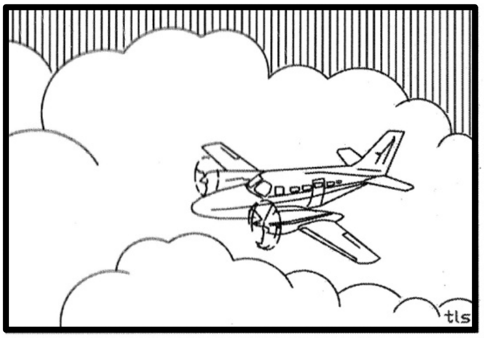
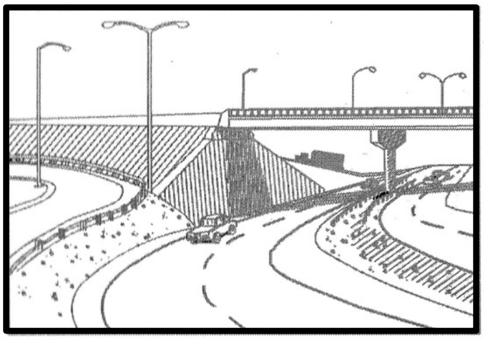
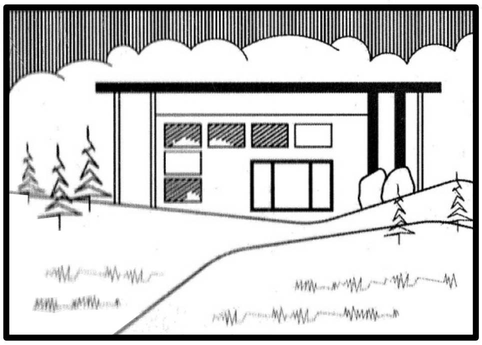
FINDING OF NO SIGNIFICANT IMPACT

KOTZEBUE TO CAPE BLOSSOM ROAD

PROJECT No. NCPD-0002(204)/76884







STATE OF ALASKA

Department of Transportation
and Public Facilities

NORTHERN REGION

December 2013

U.S. Department of Transportation
Federal Highway Administration

FINDING OF NO SIGNIFICANT IMPACT

for the

KOTZEBUE TO CAPE BLOSSOM ROAD

Federal Project Number: NCPD-0002(204)
State Project Number: 76884

The Alaska Department of Transportation and Public Facilities (DOT&PF) proposes to construct an all-season road from Kotzebue, Alaska, south across the Baldwin Peninsula to a beach access area near Cape Blossom. The Upgrade Route is the Preferred Alternative. The Kotzebue to Cape Blossom Road Upgrade Route would reconstruct approximately 2.7 miles of Air Force Road south of the Hillside Road intersection, and end adjacent to the Kotzebue Electric Association (KEA) Wind Farm. The route would continue south for another 8.9 miles, cross Sadie Creek, and terminate at a beach access ramp. The Federal Highway Administration (FHWA) has determined the Upgrade Route alternative will have no significant impact on the human environment.

Public Involvement: Community coordination began in 2008 while working on the Kotzebue to Cape Blossom Road Reconnaissance Report. DOT&PF initiated public and agency coordination for the Kotzebue to Cape Blossom Road project Environmental Assessment (EA) in the spring of 2012. DOT&PF presented the project at the joint Northwest Arctic Borough (NWAB) and City of Kotzebue Planning Commission meeting on March 22, 2012, after completion of the project's Reconnaissance Study. Agency scoping letters and emails were sent to Federal, State and local agencies, City of Kotzebue, NWAB and surrounding Villages, Native Village of Kotzebue, Alaska Native Claims Settlement Act (ANCSA) Corporations, and other interested parties beginning on April 9, 2012. A scoping meeting was held on May 10, 2012.

On Oct 29, 2013, DOT&PF held a public meeting to announce the availability of the EA and request comments. Prior to the meeting, notices and copies of the EA were provided to the City of Kotzebue and NWAB. Letters or email communications were sent to Federal, State and local agencies, City of Kotzebue, NWAB and surrounding Villages, Native Village of Kotzebue, ANCSA Corporations, and other interested parties announcing the availability of the EA and request comments. Letters and comments received during the comment period are included in Appendix A.

Mitigation and Environmental Commitments:

- Turnouts and off-highway access ramps will be placed by existing trails. DOT&PF will work with the community and Tribe to determine appropriate turnout and ramp locations to maintain accessibility to traditional ATV and snow machine trail routes. Trail users will be notified in advance of, and during construction that trail access may be temporarily interrupted. Appropriate signage will be placed on the road and trails during construction and operation indicating trail/road intersections. Access for off-road vehicles will be maintained during construction.
- If archeological resources are discovered during ground disturbing activities, work will stop until the area is evaluated by an archaeologist and the landowner, and the State Historic Preservation Office (SHPO) will be notified.
- DOT&PF contractors will prepare and comply with an Erosion and Sediment Control Plan; Stormwater Pollution Prevention Plan; Hazardous Material Control Plan; and Spill Prevention, Control, and Countermeasures Plan.

- No equipment or vehicles will operate in flowing waters. Fueling and maintenance will not occur within 100 feet of waterbodies. Equipment will be routinely inspected and serviced to prevent leaks and accidental spills.
- DOT&PF's construction contractor will abide by the Hazardous Materials Control Plan to address spill response and the storage and handling of hazardous materials, including fuel and lubricants. If leaks or spills occur, all contaminated material and soils would be contained and disposed of properly in accordance with Alaska Department of Environmental Conservation regulations. Solid waste will be disposed of in the Kotzebue permitted landfill.
- Best management practices will be implemented during construction to minimize disturbance of wetlands and streams.
- Construction limits will be clearly marked to minimize the potential for accidental wetland disturbance. Construction activities off the embankment will protect the tundra in accordance with project permits by using temporary matting, ice roads, and ice pads.
- DOT&PF will work with the Alaska Department of Fish and Game (ADF&G) to determine a construction window for in-water work in order to minimize impacts to fish resources. DOT&PF will obtain a Fish Habitat permit for winter construction in Sadie Creek and for completion of the road in the spring, when compaction, crushed aggregate placement and grading will occur. Construction of the Sadie Creek stream crossing will adhere to all compliance measures in the ADF&G Fish Habitat permit.
- Construction at Sadie Creek will occur in winter, and the crossing will be engineered to meet the estimated hydraulic flow. Appropriate drainage structures will be designed. Stream bank vegetation disturbance will be minimized.
- Dust impacts to surrounding property and adjacent vegetation will be controlled by placing gravel surfacing with a dust palliative, maintaining adequate drainage, installing geotextile fabric under the road base, watering during dry conditions, and posting lower speed limits. Material stockpiles will be covered if left in place.
- Construction will avoid the U.S. Fish and Wildlife Service (USFWS) recommended spring and summer bird migration timing windows. Alterations to vegetated sites will take place outside the bird nesting period.
- Drainage structures and culverts will be designed to control flood flows and adequately accommodate stormwater.
- Material delivery trucks traveling through the City of Kotzebue will coordinate operations near potential noise receptors based on the City's requirements.
- DOT&PF will obtain all necessary permits and agency approvals listed in the EA. All stipulations, conditions and requirement will be met.

This Finding of No Significant Impact (FONSI) is based on the attached EA, Endangered Species Act (ESA, Section 7 Consultation) concurrence from the USFWS, and National Historic Preservation Act (NHPA, Section 106 Consultation) concurrence from SHPO. The concurrence letters are included in Appendix B. The FHWA independently evaluated these documents and determined the EA adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. The EA complies with Executive Orders 12898, Environmental Justice; 11988, Floodplain Management; 11990, Protection of Wetlands; 11593, Protection and Enhancement of the Cultural Environment; 13084 Consultation and Coordination with Indian Tribal Governments; and 13112, Invasive Species.

The EA and concurrence documents provide sufficient evidence and analysis for determining an Environmental Impact Statement is not required. FHWA takes full responsibility for the accuracy, scope and content of the EA, and the ESA and NHPA consultations.

12-10-2013
Date

John W. Huestis, P.E.
Northern Region Area Engineer
Federal Highway Administration

Appendix A
Finding of No Significant Impact
Environmental Assessment
Public Meeting Materials

Kotzebue To Cape Blossom Road

ADOT&PF Project No. 76884/NCPD-0002(204)

PUBLIC MEETING

Tuesday
October 29th, 3013

Refreshments and sign-in at 6 pm
Presentation at 6:30 pm,
public comments until 8 pm

Northwest Arctic Borough
Assembly Chambers,
Kotzebue

The Alaska Department of Transportation and Public Facilities (ADOT&PF) announces the availability of the Draft Environmental Assessment (EA) for the Cape Blossom Road project in Kotzebue, Alaska for public review.

The ADOT&PF proposes to construct a road from Kotzebue to Cape Blossom on the Baldwin Peninsula in western Alaska. The proposed project includes:

- Upgrading Air Force Road from Hillside Road to the Kotzebue Electric Association (KEA) Wind Farm.
- Constructing a two-lane gravel road from the wind farm to a beach access ramp above the high tide line near Cape Blossom.

The proposed road would provide all-season access between Kotzebue and Cape Blossom. The Draft EA addresses the proposed action and potential economic, social, and environmental effects.

If you're unable to make the meeting, but wish to provide comments on the EA, you can find the Draft EA on the project website and at the Northwest Arctic Borough office in Kotzebue. Written comments can be made until November 8, 2013.

For more information, contact:

Christopher Johnston, P.E., Project Manager
Alaska Department of Transportation & Public Facilities, Northern Region
2301 Peger Road, Fairbanks, AK 99709
(907) 451-2322, chris.johnston@alaska.gov

Visit Website: dot.alaska.gov/nreg/capeblossomroad

The ADOT&PF operates Federal Programs without regard to race, color, national origin, sex, age, or disability. Full Title VI Nondiscrimination Policy: dot.alaska.gov/tvi_statement.shtml. To file a complaint go to: dot.alaska.gov/cvlrts/titlevi.shtml.

Kotzebue To Cape Blossom Road

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Visit Website: dot.alaska.gov/nreg/capeblossomroad

Brooks & Associates
1704 Rogers Park Court
Anchorage, AK 99508-4070

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Kotzebue To Cape Blossom Road

Public Meeting

Tuesday
October 29th, 2013, 6 pm

PUBLIC SERVICE ANNOUNCEMENT – KOTZEBUE TO CAPE BLOSSOM ROAD

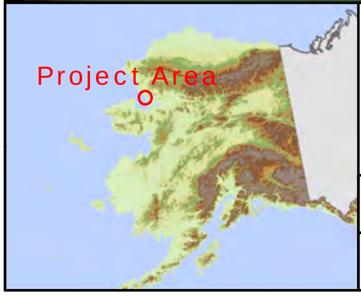
30 SECOND SPOT

October 24, 2013, Fairbanks. THE ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES ANNOUNCES THE AVAILABILITY OF THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE CAPE BLOSSOM ROAD PROJECT IN KOTZEBUE FOR PUBLIC REVIEW. THE PROJECT PROPOSES TO CONSTRUCT A ROAD FROM KOTZEBUE TO CAPE BLOSSOM. A PUBLIC MEETING IS PLANNED FOR TUESDAY, OCTOBER 29TH, FROM 6 TO 8 P.M. AT THE NORTHWEST ARCTIC BOROUGH ASSEMBLY CHAMBERS IN KOTZEBUE. WRITTEN COMMENTS WILL BE ACCEPTED UNTIL NOVEMBER 8TH. FOR MORE INFORMATION CONTACT CHRISTOPHER JOHNSTON AT 451-2322.

####

For more information contact:

Alaska Department of Transportation and Public Facilities
Christopher Johnston, Project Manager
ADOT&PF, Northern Region
(907) 451-2322
E-mail: chris.johnston@alaska.gov



Kotzebue to Cape Blossom Road Project Location

0 1 2 4 Miles

Date: 9/3/2013	Scale: 1 in = 2 miles
Revision: 3	Figure: 1.1

Legend

- ⚒ Material Site
- ⌧ Stream Crossing
- Winter Trail
- Kotzebue Corp. Boundary
- VORTAC Easement

Route Alternatives

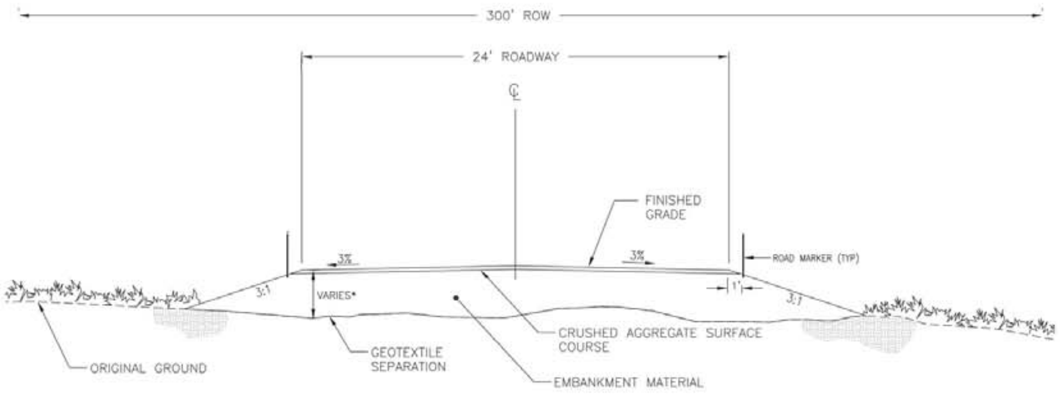
- 🟩 Upgrade Route
- 🟥 Dismissed
- 🟫 Staging Pad

Land Status

- 🟫 Cemetery
- ▨ KEA Windfarm
- 🟩 ANCSA - City
- 🟧 KIC Patent
- 🟦 KIC Selection
- 🟨 KIC & NANA
- 🟪 NANA Patent
- 🟥 Native Allotment
- 🟩 State Selection Application

Sources: DOT&PF, BLM, DNR, FWS, McClintock Land Associates Inc.

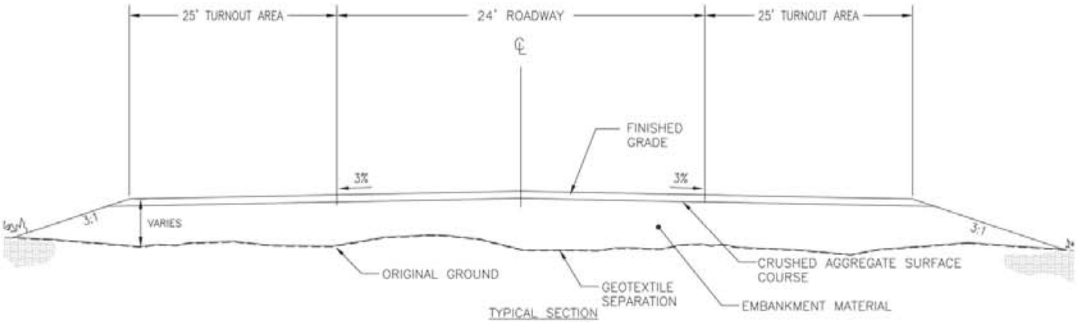
Transportation & Public Facilities State of Alaska



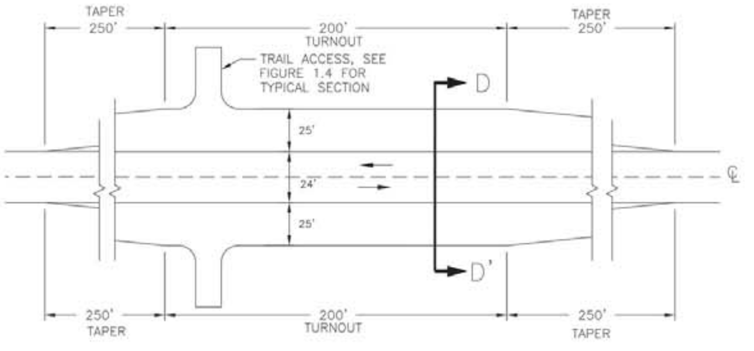
TYPICAL SECTION

NOT TO SCALE

* EMBANKMENT HEIGHT WILL VARY BETWEEN 3 TO 8 FEET. EMBANKMENT HEIGHT OF 6' MAY BE USED IN AREAS OF POTENTIAL SNOW DRIFTING. EMBANKMENT HEIGHT WILL BE 8' IN AREAS WHERE THERE IS CONCERN OF THAWING UNDERLYING PERMAFROST.



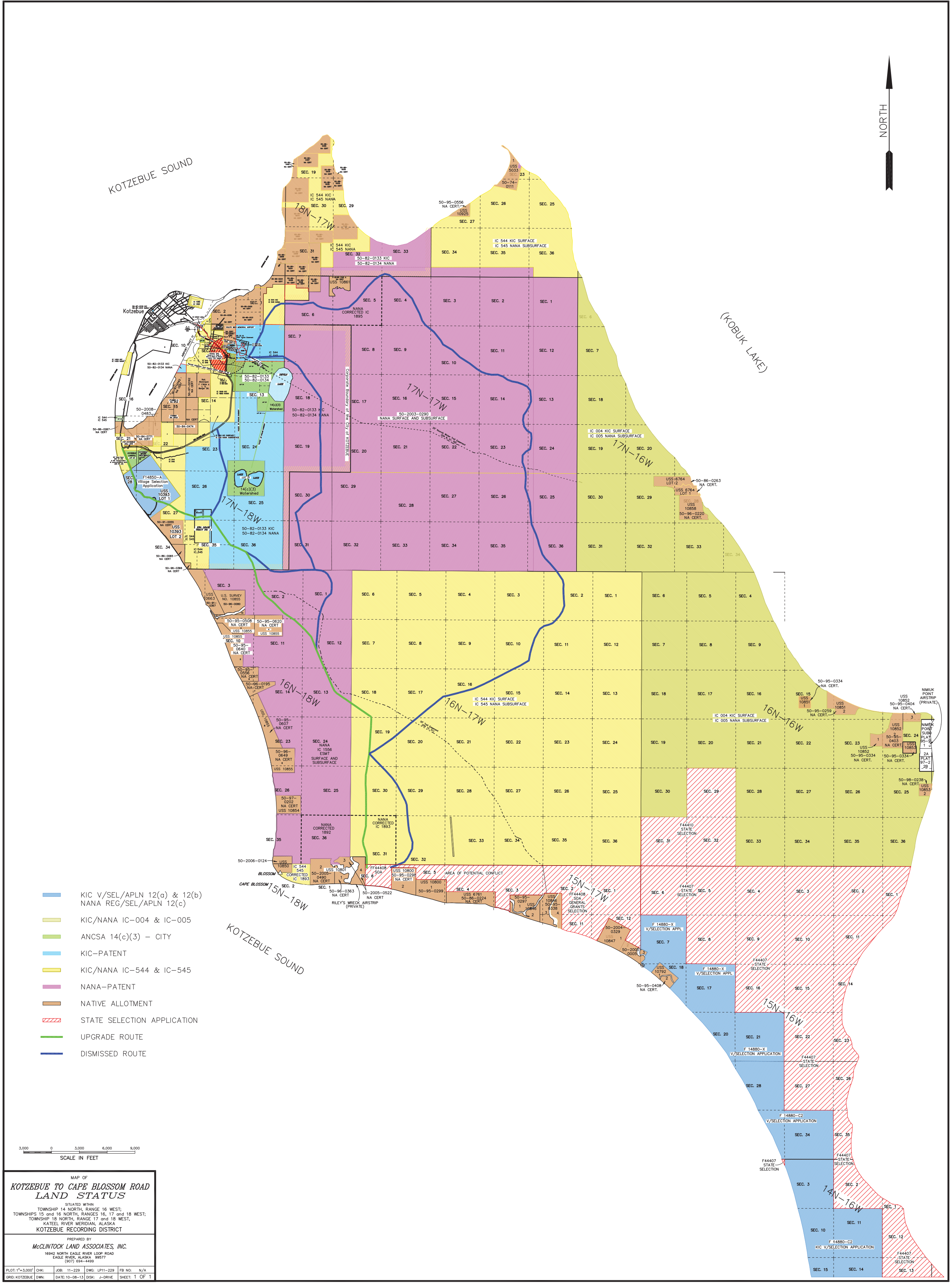
TYPICAL SECTION
SECTION D-D'
NOT TO SCALE



PLAN
NOT TO SCALE

NOTE: TURNOUTS WITH TRAIL ACCESS WILL BE PROVIDED AT TRADITIONAL USE TRAILS. TURNOUTS MAY BE ON EITHER SIDE OF THE ROAD OR BOTH SIDES DEPENDING

Roadway Details



MAP OF

KOTZEBUE TO CAPE BLOSSOM ROAD
LAND STATUS

SITUATED WITHIN
TOWNSHIP 14 NORTH, RANGE 16 WEST;
TOWNSHIPS 15 and 16 NORTH, RANGES 16, 17 and 18 WEST;
TOWNSHIP 18 NORTH, RANGE 17 and 18 WEST,
KATEEL RIVER MERIDIAN, ALASKA
KOTZEBUE RECORDING DISTRICT

PREPARED BY
McCLINTOCK LAND ASSOCIATES, INC.
16942 NORTH EAGLE RIVER LOOP ROAD
EAGLE RIVER, ALASKA 99577
(907) 694-4499

PLOT: 1"=3,000'	CHK:	JOB: 11–229	DWG: LP11–229	FB NO: N/A
GRID: KOTZEBUE	DWN:	DATE: 10–08–13	DISK: J–DRIVE	SHEET: 1 OF 1

Meeting Minutes

Kotzebue to Cape Blossom Road EA

Baker Project No: 128262
DOT&PF/Federal Project No: 76884/NCPD-0002(204)

Subject: **Kotzebue to Cape Blossom Road EA Public Meeting**

Date: October 29, 2013

Time: 6 p.m. to 8 p.m., presentation at 6:30 p.m., public comments until 8 p.m.

Location: Kotzebue, AK: Northwest Arctic Borough Assembly Chambers (NWAB)

Meeting Outreach:

- Meeting notice posted on the project website, October 25, 2013
- Display advertisement in Arctic Sounder, October 24, 2013, inviting the public to the open house
- Postcard invitations to local agencies, and elected officials in Kotzebue, October 18, 2013
- Postcard invitations mailed to all local businesses and residents in Kotzebue, October 25, 2013
- Fliers posted in Kotzebue on October 29, 2013
- Public service announcement request sent to: KINU-FM, KOTZ-AM, and GCI, to request to broadcast announcement inviting public to meeting, October 25, 2013-October 28, 2013

Meeting Attendance: 37 individuals signed in

Meeting Materials:

- Welcome sign
- Proposed and Dismissed Routes map
- Land status map
- Typical Section figure
- Environmental Assessment copies
- Sign in Sheets
- Comment Sheets
- Display Advertising

Participants:

Name	**Title/Discipline**	**Organization**
Al Beck	Aviation Group Chief	Alaska DOPT&PF
Christopher Johnston	Project Manager	Alaska DOPT&PF
Paul Karczmarczyk	Environmental Analyst	Alaska DOPT&PF

Name	Title/Discipline	Organization
Derek Christianson	Project Manager	Michael Baker Jr., Inc.
Karen Brown	Environmental Task Lead	Michael Baker Jr., Inc.
Michelle Onuska	Public Involvement Support	Michael Baker Jr., Inc.

A public meeting was held in Kotzebue on October 29, 2013 to announce the availability of the Kotzebue to Cape Blossom Road Environmental Assessment (EA) to the community. The meeting began at 6:00 p.m. and the presentation began about 6:15 p.m.

Attendees were greeted at the door and asked to sign in. Written comment forms were provided. Food and beverages were available for the attendees to enjoy during the meeting. The project team was available to discuss the project before and after the presentation.

The meeting started with an invocation given by an Elder of Kotzebue. Chris Johnston introduced the staff and consultants in attendance. Once introductions were completed, Chris provided an overview of the project. He described the Proposed Action including the route from Kotzebue to Cape Blossom in logical segments and provided information on other routes studied and land ownership. He explained the decision making process guiding the development of alternatives. He described how previous reports and reconnaissance studies helped in the developmental process of current route options considered and carried forward for further study or dismissed. He also explained the input received from the public and agencies over the past few years helped in the developmental process as well.

Paul Karczmarczyk described the environmental and National Environmental Policy Act (NEPA) processes and timeline for providing comments on the EA.

Derek Christianson of Michael Baker Jr., Inc. reviewed the purpose and need as specified in the EA. He elaborated on the anticipated improvements that would occur for access to a better barge landing area, and subsistence and recreational uses of the lower Baldwin Peninsula. He also explained that improvements to a better barge landing area would improve lightering efficiency and likely result in an increase in economics for transportation of barged freight.

Karen Brown of Michael Baker Jr., Inc. provided an overview of field and desktop studies that provided data for determination of potential impacts to the natural environment. These included fish and avian species, hydrology, wildlife, wetlands, cultural and archeological resources, air, water and sound. She also detailed anticipated human environmental impacts including access to traditional camps, Native allotments, subsistence resources, and recreational uses. She pointed out the potential economic benefits that access could provide to the community.

Karen explained that all Federal, State and local agencies agreed that there wouldn’t be impacts to the Right-of-Way (ROW). The EA concluded there would be no negative impacts to community transportation. She mentioned that while there were historical sites connected to the radar station, the State Historic Preservation Office (SHPO) made a finding of no effect for the project.

Karen emphasized if any cultural resources were discovered during construction, work would be stopped and SHPO would be notified before work could resume. She continued explaining that there should not be temporary impacts to wildlife resources during construction, but there could be some impacts to terrestrial mammals from operation. The new road will improve access to berry picking areas.

She explained that dust will be controlled by palliatives added to the gravel surface during construction, and the road would be watered to limit impacts to land and water. Noise and water quality impacts were most likely to occur during construction. Karen continued that there were no anticipated long term impacts to fish, wildlife or suitable nesting habitat for raptors, and there are no Endangered Species Act -listed species in the project area. The route would avoid all lakes, but will cross Sadie Creek, and appropriate drainage structures would be placed at the creek crossing and other locations along the road.

Karen indicated there are previously identified contaminated sites associated with the Long-Range Radar Site, but these were previously remediated, and no other portions of the project area were anticipated to contain contaminated sites or materials. She explained that the project will terminate above the high water mark, and therefore would not affect beach processes. The entire project area is in wetlands, and approximately 109 wetland acres would be impacted. The project would require a permit from the United States Army Corps of Engineers.

Chris Johnston followed up by indicating the need for public and agency comments, and the project team will provide responses to comments. Any changes to the EA will be incorporated and a Finding of No Significant Impact (FONSI) will be written and approved by the Federal Highway Administration. Once the FONSI is signed, final design will begin, and the ROW will be acquired. A design study report and final design will be completed before the start of construction.

Questions from those present:

Q: When will you put out a project bid?

A: *The acquisition of the ROW is the critical path, but construction bids could be requested and constructed started within two years if things go smoothly. If the project takes an accelerated path and ROW acquisition goes quickly, the project could be out to bid in winter 2014-2015.*

Q: The ROW is generally 150 feet on either side of the centerline?

A: *DOT&PF described land ownership and potential ROW width by project location, and in certain areas the ROW width would vary.*

Q: Is there a port associated with the project?

A: *DOT&PF: This project is for a road to Cape Blossom. The port is a separate, stand-alone project and not addressed in the EA.*

Q: Would winter only construction include the bridge?

A: *Much of the work including bridge construction would be done in winter, with some summer work necessary, such as final surfacing, grading, and signage.*

Q: Would the State be constructing the road alone or with city and military assistance.

A: The *City has been working with U.S. Army Innovative Readiness Training. At this point, the entire project would be put out to a contractor for bid and construction.*

Q: Walter Sampson: Have there been any negative comments from Non-governmental Organizations or others?

A: *No negative comments have been received. The U.S. Fish and Wildlife Service provided comments on impacts to wetlands, and requested the project minimize wetland footprint. Overall the comments received from agencies and the community have been positive.*

Q: Walter Sampson: Where will gravel from the project come from.

A: *The gravel would be contractor furnished. Iggy Hill is one potential, and there are other sources a contractor could draw from. Ultimately, it would be the contractor's call on materials.*

Q: Walter Sampson: Have you looked at any sites with good gravel potential?

A: *DOT&PF conducted a gravel investigation along the centerline of the proposed road, but no potential gravel sources were found. They also did some drilling offshore around the proposed road terminus, but again did not find a competent gravel source. During the airport relocation reconnaissance, gravel was found at the Iggy Hill site, and DOT&PF has looked other places on the Baldwin Peninsula.*

Q: Walter Sampson: If there's a potential source at Iggy Hill, could there be more at the higher hill areas nearby?

A: *DOT&PF: Nimiuk Point may have a little gravel, and there might be some offshore sources but they have salt and really cannot be used. It will depend on the quality of gravel. The contractor will likely choose the closest source and the most economical.*

Q: What material sites has DOT&PF investigated?

A: *DOT&PF has investigated several sites but found most to be undesirable including those along the road center line, airport spoils, and off-shore at Cape Blossom. Good gravel was found at the Iggy Hill site.*

Q: The road near the radar site has a sharp turn and is very close to the site fence. Is anything being proposed to fix the turn? Will the fence be impacted?

A: *DOT&PF will probably be able to avoid it, but will depend on the ROW. The 300 feet ROW might narrow near the facilities.*

Q: Walter Sampson: Does Kotzebue Electric Association (KEA) have any ideas on what they want there?

A: *Eugene Smith gave some information on KEA. KEA leases the land from Kikiktagruk Inupiat Corporation (KIC). Cape Blossom Road would provide KEA with better access to the wind farm. Both KEA and KIC are in favor of the road.*

Q: Will the increase in traffic impact the route through the airport?

A: *This project starts at the intersection of Hillside Road. The airport project is separate, and the airport project will help with the traffic situation at the airport, but the gates at the airport will be open even after that project is done.*

Q: What is the design and construction schedule?

A: *DOT&PF requests comments on the EA by November 8. DOT&PF anticipates FHWA will issue the FONSI by the end of the year. Detailed design will begin approximately 6 weeks later. ROW negotiations are expected to take 1 to 2 years. Construction will begin once the ROW negotiations are complete. Construction could begin in the winter of 2014/2015 if ROW can be obtained.*

Comments:

Chris reiterated the comment deadline is November 8. The comments will be addressed and provided to FHWA quickly. Once the FONSI if completed and signed and the NTP is received, DOT&PF can begin design and complete the design study report. The ROW process will begin, and as soon as DOT&PF can get ROW acquisition completed, the project will go out to bid.

Comment from Chairman of KIC Board: It would be good to get KIC and NANA together to work together with DOT&PF on ROW. Working together would speed the process along.

DOT&PF is open to working together and would like to speed things up if possible, and will mention your desire to our ROW people to see what we can do.

*This information is **voluntary**. Its purpose is to ensure fair and equal representation by the public in all projects and programs administered by the Alaska Department of Transportation and Public Facilities.

ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

PUBLIC MEETING

SIGN IN SHEET

PROJECT NAME: Kotzebue to Cape Blossom Road, **PROJECT NO.:** 76844/NCPD-0002(204), **DATE:** October 29, 2013

NAME (PLEASE PRINT)	**ADDRESS** (to receive project notices, you MUST provide)	**PHONE**	***GENDER (M/F)**	***RACE (W, AN, N, B, H, A, P, O)**
Cynthia Fields		442-2861	F	AN
Wanda Baltazar		442-3794	F	AN
Jennifer Snider		412-1268	F	AN
John Chase	jchase@nwabor.org	442 8212	M	AK Nate
Sheila Stein	Box 786 Kotzebue, AK 99752	412 0834	F	AN
Katherine Gregg		412-0392	F	AN

3904.06 PI Docs:3909.06 Meetings:3906.06 060329 Meeting:3904.06_060329 Title VI Sign-In.doc

***RACE CATEGORIES: WHITE (W), ALASKA NATIVE (AN), NATIVE AMERICAN (N), BLACK (B), HISPANIC (H), ASIAN (A), PACIFIC ISLANDER (P), and OTHER (O)**

1 of ____

revised: March 2005

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PROJECT NAME: Kotzebue to Cape Blossom Road, **PROJECT NO.:** 76844/NCPD-0002(204), **DATE:** October 29, 2013

NAME (PLEASE PRINT)	**ADDRESS** (to receive project notices, you MUST provide)	**PHONE**	***GENDER (M/F)**	***RACE (W, AN, N, B, H, A, P, O)**
Dave Myers	P.O. Box 728	442-2535	M	W
Clement Richards SR	Box 823		m	N
Frank Hays	Box 1029	442 8301	m	W
Jason Jessup	Box 46	442 5204	M	N
Barbara Coltisn	Box 532	442 3374	Fe	W
Susan Georgette	Box 278	442 3336	F	W
Ted Smith	Box 1197	442 1764	M	AN
Bish Gallahan	box 909	360 5385	M	
J Beck	2301 PEGER RD FAIRBANKS, AK 99709	451-2276	M	W

***RACE CATEGORIES: WHITE (W), ALASKA NATIVE (AN), NATIVE AMERICAN (N), BLACK (B), HISPANIC (H), ASIAN (A), PACIFIC ISLANDER (P), and OTHER (O)**

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revised: March 2005

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ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

PUBLIC MEETING

SIGN IN SHEET

PROJECT NAME: Kotzebue to Cape Blossom Road, **PROJECT NO.:** 76844/NCPD-0002(204), **DATE:** October 29, 2013

NAME (PLEASE PRINT)	ADDRESS (to receive project notices, you MUST provide)	PHONE	*GENDER (M/F)	*RACE (W, AN, N, B, H, A, P, O)
KAREN BROWN	1400 W. Benson Blvd Ste 200 Anchorage AK 99503	273 1638	F	W
DEREK CHRISTIANSON	1400 W. BENSON BLVD. SUITE 200 ANCHORAGE AK 99503	273·1600	M	W
Peter Johanknecht	1500 W. 33rd Ave, Suite 100 Anchorage AK 99503	351-5757	M	W
Walter Sampson	Bx 1088 Kotzebue, Ak 99752	442 3605	M	AN
Cole W. Schaefer	Box 1050 Kotzebue AK 99752	442 3165	M	AN
SANDY HUSS	P.O. Box 277 KOTZEBUE, AK. 99752	412- 2121	M	W

3904.06 PI Docs:3909.06 Meetings:3906.06 060329 Meeting:3904.06_060329 Title VI Sign-In.doc

***RACE CATEGORIES: WHITE (W), ALASKA NATIVE (AN), NATIVE AMERICAN (N), BLACK (B), HISPANIC (H), ASIAN (A), PACIFIC ISLANDER (P), and OTHER (O)**

1 of ____

revised: March 2005

*This information is **voluntary**. Its purpose is to ensure fair and equal representation by the public in all projects and programs administered by the Alaska Department of Transportation and Public Facilities.

PROJECT NAME: Kotzebue to Cape Blossom Road, **PROJECT NO.:** 76844/NCPD-0002(204), **DATE:** October 29, 2013

NAME (PLEASE PRINT)	**ADDRESS** (to receive project notices, you MUST provide)	**PHONE**	***GENDER** (M/F)	***RACE** (W, AN, N, B, H, A, P, O)
ERNIE NORTON	Box 361 KOTZEBUE, AK.	442-3210	M	ESK
Josephine H Sampson	Box 212 KOTZ, AK	442-2525		
WARREN R THOMPSON	P.O BOX 994 KOTZEBUE	442-3144	M	CAV
Ed Ward	BOX 1015, OTZ	442-2480	M	E
Ron Monigold	Box 593, Kotz	442-3953	M	W
Nathan Hotch Jr	Box 96 Kotzebue	442-3951	M	
Noah Naylor	P.O B 1110	442-2590	M	E
Enoch Shiet	Box 234	442-4582	m	E
Paul Karczmarczyk	DOT&PF 2301 Pegr Fbks, AK	451-2088	M	W
Michelle Onuska	1400 W. Benson Blvd. Anchorage, AK	724-312-1019	F	W

*RACE CATEGORIES: WHITE (W), ALASKA NATIVE (AN), NATIVE AMERICAN (N), BLACK (B), HISPANIC (H), ASIAN (A), PACIFIC ISLANDER (P), and OTHER (O)

____ of ____

revised: March 2005

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ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

PUBLIC MEETING

SIGN IN SHEET

PROJECT NAME: Kotzebue to Cape Blossom Road, **PROJECT NO.:** 76844/NCPD-0002(204), **DATE:** October 29, 2013

NAME (PLEASE PRINT)	ADDRESS (to receive project notices, you MUST provide)	PHONE	*GENDER (M/F)	*RACE (W, AN, N, B, H, A, P, O)
Willie [illegible]	1216 Kotz	4422661		
Harold [illegible]	1252 Kotz	995-2688	M	
Eugene Smith	POB 1158 Kotz Ak	360-4696	M	N
Harry Clark Sr	P.O. BOX 215 KOTZEBUE	442-278	m	
Gordon Killbear	PO. Box 916 Kotz	4422790		
Wilbur SKin	Box 434 OTZ	412-0303	m	

3904.06 PI Docs:3909.06 Meetings:3906.06 060329 Meeting:3904.06_060329 Title VI Sign-In.doc

*RACE CATEGORIES: **WHITE (W), ALASKA NATIVE (AN), NATIVE AMERICAN (N), BLACK (B), HISPANIC (H), ASIAN (A), PACIFIC ISLANDER (P), and OTHER (O)**

1 of ____

revised: March 2005

Comment Form

Kotzebue to Cape Blossom Road

Project No. 76844/NCPD-0002(204)

Your Comments Please... Please use this form to provide written comments about the Cape Blossom Road project—the purpose and need or any issues or concerns that should be addressed in the environmental documentation. We appreciate your written input!

Name: Katherine Gregg

Street Address or PO Box: P.O. box 786

City, State, Zip: Kotzebue AK 99752

Email: Katherine_99465@hotmailcom

Phone: 412-0392

Your comments:

I'm concerned about garbage disposal on the road and how it will affect the subsistence life and I'm also concerned about if the city of Kotzebue will actually do something about the dust. I am one of many that pick berries and hunt along the coast. The dust and garbage will affect our subsistence life and also our allotment.

We welcome your input. Please send written comments:

Mail

ADOT&PF Northern Region
Attn: Christopher Johnston, P.E., Engineering Manager
2301 Peger Road
Fairbanks, AK 99709

Call

Alaska Relay
TTY 800-770-8973 or
Toll Free: 1-866-535-1877

Email chris.johnston@alaska.gov

Comment Form

Kotzebue to Cape Blossom Road

Project No. 76844/NCPD-0002(204)

Your Comments Please... Please use this form to provide written comments about the Cape Blossom Road project—the purpose and need or any issues or concerns that should be addressed in the environmental documentation. We appreciate your written input!

Name Sheila Stein

Street Address or PO Box Box 786

City, State, Zip Kotzebue, AK

Email drgchp@hotmail.com

Phone 9074120834

Your comments:

The road is near our allotment how far away ~~do~~ you need to be from our property? who will be responsible for garbage left? we access our allotment from the beach side. Can you move away from our allotment any more?

We welcome your input. Please send written comments:

Mail

ADOT&PF Northern Region
Attn: Christopher Johnston, P.E., Engineering Manager
2301 Peger Road
Fairbanks, AK 99709

Call

Alaska Relay
TTY 800-770-8973 or
Toll Free: 1-866-535-1877

Email chris.johnston@alaska.gov

Comment Form

Kotzebue to Cape Blossom Road
Project No. 76844/NCPD-0002(204)

Your Comments Please... Please use this form to provide written comments about the Cape Blossom Road project—the purpose and need or any issues or concerns that should be addressed in the environmental documentation. We appreciate your written input!

Name Willie Towksjhea

Street Address or PO Box 258A 3rd Ave

City, State, Zip Kotz 99752

Email

Phone 442-3401

Your comments:

Like idea of the road.
On side of Rd or in Rd build in a pipeline
to come from Kotz to South
fill barges go to villages + put in
more pipelines + pump station to villages
to reduce costs of fuel

Rd is important to the community

Now fly fuel into villages,

We welcome your input. Please send written comments:

Mail
ADOT&PF Northern Region
Attn: Christopher Johnston, P.E., Engineering Manager
2301 Peger Road
Fairbanks, AK 99709

Call
Alaska Relay
TTY 800-770-8973 or
Toll Free: 1-866-535-1877

Email chris.johnston@alaska.gov

NANA

November 7, 2013

Department of Transportation & Public Facilities
Attn.: Chris Johnston, P.E.
2301 Peger Road
Fairbanks, AK 9970

Regarding: The Cape Blossom Port Access Road

Dear Chris Johnston, P.E.:

Thank you for the opportunity to comment on the Draft Environmental Assessment for the Cape Blossom Road Project. NANA Regional Corporation, Inc. (NANA) is one of the 13 Regional Alaska Native corporations created pursuant to the Alaska Native Claims Settlement Act (ANCSA) of 1971. NANA's mission is to improve the quality of life for our people by maximizing economic growth, protecting and enhancing our lands, and promoting healthy communities with decisions, and behaviors inspired by our Iñupiat Illitquisiat (Iñupiaq cultural values) consistent with our core principles.

The NANA region includes 11 rural Alaska Native villages (Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Kotzebue, Noatak, Noorvik, Selawik, Shungnak). NANA has more than 13,300 Iñupiat shareholders who depend on goods shipped at great expense from outside of our region.

The majority of goods coming into the NANA Region arrive through the hub town of Kotzebue via barge. Currently, the barges must anchor 12-15 miles away from town and have the goods lightered to the dock on smaller craft. This adds considerable cost to the food, fuel, clothing, and construction materials from Outside that improve our shareholder's everyday lives. A 2008 study found that goods were 61% more expensive in Kotzebue than in Anchorage. The costs in the outlying villages are higher still, impeding the growth of an area already challenged by high poverty levels.

The Cape Blossom Road and Port Project would also serve to make the area safer for the increasing marine traffic moving through the Bering Strait. With the general trend of decline in the mean summer sea ice extent, there have been more cargo ships transiting the Northwest Passage around Canada and the Northern Shipping Route to the north of Siberia. Small cruise lines are already selling passage through the area. This raises the risk of accidents in the region, and with no ports for hundreds of miles, one at Kotzebue could mean the difference between life and death for a stricken vessel.

NANA views the Cape Blossom Road Project as imperative to the region's economic growth, making basic supplies affordable to our shareholders, and the general safety and well-being of ships and passengers passing through the area.

Thank you for taking my comments into consideration.

Respectfully Yours,

Rosie Barr
Senior Director of Lands
NANA Regional Corporation

F A X

Native Village of Kotzebue
P.O. Box 296
600 5th street
Kotzebue, Alaska 99752
907-442-3467

www.kotzebueira.org

To: Scott Maybrier or Chris Johnston
Fax number: 907-451-5126

From: Jennifer Snider
Fax number: 907-442-2162

Date: **11/8/13**

Regarding: Public comments on draft EA for cape blossom road project

Phone number for follow-up:
907-442-3467 ext.

# of Pages including cover:

Comments:

Native Village of Kotzebue
Kotzebue IRA

Knowledge of Language
Knowledge of Family Tree
Sharing
Humility
Respect for Others
Love for Children
Cooperation
Hard Work
Respect for Elders
Respect for Nature
Avoid Conflict
Family Roles
Humor
Spirituality
Domestic Skills
Hunter Success
Responsibility to Tribe

November 5, 2013

Christopher Johnston
Engineering Manager
AK DOT&PF
2301 Peger Road
Fairbanks, Alaska 99701
Chris.johnston@alaska.gov

RE: Kotzebue to Cape Blossom Road Draft Environmental Assessment
Project No.: 76844/NCPD-0002(204)

Dear Mr. Johnston,

On behalf of the Native Village of Kotzebue, please accept these as additional comments submitted by Ukallaysaaq Okleasik and Alex Whiting dated October 28, 2013. Overall, the tribe is very supportive of the proposed Cape Blossom Road to provide access to a deep water port, commercial freight transport, recreational uses, and subsistence access and uses.

As background, our principal goal of the tribe's transportation department is to assist our community in building a safe and healthy transportation infrastructure. Secondary goals include providing employment and training, and advocacy for the transportation, erosion, and flooding concerns of the region.

The tribe fully understands Kotzebue's needs for better infrastructure improvements in our community, currently there are no roads extending outside of Kotzebue. Funding for transportation projects is becoming increasingly difficult to secure as funds diminish and competition for limited funds increases.

As a related transportation project completed by the tribe, Ted Stevens Way was built in 2000. The tribe working with the BIA as a federal agency, worked with a relatively small amount of funds, and had to stretch resources to build the road before the Air Force Road become restricted to the public. Although since then FAA backed away from closing Air Force Road. However, before its initial order the construction had issues with insulation under the shoulders of the road. Since construction, the shoulders have not held up well over the years therefore, the road is currently in a rehabilitation design phase.

To learn from this project and improve the chances for success on the Cape Blossom project, there needs to be proper oversight of the proposed road construction and the tribe needs to keep in mind for developing infrastructure that will work into the next 20 years from now. Our tribal and community members would benefit greatly from a new road in our community. Providing greater access to subsistence resources/native allotments, easier trail access points, and upgrade Air Force Road, seasonal jobs, and an increase tribal roads inventory.

333 Shore Avenue • P.O. Box 296 • Kotzebue, Alaska 99752
Phone: (907) 442-3467 • Fax: (907) 442-2162

In conclusion, the tribe supports the efforts of everyone involved on this project. Thank you for taking the time to review our comments. We appreciate this opportunity to express concerns for the new road to Cape Blossom.

Sincerely,

Jennifer Snider,
Transportation Coordinator

Ukallaysaaq T. Okleasik,
Executive Director

Native Village of Kotzebue
Kotzebue IRA

October 28, 2013

Chris Johnston
Project Manager
AK DOT&PF
2301 Peger Road
Fairbanks, AK 99701
chris.johnston@alaska.gov

Knowledge of Language
Knowledge of Family Tree
Sharing
Humility
Respect for Others
Love for Children
Cooperation
Hard Work
Respect for Elders
Respect for Nature
Avoid Conflict
Family Roles
Humor
Spirituality
Domestic Skills
Hunter Success
Responsibility to Tribe

RE: Kotzebue to Cape Blossom Road Draft Environmental Assessment
Project No.: 76844/NCPD-0002(204)

Dear Manager Johnston,

The Native Village of Kotzebue appreciates the opportunity to comment on the draft EA for the Cape Blossom Road project. The Tribe has been reviewing the plans for this effort since the initial reconnaissance study was released in February 2011 and has participated in some of the baseline collection through contracting with Michael Baker to provide cultural advisors. The Tribe agrees with the need for the project to establish an all-season transportation link to the City of Kotzebue from a barge landing site at Cape Blossom. The upgrade route chosen is the best suited to achieve the objective while minimizing costs, environmental impacts, and avoiding impacts to other landowners.

As for comments on the EA document itself, the tribe notes that the bibliography section there is a reference to the Native Village of Kotzebue Corporation for the Sam Barr personal comment. The Native Village of Kotzebue is a federally-recognized tribe and should be referenced as simply the Native Village of Kotzebue or the Native Village of Kotzebue IRA. Also, on a similar note the Native Village of Kotzebue could be referenced in the community profile discussions as the tribal government serving the people of Kotzebue. Currently, there is no mention of the Tribe in the background/profile discussions.

The document appears to address sufficiently the impacts posed by the project on the immediate environment; however the Tribe would like more discussion on the impacts of increased ATV use stemming from increased access to the country the road traverses. There are currently many more ATV trails out from Kotzebue than ever before and the new road will likely lead to many more trails becoming established from the new road. While, the Tribe supports continued access to the interior of the Baldwin Peninsula using ATV's there may be ways to manage this use and access in a more orderly fashion; it should at least be noted as a likely cumulative impact to the environment from the road being built, even if ATV use management itself is beyond the scope of this project.

333 Shore Avenue • P.O. Box 296 • Kotzebue, Alaska 99752
Phone: (907) 442-3467 • Fax: (907) 442-2162

The other issue that is unclear from the document is how the road will impact snowmachine access from one side of the road to the other. While the document does address access points, it is not entirely clear if road construction methods or materials may preclude access along significant portions of the length of the road from one side to the other with snowmachines during winter. Additionally, winter maintenance has the potential to result in impassable snow piling for various lengths on either side of the road. It would be helpful if this issue could be addressed in the Final EA.

Lastly, dust generation will probably be one of the more common long term impacts to the environment and the Tribe encourages a long term plan to address dust beyond the construction phase, in addition to a maintenance plan to keep the road up to safe operational standards.

Thank you for the consideration of these comments.

Sincerely,

FOR

Alex Whiting
Environmental Specialist

Ukallaysaaq Tom Okleasik
Executive Director

Appendix B
USFWS and SHPO Concurrence Letters

United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Fairbanks Fish and Wildlife Field Office
101 12th Avenue, Room 110
Fairbanks, Alaska 99701
November 7, 2013

Paul Karczmarczyk
Environmental Analyst
DOT&PF
2301 Peger Road
Fairbanks, AK 99709

Re: Kotzebue to Cape Blossom Road

This letter is in response to your request for concurrence on your effect determinations for endangered and threatened species, pursuant to Section 7 of the Endangered Species Act of 1973, as amended (Act).

THE PROPOSED ACTION

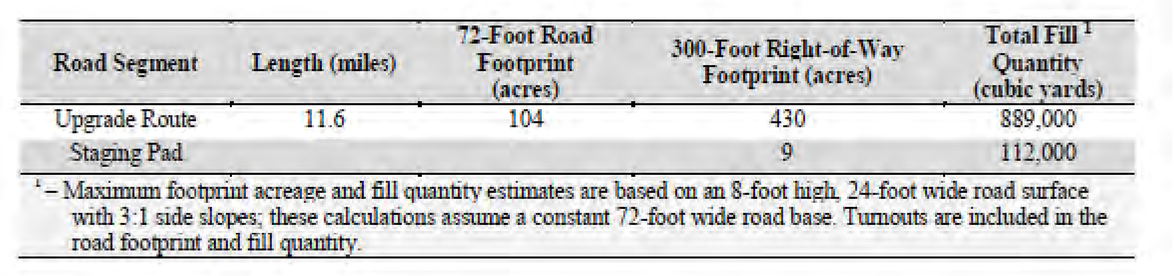
Based on the information provided, we understand that The Alaska Department of Transportation and Public Facilities (DOT&PF) proposes to construct an all-season road (Figure 1) from Kotzebue, Alaska, south across the Baldwin Peninsula to a beach access area near Cape Blossom. Additionally, the U.S. Army Corps of Engineers (USACE) would permit placement of fill in wetlands pursuant to the Clean Water Act (Table 1). The Cape Blossom Road would be approximately 11 miles long, with 24 feet of road surface and side slopes 3:1 or steeper. The road would include turnouts with ramps to access traditional trail crossings and potentially other areas. The proposed road would be designed for commercial freight transport and recreational uses with an estimated volume of 100 vehicles per day or less, which is below the Very Low-Volume Local Road designation by the American Association of State Highway and Transportation Officials guidelines of less than 400 vehicles.

The road would reconstruct approximately 2.7 miles of Air Force Road south of the Hillside Road intersection and end adjacent to the Kotzebue Electric Association (KEA) Wind Farm. The route would continue south for another 8.9 miles, cross Sadie Creek, and terminate at a beach access ramp. The beach access ramp would end above high tide line. Plans include construction of a staging pad on the east side of the road about 0.25 miles north of the shoreline. Anticipated uses of the pad include container and barge freight staging and storage, vehicle and boat trailer parking, and material stockpiles.

The road would be constructed on geotextile fabric placed on the tundra. A leveling course may be required under the geotextile depending on tundra tussock heights. The existing organic mat would not be removed. Clearing may occur but would be limited to brush removal within the roadway footprint. When the ground is frozen, embankment material would be placed on the fabric. The material would likely be supplied by either ice road from the recently permitted Iggy Hill material site or barged in and stockpiled from a regional material site. After the embankment material thaws, the road would be compacted and leveled with additional material, and a surface layer of crushed aggregate would be applied. The crushed aggregate would be barged locally from the Baldwin Peninsula. A dust palliative surface treatment would be applied. Stream crossings would use appropriately-sized drainage structures, with cross culverts installed along the roadway as needed to equalize drainage areas. Except for the beach access ramp, excavation would be avoided to minimize thermal degradation of the subgrade. Insulation would be installed under the road bed at the beach access excavation site for thermal protection.

Construction would begin in the winter 2014/2015 after the ground freezes and would be completed after spring breakup. After breakup, the road would be graded, and the final surface layer of gravel would be added. Construction would be phased as funds become available. Currently, available funds would allow road construction to Sadie Creek.

Table 1. Footprint of the Cape Blossom Road with associated fill.



Road Segment	Length (miles)	72-Foot Road Footprint (acres)	300-Foot Right-of-Way Footprint (acres)	Total Fill [1] Quantity (cubic yards)
Upgrade Route	11.6	104	430	889,000
Staging Pad			9	112,000

[1] – Maximum footprint acreage and fill quantity estimates are based on an 8-foot high, 24-foot wide road surface with 3:1 side slopes; these calculations assume a constant 72-foot wide road base. Turnouts are included in the road footprint and fill quantity.

THE ACTION AREA

The action area includes the footprint of the Cape Blossom Road and a buffer each side where direct and indirect effects to listed species may occur.

EFFECTS OF THE ACTION ON LISTED SPECIES

Project effects on Spectacled and Steller's Eiders

The Service listed the spectacled eider (*Somateria fisheri*) as threatened on May 10, 1993 (58 FR 27474) and the Alaska-breeding population of the Steller's eider (*Polysticta stelleri*) as threatened on June 11, 1997 (62 FR 31748). Listed eiders may migrate through the project area, but neither species currently nests in the area. Road construction would occur in winter when eiders are not present, and thus no effects for this part of the project are expected.

Road traffic may disturb migrating eiders. While migrating eiders may rest and feed in freshwater or terrestrial habitat within the action area, we expect disturbance to migrating eiders would be minor because these birds can respond to human presence or disturbance by moving to a perceived safe distance. Because listed eider density in the action area is extremely low and disturbance to migrating eiders would be so minor that injury or death would not occur, we expect project effects to these birds would be insignificant.

Project Effects on Polar Bears
Due to threats to its sea ice habitat, on May 15, 2008 the Service published a Final Rule in the Federal Register listing the world-wide population of the polar bear (*Ursus maritimus*) as threatened (73 FR 28212) under the Act. Polar bears may occur in the area, however their density is very low and encounters are expected to be rare. Due to lack of preferred denning habitat, polar bears rarely den near Kotzebue. Furthermore, given existing levels of human activity and development, we would expect polar bears denning in or near the action area to be extremely unlikely.

Although rare, transient bears could conceivably enter the action area and be disturbed by the presence of humans or equipment noise. However, we expect disturbances would be minor and temporary because transient polar bears would likely respond by departing the area. For informational purposes, the Service has enclosed standard *Polar Bear Interaction Guidelines* for the unlikely event that personnel encounter a polar bear during project activities. Because (1) the density of polar bears in the action area is very low; (2) project effects on denning polar bears are not anticipated; and (3) behavioral effects to transient bears are expected to be rare, minor, and temporary, we expect effects of the proposed action on polar bears would be insignificant.

CONCLUSION

The proposed action could temporarily disturb listed eiders or polar bears in the project area; however, we expect the effects of disturbance to be insignificant. Therefore the Service concludes that the proposed action is not likely to adversely affect listed eiders or polar bears. Preparation of a Biological Assessment or further consultation under Section 7 of the Act is not necessary at this time. Thank you for the opportunity to comment on this project. If you need further assistance, please contact Shannon Torrence at (907) 455-1871.

Sincerely,

Ted Swem

Ted Swem
Branch Chief
Endangered Species

Cc: Michiel Holley, Regulatory Department,
Karen Brown, Environmental Manager, Michael Baker Jr., Inc.

Figure 1. New proposed barge channel for the proposed Kotzebue Airport and Safety Area Improvement Project.

POLAR BEAR INTERACTION GUIDELINES

These Polar Bear Interaction Guidelines (Guidelines) were developed to ensure that activities are conducted in a manner that avoids conflicts between humans and polar bears. Polar bears are protected under the Marine Mammal Protection Act (MMPA), and were listed as a threatened species under the Endangered Species Act (ESA) in 2008. The MMPA and ESA both prohibit the “take” of polar bears without authorization. Take includes disturbance/harassment, as well as physical injury and killing of individuals.

In addition to sea ice, polar bears use marine waters and lands in northern Alaska for resting, feeding, denning, and seasonal movements. They are most likely to be encountered within 25 miles of the coastline, especially along barrier islands during July-October. Polar bears may also be encountered farther inland, especially females during the denning period (October-April). Polar bears may react differently to noise and human presence. The general methods for minimizing human-bear conflicts are to: 1) avoid detection and close encounters; 2) minimize attractants; and 3) recognize and respond appropriately to polar bear behaviors. These Guidelines provide information for avoiding conflicts with polar bears during air, land, or water-based activities.

Unusual sightings or questions/concerns can be referred to: Susanne Miller or Craig Perham, Marine Mammals Management Office (MMM Office), 1-800-362-5148; or to Sarah Conn (907) 456-0499 of the Fairbanks Fish & Wildlife Field Office (FFWFO).

When operating aircraft:

- If a polar bear(s) is encountered, divert flight path to a minimum of 2,000 feet above ground level or ½ mile horizontal distance away from observed bear(s) whenever possible.

When traveling on land, ice, or water:

- Avoid surprising a bear. Be vigilant—especially on barrier islands, in river drainages, along bluff habitat, near whale or other marine mammal carcasses, or in the vicinity of fresh tracks.

- Between October and April special care is needed to avoid disturbance of denning bears. If activities are to take place in that time period the MMM Office should be contacted to determine if any additional mitigation is required. In general, activities are not permitted within one mile of known den sites.

- Avoid carrying bear attractants (such as strongly scented snacks, fish, meat, or dog food) while away from camp; if you must carry attractants away from camp, store foods in air-tight containers or bags to minimize odor transmission until you return them to “bear-resistant” containers.*

- If a polar bear(s) is encountered, remain calm and avoid making sudden movements. Stay downwind if possible to avoid allowing the bear to smell you. Do not approach polar bears. Allow bears to continue what they were doing before you encountered them. Slowly leave the vicinity if you see signs that you've been detected. Be aware that safe viewing distances will vary with each bear and individual situation. Remember that the closer you are to the animal, the more likely you are to disturb it.

- If a bear detects you, observe its behavior and react appropriately. Polar bears that stop what they are doing to turn their head or sniff the air in your direction have likely become aware of your presence. These animals may exhibit various behaviors:

    - *Curious* polar bears typically move slowly, stopping frequently to sniff the air, moving their heads around to catch a scent, or holding their heads high with ears forward. They may also stand up.

    - *A threatened or agitated* polar bear may huff, snap its jaws together, stare at you (or the object of threat) and lower its head to below shoulder level, pressing its ears back and swaying from side to side. These are signals for you to begin immediate withdrawal by backing away from the bear. If this behavior is ignored, the polar bear may charge. Threatened animals may also retreat.

    - In rare instances you may encounter a *predatory* bear. It may sneak or crawl up on an object it considers prey. It may also approach in a straight line at constant speed without exhibiting curious or threatened behavior. This behavior suggests the bear is about to attack. Standing your ground, grouping together, shouting, and waving your hands may halt the bear's approach.

- If a polar bear approaches and you are in the bear's path—or between a mother and her cubs—get out of the way (without running). If the animal continues to approach, stand your ground. Gather people together in a group and/or hold a jacket over your head to look bigger. Shout or make noise to discourage the approach.

- If a single polar bear attacks, defend yourself by using any deterrents available. If the attack is by a surprised female defending her cubs, remove yourself as a threat to the cubs.

<u>When camping:</u>

- Avoid camping or lingering in bear high-use areas such as river drainages, coastal bluffs and barrier islands.

- Store food and other attractants in "bear-resistant" containers*. Consider the use of an electric fence as additional protection. Do not allow the bear to receive food as a reward in your camp. A food-rewarded bear is likely to become a problem bear for you or someone else in the future.

- Maintain a clean camp. Plan carefully to: minimize excess food; fly unnecessary attractants out on a regular basis (i.e. garbage, animal carcasses, excess anti-freeze or petroleum products); locate latrines at least ¼ mile from camp; and wash kitchen equipment after every use.

- If a polar bear approaches you in camp, defend your space by gathering people into a large group, making noise and waving jackets or tarps. Continue to discourage the bear until it moves off. Have people watch the surrounding area in case it returns later, keeping in mind that polar bears are known to be more active at night. Additional measures to protect your camp, such as electric fences or motion sensors can be used.

Harassment of polar bears is not permissible, unless such taking (as defined under the MMPA) is imminently necessary in defense of life, and such taking is reported to FWS within 48 hours.

*Containers must be approved and certified by the Interagency Grizzly Bear Committee as "bear-resistant." Information about certified containers can be found at http://www.igbconline.org/html/container.html.

THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Natural Resources

DIVISION OF PARKS AND OUTDOOR RECREATION
Office of History and Archaeology

550 West 7th Avenue, Suite 1310
Anchorage, Alaska 99501-3565
Web: http://dnr.alaska.gov/parks/oha
Phone: 907.269.8721
Fax: 907.269.8908

July 10, 2013

File No.: 3130-1R FHWA
3330-6N KTZ-00037, 3330-6 KTZ-00190,
3330-6N KTZ-00231, 3330-6N KTZ-00232

Federal Highway Administration
JUL 12 2013
Juneau, Alaska

John W. Huestis, P.E.
Northern Region Area Engineer
Department of Transportation & Public Facilities
P.O. Box 21648
Juneau, AK 99802-1648

Subject: Kotzebue to Cape Blossom Road Project

Dear Mr. Huestis:

The Alaska State Historic Preservation Office (AK SHPO) received your correspondence (dated June 17, 2013) on June 20, 2013.

Following our review of the documentation, we concur with your determination that because the Kotzebue White Alice Communication System Historic District (KTZ-00037) has been adequately mitigated and subsequently demolished, it has been rendered **not eligible** for the National Register of Historic Places (NRHP). Further, we concur with your determination that KTZ-00190 no longer contributes to the historic district, but remains individually **eligible** for the NRHP under Criterion A. Finally, we concur that KTZ-00231 and KTZ-00232 are **not eligible** for the NRHP.

As there are no historic properties present within the project's area of potential effects (APE), we concur that a finding of **no historic properties affected** is appropriate for the proposed undertaking.

Your letter indicates that a great deal of consultation on potential effects to historic properties has been ongoing since at least late 2007. We are accustomed to receiving initiation letters that include preliminary information about the scope and scale of these types of projects as well as a preliminary definition of the APE, especially when there are potential effects to historic properties or when a cultural resource inventory is conducted. Our records do not indicate receipt of an initiation letter on the subject undertaking. Despite our concurrence with the determinations and finding of effect provided, in the future, we would greatly appreciate the opportunity to be involved in consultation early in an undertaking's planning (per 36 CFR 800.1[c]).

As stipulated in 36 CFR 800.3, other consulting parties such as the local government and Tribes are required to be notified of the undertaking. Additional information provided by the local government, Tribes, or other consulting parties may cause our office to re-evaluate our comments and recommendations. Please note that our comment letter does not end the 30-day review period provided to other consulting parties.

Should unidentified archaeological resources be discovered in the course of the project, work must be interrupted until the resources have been evaluated in terms of the National Register of Historic Places eligibility criteria (36 CFR 60.4) in consultation with our office.

Thank you for the opportunity to comment. Please contact Shina duVall at 269-8720 or shina.duvall@alaska.gov if you have any questions or if we can be of further assistance.

Sincerely,

Judith E Bittner

Judith E. Bittner
State Historic Preservation Officer

JEB:sad

U.S. Department of Transportation
Federal Highway Administration
ERRATA

KOTZEBUE TO CAPE BLOSSOM ROAD

Federal Project Number: NCPD-0002(204)
State Project Number: 76884

Changes were made to the Environmental Assessment (EA) in response to comments. Copies of the comments are attached. The following table shows the modification to the EA.

Environmental Assessment Comment Summary and Revisions

Comment	Location	Response/Revisions to the EA
Ensure proper road design and construction with insulation to decrease maintenance and extend the life of the road (Native Village of Kotzebue, Snider and Okleasik, November 5, 2013)	Section 1.1 Page 23	**Construction:** Road design and construction plans include maintaining the existing organic mat, using geotextile fabric, placing a 3' to 8' thick embankment, and installing appropriate cross culverts to equalize drainage. No changes were made to the EA.
Cape Blossom Road Project is imperative to the region's economic growth (NANA, Barr, November 7, 2013)	Section 2.1 Page 25	**Purpose:** The regional priority of the road is addressed in the project purpose including the independent resolutions passed by the local governments and ANCSA Corporations.
	Section 2.2 Pages 25 and 26	**Need:** Improved access and consistency with transportation and land use planning is described as a priority for the NWAB, surrounding communities, and ANCSA Corporations. No changes were made to the EA.
Native Village of Kotzebue has contributed to the planning effort for the project and is not mentioned in the community profile. (Native Village of Kotzebue, Whiting and Okleasik, October 28, 2013)	Section 3 Page 27	**Alternatives:** The Native Village of Kotzebue is added to the list of entities involved in the road planning. (Revised)
Native Village of Kotzebue could be referenced in the community profile discussion as a tribal government. (Native Village of Kotzebue, Whiting and Okleasik, October 28, 2013)	Section 4.1.1 Pages 33 and 34	**Existing Conditions:** The Native Village of Kotzebue is a federally-recognized tribe, and as the tribal government, services the people of Kotzebue. (Inserted)

Environmental Assessment Comment Summary and Revisions

Comment	Location	Response/Revisions to the EA
Location of the road in close proximity to a Native allotment near the beach (Stein, October 29, 2013)	Section 4.1.2 Page 34	**Direct and Indirect Impacts:** The road would avoid Native allotments. (Inserted)
	Section 4.1.3 Pages 35 and 36	**Avoidance, Minimization, and Mitigation:** The road alignment will be optimized during final design to avoid native allotment boundaries. It will have a buffer from native allotment boundaries to ensure activities associated with the road will avoid trespassing onto the allotments. (Inserted)
Include a pipeline in the road corridor (Towksjhea, October 29, 2013)	Section 4.1.2 Page 35	**Cumulative Impacts:** No utilities are planned along the road; however, the 300-feet right-of-way could accommodate future utilities within the road corridor. (Inserted)
Concerns about the road creating additional impacts from increased all-terrain vehicles (ATV) use in summer and prohibiting snow machine access across the road in winter (Native Village of Kotzebue, Whiting and Okleasik, October 28, 2013)	Section 4.1.2 Page 35	**Cumulative Impacts:** Comments from the Native Village of Kotzebue have suggested the existing use of ATVs throughout the Baldwin Peninsula has created new trails and widened existing trails. ATV use near the road could increase. (Inserted)
	Section 4.1.3 Pages 35 and 36	**Avoidance, Minimization, and Mitigation:** DOT&PF would work with the community and tribes to reasonably establish pullouts with ramps at appropriate locations to maintain traditional use. In summer, steep road side slopes would discourage crossing the road at locations without ramps. In winter, as snow gathers around the road embankment, snow machines would be able to find suitable crossing locations or use pullouts and ramps. (Inserted)

Environmental Assessment Comment Summary and Revisions

Comment	Location	Response/Revisions to the EA
Spectacled and Steller's Eiders may migrate through the project area, but neither species currently nests in the area. Road construction would occur in winter when eiders are not present, and no effects are expected. Road traffic may disturb migrating eiders, but eider density is extremely low in the area and effects are expected to be insignificant. Polar bears are rare, but could transit through the area and be disturbed by humans or noise. However, expected disturbances would be minor and temporary, and effects are expected to be insignificant. U.S. Fish and Wildlife Service, Endangered Species Act, Section 7 Consultation, November 7, 2013)	Section 4.8.2 Page 56	**Direct, Indirect and Cumulative Impacts:** No impacts to ESA-listed species would be expected. No changes were made to the EA.
Illegal garbage disposal along the road (Gregg, October 29, 2013) (Stein, October 29, 2013)	Section 4.9.2 Page 58 Section 4.9.3 Page 58	**Direct and Indirect Impacts**: City of Kotzebue Ordinance, Chapter 8.04 prohibits littering upon any public or private place. The Northwest Arctic Borough Code, 9.25.020 requires refuse to be burned, deposited into refuse receptacles, or backhauled to a disposal site. However, illegal dumping could occur along the road. (Inserted) **Avoidance, Minimization, and Mitigation**: The landfill is located along the existing upgrade route. The City of Kotzebue's Litter Control Board addresses problems and implements solutions to illegal dumping. The City's Refuse Department has regularly scheduled household trash collection. Hazardous materials and appliances disposal is also available. The City also has a recycling program. Routine maintenance of roadways includes the removal of illegally dumped refuse. (Inserted)

Environmental Assessment Comment Summary and Revisions

Comment	Location	Response/Revisions to the EA
Effects of dust from the road on safety, subsistence and berry picking (Gregg, October 29, 2013)	Section 4.12.3 Pages 66 and 67	**Avoidance, Minimization, and Mitigation:** Dust impacts to surrounding property and adjacent vegetation will be controlled by placing gravel surfacing with a dust palliative, maintaining adequate drainage, installing geotextile fabric under the road base, watering during dry conditions, and posting lower speed limits. Material stockpiles will be covered if left in place. No changes were made in the EA.
Change reference for the personal comment from Sam Barr with the Native Village of Kotzebue Corporation to Native Village of Kotzebue (Native Village of Kotzebue, Whiting and Okleasik, October 28, 2013)	Section 7 Page 91	**Reference:** Native Village of Kotzebue 2012. Native Village of Kotzebue. Personal communication with Sam Barr, Subsistence Advisor to Laura Gutierrez, ABR. July 27, 2012. (Revised)

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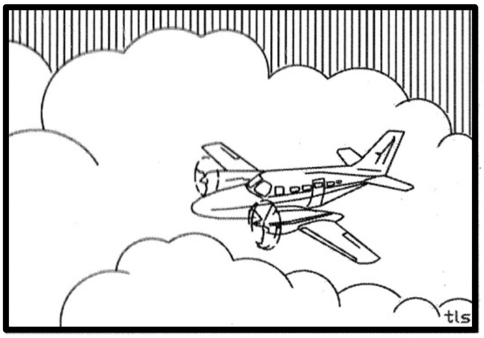
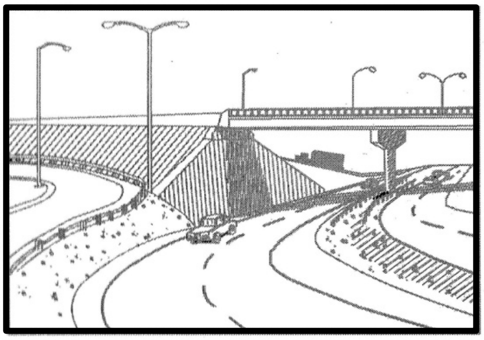
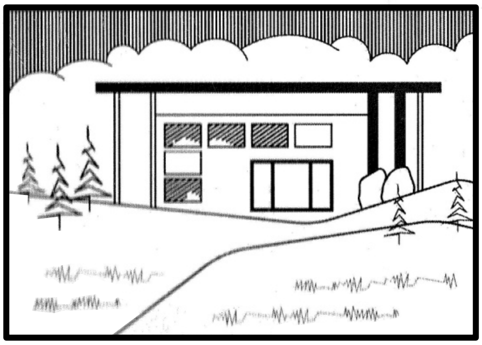
REVISED ENVIRONMENTAL ASSESSMENT

KOTZEBUE TO CAPE BLOSSOM ROAD

PROJECT No. NCPD-0002(204)/76884







STATE OF ALASKA

Department of Transportation
and Public Facilities

NORTHERN REGION

December 2013

KOTZEBUE TO CAPE BLOSSOM ROAD

Federal Project Number: NCPD-0002(204)
State Project Number: 76884

REVISED ENVIRONMENTAL ASSESSMENT

Submitted pursuant to 42 U.S.C. 4332(2)(c)

By the
U.S. Department of Transportation
Federal Highway Administration
And
State of Alaska
Department of Transportation and Public Facilities

This action complies with
Executive Order 12898, Environmental Justice;
Executive Order 11988, Floodplain Management;
Executive Order 11990, Protection of Wetlands;
Executive Order 11593, Protection and Enhancement of the Cultural Environment; and
Executive Order 13112, Invasive Species.

Recommended for Public Availability by:

12/6/2013
Date

Ryan F. Anderson, P.E.
Regional Preconstruction Engineer
State of Alaska Department of Transportation and Public Facilities

Approved for Public Availability by:

12-10-2013
Date

John W. Huestis, P.E.
Northern Region Area Engineer
Federal Highway Administration

The following individuals may be contacted for additional information concerning this document:

Brett Nelson, Environmental Manager, Alaska Department of Transportation and Public Facilities, Northern Region, 2301 Peger Road, Fairbanks, Alaska 99709

John W. Huestis, P.E., Northern Region Area Engineer, Federal Highway Administration, Alaska Division, P.O. Box 21648, Juneau, Alaska 99802-1648

The proposed action includes: upgrading Air Force Road from Hillside Road to the Kotzebue Electric Association (KEA) Wind Farm, and constructing a two-lane gravel road from the wind farm to a beach access ramp above the high tide line near Cape Blossom. The proposed road would provide all-season access between Kotzebue and Cape Blossom.

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Contents

Figures

Tables

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Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
ANCSA	Alaska Native Claims Settlement Act
APE	Area of Potential Effect
BLM	U.S. Bureau of Land Management
BMPs	Best Management Practices
C	Celsius
CFR	Code of Federal Regulation
CO	Carbon Monoxide
cy	Cubic Yards
DOT&PF	Alaska Department of Transportation and Public Facilities
EA	Environmental Assessment
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESI	Environmental Sensitivity Index
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
IC	Institutional Controls
IRA	Indian Reorganization Act
IRT	Innovative Readiness Training
KEA	Kotzebue Electric Association
KIC	Kikiktagruk Inupiat Corporation

LRRS	Long-Range Radar Site
NANA	Northwest Arctic Native Association
NLUR	Northern Land Use Research
NOAA	National Oceanographic and Atmospheric Administration
NRHP	National Register of Historic Places
NWAB	Northwest Arctic Borough
NWI	National Wetland Inventory
OHA	Alaska Department of Natural Resources, Office of History & Archaeology
OHW	Ordinary High Water
PM	Particulate Matter
ROW	Right-of-way
SAFETEA-LU	Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users
SHPO	State Historic Preservation Office
SPCC	Spill Prevention, Control and Countermeasures
SWPPP	Stormwater Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USFWS	U.S. Fish and Wildlife Service
VORTAC	VHF Omnidirectional Range/Tactical Aircraft Control

1 Proposed Action

The Alaska Department of Transportation and Public Facilities (DOT&PF) proposes to construct an all-season road from Kotzebue, Alaska, south across the Baldwin Peninsula to a beach access area near Cape Blossom. Kotzebue is the transportation hub and the largest of the 11 communities in the Northwest Arctic Borough (NWAB). Approximately 5,000 tons of freight is barged into Kotzebue each year, of which about 2,000 tons is transferred to NWAB villages (King 2012). This freight includes semi-perishable goods, basic construction supplies, and vehicles such as cars and all-terrain vehicles, but does not include fuel or materials and supplies for capital projects (King 2013).

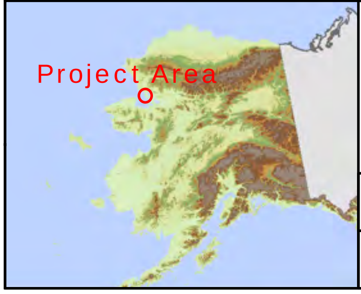
The proposed Cape Blossom Road would be designed for commercial freight transport and recreational uses with an estimated volume of 100 vehicles per day or less. It would be designed to adhere to the American Association of State Highway and Transportation Officials (AASHTO) *Guidelines for Geometric Design of Very Low-Volume Local Roads*. The AASHTO guidelines consider low-volume roads to be those with an average daily traffic volume of less than 400 vehicles.

The Proposed Action is to construct a two-lane gravel road approximately 11 miles long, with a road surface width of 24 feet and side slopes 3:1 or steeper. Turnouts with ramps down to the tundra would be constructed along the road near traditional trail crossings and potentially in other areas.

The Baldwin Peninsula is underlain by continuous permafrost (Brown et al. 1997). Thermal degradation of locally ice-rich permafrost leads to thaw, settlement, and loss of embankment stability. The road would be constructed on an embankment up to 8 feet thick. The embankment height would be engineered to minimize potential road surface snow drifting and to provide thermal protection for the permafrost. Cross culverts would be installed as necessary to maintain drainage.

The Upgrade Route has been identified as the preferred alternative. The Upgrade Route would reconstruct approximately 2.7 miles of Air Force Road south of the Hillside Road intersection, and end adjacent to the Kotzebue Electric Association (KEA) Wind Farm. The route would continue south for another 8.9 miles, cross Sadie Creek, and terminate at a beach access ramp. The beach access ramp would end above high tide line. No construction would occur below the high tide line. A staging pad would be constructed on the east side of the proposed road about 0.25 miles north of the shoreline. Anticipated uses of the pad include container and barge freight staging and storage, vehicle and boat trailer parking, and material stockpiles.

The project location including the proposed road alternatives is shown in Figure 1.1. Figure 1.2 shows a typical road section. Turnout and trail access typical details are shown in Figure 1.3 and Figure 1.4, respectively. The staging pad typical is shown in Figure 1.5, and Figure 1.6 shows the beach access ramp.



Kotzebue to Cape Blossom Road Project Location

0 1 2 4 Miles

Date: 9/3/2013	Scale: 1 in = 2 miles
Revision: 3	Figure: 1.1

Legend

- ⚒ Material Site
- ⌧ Stream Crossing
- Winter Trail
- Kotzebue Corp. Boundary
- VORTAC Easement

Route Alternatives

- 🟩 Upgrade Route
- 🟥 Dismissed
- 🟫 Staging Pad

Land Status

- 🟫 Cemetery
- ▨ KEA Windfarm
- 🟩 ANCSA - City
- 🟧 KIC Patent
- 🟦 KIC Selection
- 🟨 KIC & NANA
- 🟪 NANA Patent
- 🟥 Native Allotment
- 🟩 State Selection Application

Sources: DOT&PF, BLM, DNR, FWS, McClintock Land Associates Inc.

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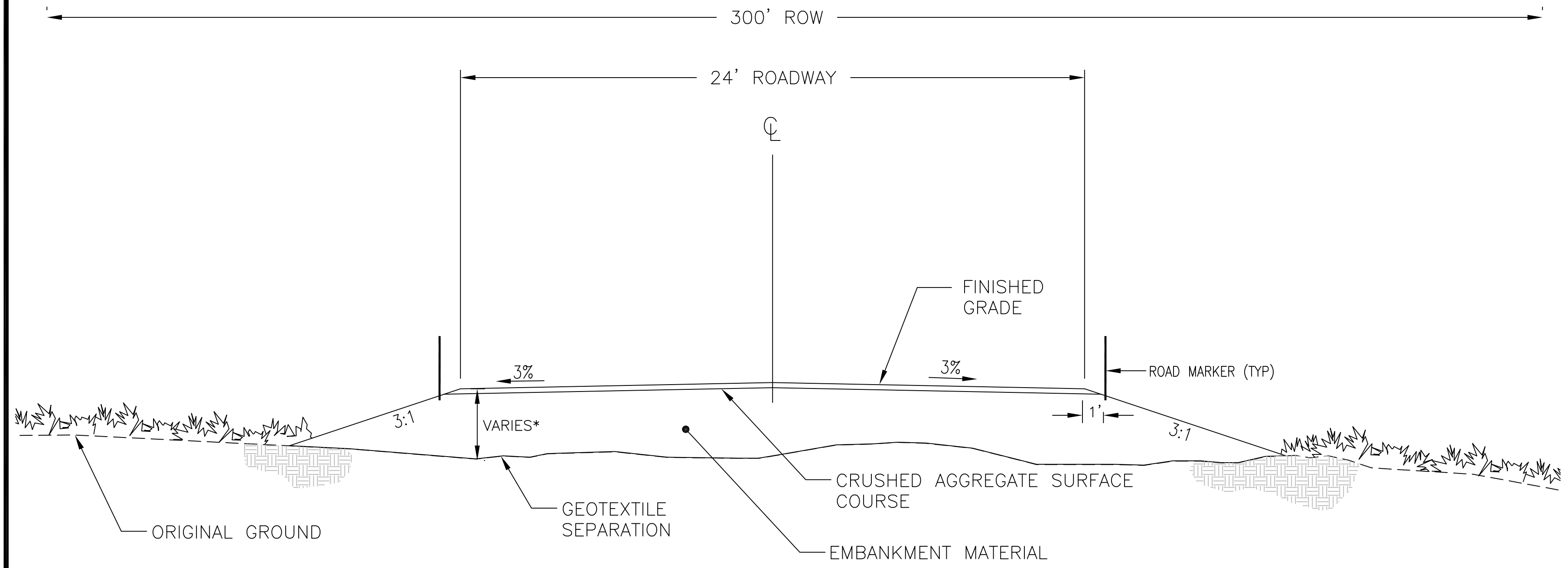
T:\00 Aviation & Community Rds & Buildings\Kotzebue\02 Highways\76884 Kotz to Cape Blossom Rd\04 PS&E\10 C3D\MAINLINE TYPICAL SECTION_CP-Mainline Fri, 18/Jan/13 08:08am



TYPICAL SECTION

SECTION F-F'

NOT TO SCALE

* EMBANKMENT HEIGHT WILL VARY BETWEEN 3 TO 8 FEET. EMBANKMENT HEIGHT OF 6' MAY BE USED IN AREAS OF POTENTIAL SNOW DRIFTING. EMBANKMENT HEIGHT WILL BE 8' IN AREAS WHERE THERE IS CONCERN OF THAWING UNDERLYING PERMAFROST.

PRELIMINARY

STATE OF ALASKA
Department of Transportation and Public Facilities
APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

KOTZEBUE TO CAPE BLOSSOM ROAD
76884
ROAD TYPICAL SECTION
Figure 1.2

NORTHWEST ARCTIC BOROUGH

DATE: JANUARY 2013

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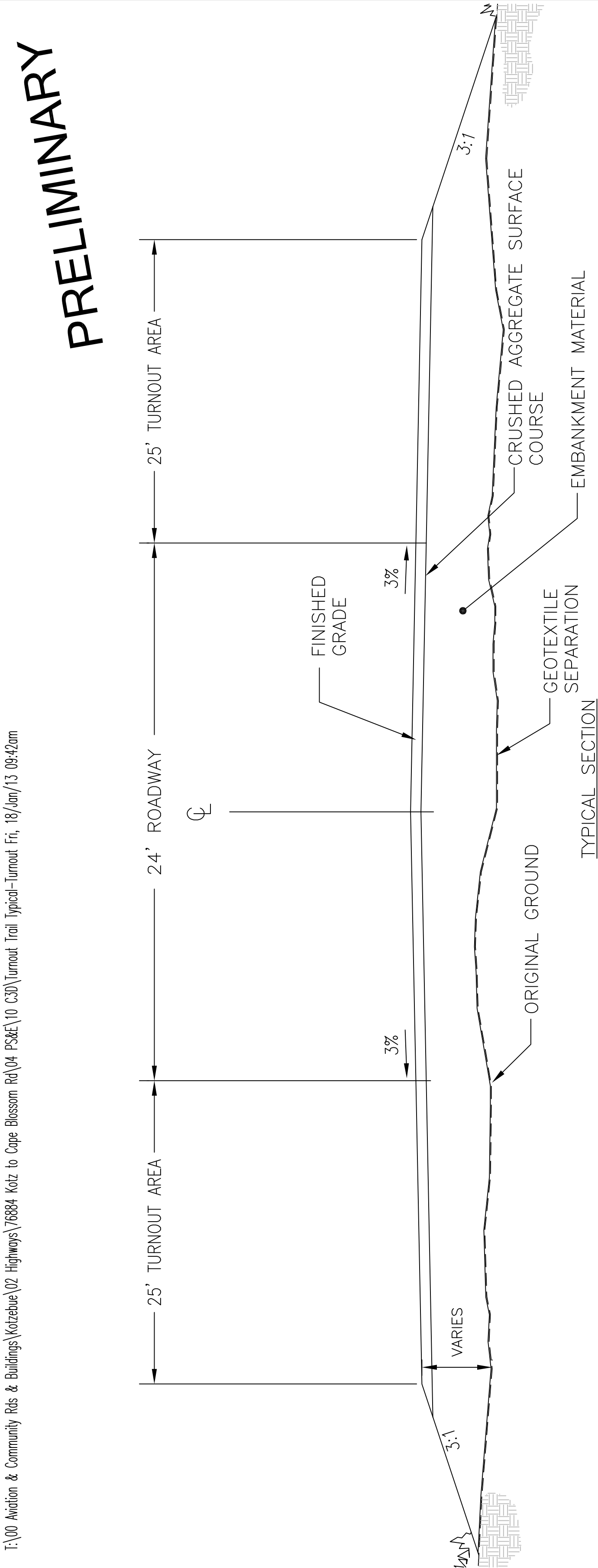

TYPICAL SECTION
SECTION D–D'
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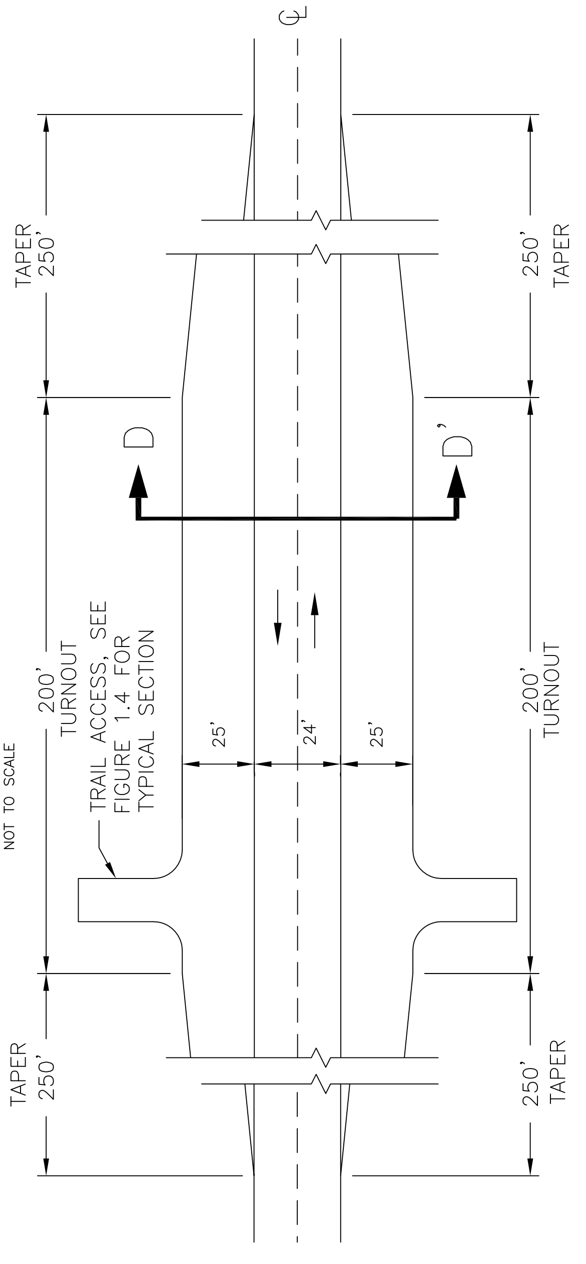

PLAN
NOT TO SCALE

NOTE: TURNOUTS WITH TRAIL ACCESS WILL BE PROVIDED AT TRADITIONAL USE TRAILS. TURNOUTS MAY BE ON EITHER SIDE OF THE ROAD OR BOTH SIDES DEPENDING ON TRAIL LOCATION.

STATE OF ALASKA
Department of Transportation and Public Facilities
APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

KOTZEBUE TO CAPE BLOSSOM ROAD
76884
TURNOUT TYPICAL
Figure 1.3

NORTHWEST ARCTIC BOROUGH

DATE: JANUARY 2013

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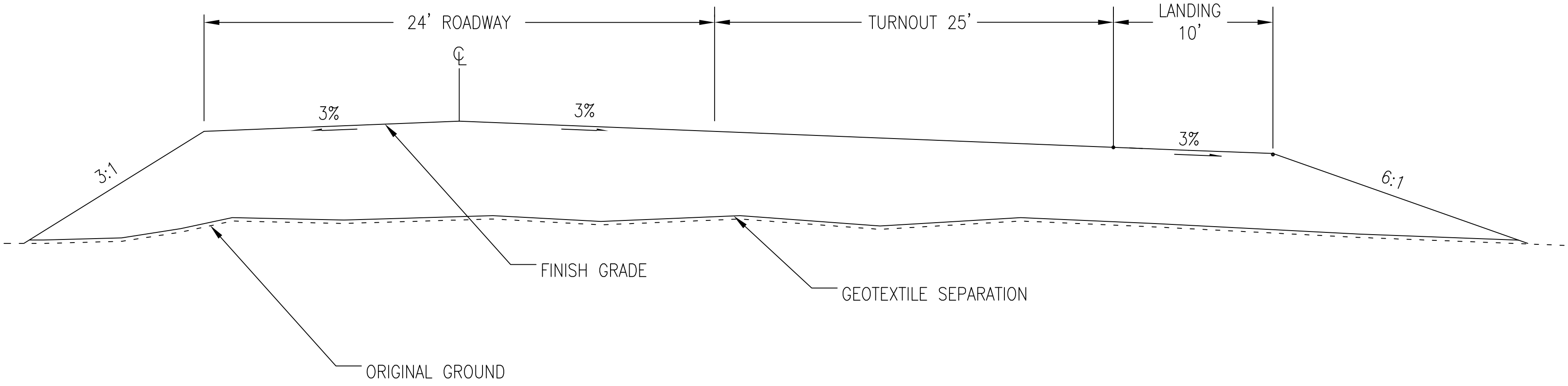
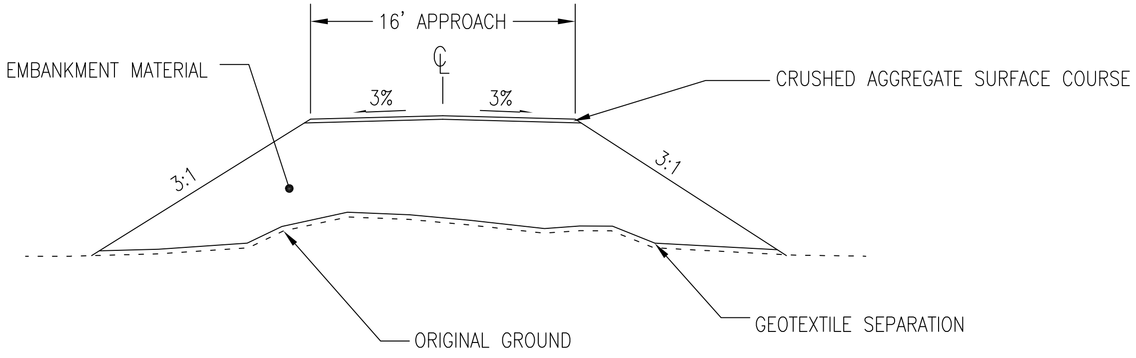


TRAIL ACCESS – PROFILE
NOT TO SCALE



TRAIL ACCESS – TYPRICAL SECTION
NOT TO SCALE

PRELIMINARY

STATE OF ALASKA
Department of Transportation and Public Facilities
APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

KOTZEBUE TO CAPE BLOSSOM ROAD
76884
TRAIL ACCESS TYPICAL
Figure 1.4

NORTHWEST ARCTIC BOROUGH

DATE: JANUARY 2013

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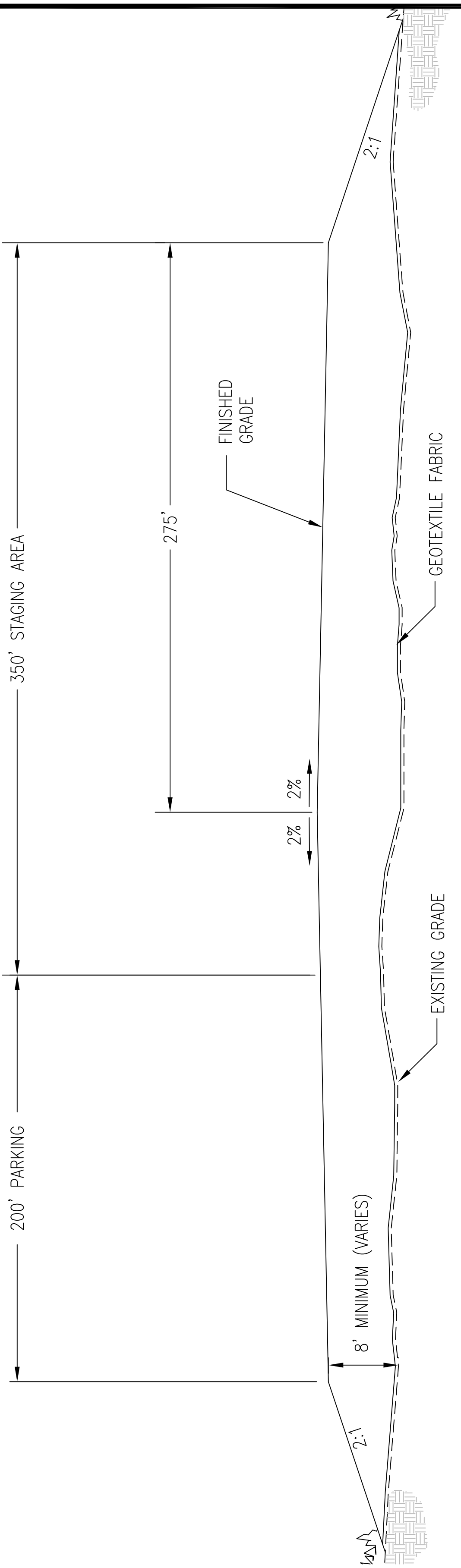

TYPICAL SECTION
SECTION D-D'
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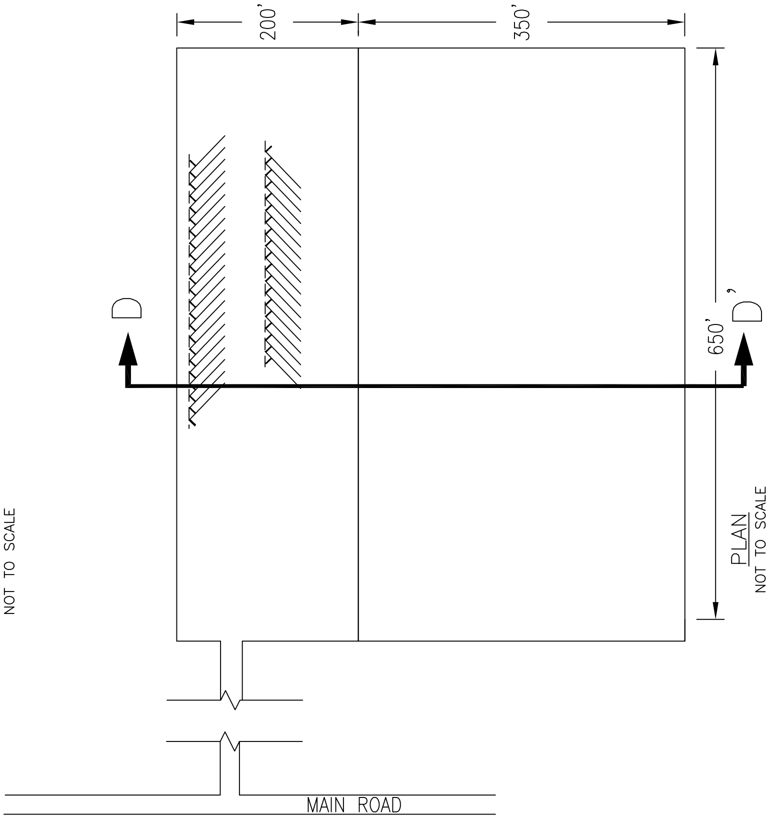

PLAN
NOT TO SCALE

PRELIMINARY

STATE OF ALASKA
Department of Transportation and Public Facilities
APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

KOTZEBUE TO CAPE BLOSSOM ROAD
76884
STAGING PAD TYPICAL
Figure 1.5

NORTHWEST ARCTIC BOROUGH

DATE: JANUARY 2013

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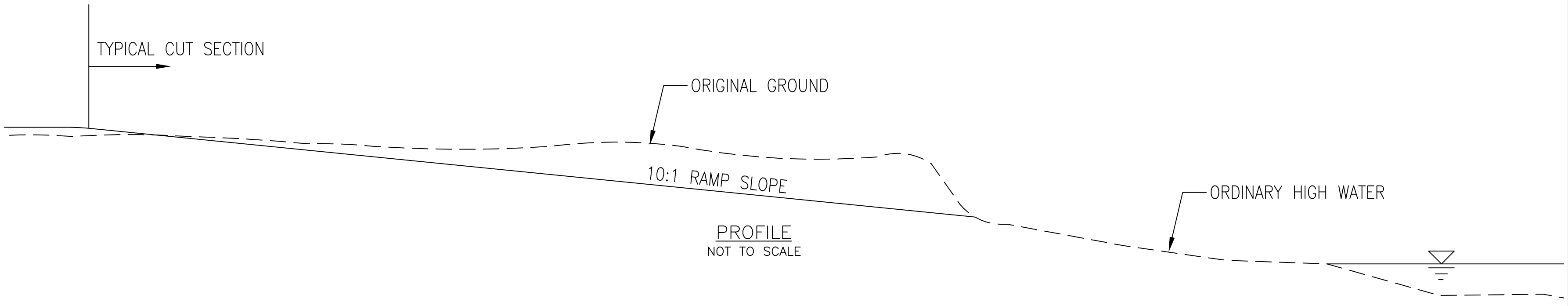
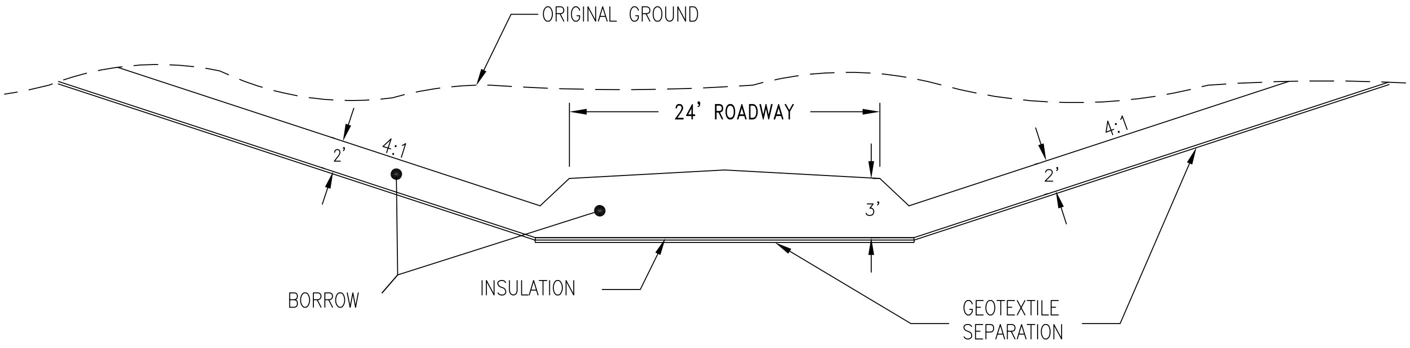
T:\00 Aviation & Community Rds & Buildings\Kotzebue\02 Highways\76884 Kotz to Cape Blossom Rd\04 PS&E\10 C3D\RampTypical-Turnout Tue, 22/Jan/13 01:47pm

PRELIMINARY



PROFILE
NOT TO SCALE



TYPICAL CUT SECTION
NOT TO SCALE

STATE OF ALASKA
Department of Transportation and Public Facilities
APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

KOTZEBUE TO CAPE BLOSSOM ROAD
76884
BEACH ACCESS RAMP
Figure 1.6

NORTHWEST ARCTIC BOROUGH

DATE: JANUARY 2013

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1.1 Construction

Construction of the road would begin in the winter 2014/2015 after the ground freezes and would be completed after spring breakup. Construction would be phased as funds become available. Currently available funds would likely construct the road to Sadie Creek.

The City of Kotzebue has applied to the Office of the Assistant Secretary of Defense for Reserve Affairs, Innovative Readiness Training (IRT) program to construct a portion of the road and the Sadie Creek crossing. Civil-military IRT projects enhance military training and readiness while filling a community need. The State would act as a facilitator for an agreement between the City of Kotzebue and the IRT program. The military would supply personnel and equipment, and State grants and bond money would be used to purchase the construction materials. IRT personnel would be housed locally in existing facilities. Portions of the project built utilizing federal funds or those not constructed through the IRT program would likely be constructed by a low bid contractor.

The road would be constructed on geotextile fabric placed on the tundra. A leveling course may be required under the geotextile depending on tundra tussock heights. The existing organic mat would not be removed. Clearing may occur but would be limited to brush removal within the roadway footprint. When the ground is frozen, embankment material would be placed on the fabric. The material would likely be supplied by either ice road from the recently permitted Iggy Hill material site or barged in and stockpiled from a regional material site. After the embankment material thaws, the road would be compacted and leveled with additional material, and a surface layer of crushed aggregate would be applied. The crushed aggregate would be barged in from a source located outside the Baldwin Peninsula. A dust palliative surface treatment would be installed as part of the construction project. The stream crossings would use appropriately sized drainage structures, with cross culverts installed along the roadway as needed to equalize drainage areas.

Except for the beach access ramp, excavation would be avoided to minimize thermal degradation of the subgrade. Insulation would be installed under the road bed at the beach access excavation site for thermal protection.

1.1.1 Material Sources

The estimated fill quantities for the Cape Blossom Road preferred alternative is 889,000 cubic yards (cy) for constructing the Upgrade Route. Additional fill quantities include: 112,000 cy for constructing a staging pad. A geotechnical investigation of the road alignment did not identify any material sites suitable for road construction within the road corridor.

Several commercial sources for embankment fill are located in the region. The closest material site with a sufficient quantity of material to construct the road is the Kikiktagruk Inupiat Corporation (KIC) Iggy Hill material site. In anticipation of supplying aggregate material for this and other projects, KIC has recently permitted the Iggy Hill gravel source (Norton 2012a) and permitted a sea ice road to assist with development and gravel delivery (LAS 28743; Norton 2013a). KIC plans to begin development of the material site in winter 2013/2014, and is applying for permits for a permanent gravel road (Norton 2013a). Aggregate would be mined and stockpiled at the mine site in summer and delivered in winter.

Other nearby material sites include the existing Drake Construction material site on the Noatak River, an existing material site at Nimiuk Point, and an existing material site near the community of Buckland (NANA 2009). The Noatak River site and Nimiuk Point site are potential sources of gravel, while the Buckland site may be a source for rock and gravel. Crushed aggregate for the road surface would likely be purchased from one of these existing sources. Material delivery from these sites would be by barge and would increase road construction costs.

2 Purpose and Need

2.1 Purpose

The purpose of the Cape Blossom Road project is to improve transportation efficiency and reduce the cost of shipping freight between cargo barges and the NWAB communities. The project would construct an all-season transportation facility and freight staging area, and provide access to a barge landing site. The road would be capable of supporting commercial freight carriers between Kotzebue and the southwest shoreline of the Baldwin Peninsula, and would comply with Federal legislation and local government resolutions. Kotzebue is a transportation and economic center for northwest Alaska. The road would provide a surface connection to the trails and beaches surrounding the Baldwin Peninsula which are used as transportation routes between Kotzebue and various NWAB communities, and also provide access to subsistence and recreation areas and private lands along the coast.

The proposed project is identified as a regional priority needed to address transportation deficiencies and provide economic opportunities. Advancement of the road project is included in the Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) legislation (SAFETEALU 2005). In 2010, the NWAB and City of Kotzebue Joint Planning Commission passed Resolution JPC-10-01 supporting development of Cape Blossom Road. Through independent resolutions, the NWAB Assembly (03-05), City of Kotzebue (02-19), Northwest Arctic Native Association (NANA) Regional Corporation Board of Directors (2003-04), and KIC (03-23) identified the Kotzebue to Cape Blossom Road as a priority transportation project.

2.2 Need

Improved Access: This road project has been identified as a priority for the NWAB and surrounding communities in the transportation planning process because there are currently no all season roads providing access to this area of the peninsula. The road would establish an all-season transportation link to Kotzebue that facilitates freight movement from barges landing at Cape Blossom. The gravel staging pad would accommodate temporary parking of vehicles, equipment, freight and supplies being transported to or from Kotzebue via barge.

Deep draft marine freight vessels serving Kotzebue currently set anchor in 30 feet of water approximately 15 miles from shore at the north end of the Baldwin Peninsula. From these offshore anchorages, freight is then lightered by smaller vessels over constantly shifting mudflats during incoming tides. In contrast to this current practice, waters 1 mile offshore of Cape Blossom are approximately 25 feet deep with no dynamic shoaling evident.

An all season road would reduce the distance and cost for freight lightering, and provide modal connectivity for deep draft barges, thereby improving access and efficiency for transportation of freight and other commodities to Kotzebue and nearby communities in the NWAB. About 5,000 tons of freight including semi-perishable goods, basic construction supplies, and vehicles is currently barged to Kotzebue each year, of which approximately 2,000 tons is transferred to nearby communities. This total is not inclusive of material and supplies for capital projects or fuel (King 2012 and King 2013). Materials for capital projects such as road construction, airport improvements, new buildings, and wind turbines for KEA are considered above and beyond this underlying base demand.

Portions of the shoreline proximate to Cape Blossom are often too soft to allow passage to vehicles traveling between Kotzebue and nearby communities. The road would bypass the soft beach areas and terminate where soils can safely accommodate beach vehicular traffic. Cape Blossom Road would connect to existing trails and the beach and improve access and transportation efficiency between Kotzebue and the surrounding communities and subsistence use areas.

Consistency with Transportation and Land Use Planning: Development of the Kotzebue to Cape Blossom Road project would comply with SAFETEA-LU legislation and address resolutions passed by the NWAB, the City of Kotzebue, KIC, and NANA Regional Corporation. The road project is also consistent with the Northwest Alaska Transportation Plan (DOT&PF 2004).

3 Alternatives

DOT&PF worked with the City of Kotzebue and NWAB, Joint Planning Commission, KIC, NANA and community members to develop, select and evaluate alternatives prior to, during and after project scoping. Community open houses, Joint Planning Commission presentations, and meetings with local government and Native organizations were held to collect information and comments on the alternatives. DOT&PF developed and considered four build alternatives for construction of a road to Cape Blossom, and two options to cross Sadie Creek. The 3.5-mile long upper Sadie Creek option requires two stream crossings, and the 2.5-mile long lower Sadie Creek option requires a single stream crossing. Two of the alternatives and the upper option to cross Sadie Creek were dismissed early in the process from further study because of higher costs and greater environmental impacts. These alternatives represented the longest routes, largest footprints, and greatest amount of wetland impacts.

The remaining build alternatives, via either the Hillside or Upgrade route, were carried forward for further study. Both would meet the purpose and need with fewer environmental impacts and at a reduced cost. The Hillside Route was dismissed as a build alternative after considerable study. The Hillside Route alternative is discussed in the attached technical reports (Appendices A, B, D and E). The Hillside Route was dismissed because it would create more impacts to undeveloped areas, requires an additional stream crossing at June Creek, and does not have community support.

The alternatives are shown on Figure 1.1. They are the Eastern Route, Middle Route via the upper Sadie Creek option, Hillside Route, and Upgrade Route. Table 3.1 provides the length of the alternative route segments and the total length by alternative.

Table 3.1. Lengths of Segments Considered

Segment	Length (miles)	Alternatives			
		Hillside Route	Upgrade Route	Middle Route Alternative	Eastern Route Alternative
Eastern Route	21.3				X
Middle Route via Upper Sadie Creek	13			X	
Hillside Route to Wind Farm Road	1.9	X			
Upgrade Route to Wind Farm Road	2.7		X		
Wind Farm Road to Cape Blossom	8.9	X	X		
Upper Sadie Creek Crossing Option	3.5	▨	▨	▨	▨
Lower Sadie Creek Crossing Option	2.5	▨	▨	▨	▨
Total Length		**10.8**	**11.6**	**13**	**21.3**

3.1 Alternative Routes and Route Segments Dismissed from Further Study

Eastern Route: The 21.3-mile long route alternative would begin at New Hillside Road, travel east through the 2000-foot VHF Omnidirectional Range/Tactical Aircraft Control (VORTAC) easement, and continue north and then east before turning southwest to the terminus at the Cape Blossom beach access. The route avoids the Sadie Creek drainage and is located at higher elevations. This is the longest potential route alternative identified in the Kotzebue to Cape Blossom Road Reconnaissance Study (DOT&PF 2011a). Historically, the Federal Aviation Administration (FAA) has not granted an adequate title for a road right-of-way (ROW) through its property. The Eastern Route has been dismissed from further study because of the risk of failure in obtaining an adequate title from the FAA, and the higher costs and potential for increased environmental impacts associated with construction of the longest route.

Middle Route: The 13-mile long route would begin at New Hillside Road and travel east through the VORTAC easement, continue south to the north bank of Sadie Creek, and then proceed south to the Cape Blossom beach access along the same route as the Proposed Action. This alternative would require two crossings of Sadie Creek. The Middle Route has been dismissed from further study because of the risk of failure in obtaining an adequate title from the FAA, and the higher costs and potential for increased environmental impacts from constructing the longer route.

Upper Sadie Creek Crossing Option: The 3.5-mile long route crosses Sadie Creek at two locations. This option would cross the Buckland Alaska Native Claims Settlement Act (ANCSA) 17 (b) winter trail. This route has been dismissed because it is longer than the 2.5-mile Lower Sadie Creek crossing option; the lower crossing has a single stream crossing and does not cross the Buckland ANCSA trail. The Upper Sadie Creek Crossing Option has the potential for increased environmental impacts.

The Eastern and Middle alignments and Upper Sadie Creek crossing option would increase the footprint of the road and the amount of material required for construction compared to the other alternatives. The larger footprint in wetlands and increased wetland impacts would not meet the U.S. Army Corps of Engineers (USACE) definition of the least environmentally damaging practicable alternative. USACE would likely not issue permits for either of these alternatives without compelling reasons.

Hillside Route: This route was studied in detail before it was dismissed. The Hillside Route would involve construction of a new all-season road, beginning at New Hillside Road, to the terminus at a beach access ramp near Cape Blossom. The Hillside Route would begin two miles east of Air Force Road at an unnamed lake. The road would travel 1.9 miles south to the eastern edge of the KEA wind farm, where it would intersect with the wind farm access road. A stream crossing at June Creek would be required. The road would travel south and east approximately 8.9 miles to end at a beach access ramp. A staging pad would be constructed on the east side of the road about 0.25 miles north of the shoreline. Total length of this alternative is 10.8 miles. The Hillside Route was dismissed because it would create additional impacts from the introduction of a road in an undeveloped area when an existing route is available. The Hillside Route also requires an additional waterbody crossing compared to the Upgrade Route. The community did not support the Hillside Route and preferred upgrading the existing Air Force Road to the wind farm.

Table 3.2 provides an estimate of the wetland footprint and fill quantities for the dismissed routes.

Table 3.2. Dismissed Alternatives Estimated Wetland Footprint and Fill Quantities

Alternative	Length (miles)	72-Foot Road Footprint [1] (acres)	300-Foot Right-of-Way Footprint (acres)	Total Fill [1] Quantity (cubic yards)
Eastern Route	21.3	191	775	1,666,000
Middle Route	13.0	118	473	1,046,000
Upper Sadie Creek Crossing Option	3.5	32	127	266,000
Hillside Route	10.8	99	402	829,000
Staging Pad			9	112,000

[1] – Maximum footprint acreage and fill quantity estimates are based on an 8-foot high, 24-foot wide road surface with 3:1 side slopes; these calculations assume a constant 72-foot wide road base. Turnouts are included in the road footprint and fill quantity.

Note: Staging pad impacts are the same for all alternatives.

3.2 Alternatives Carried Forward

3.2.1 No-Action Alternative

Under the No-Action Alternative, a road would not be constructed to Cape Blossom. New access would not be constructed for freight transportation between Kotzebue and a site suitable for a barge landing for offloading and staging freight for overland transportation on the southwest side of the Baldwin Peninsula.

3.2.2 Build Alternative

The Upgrade Route was selected as the preferred alternative after public and agency review comments and impacts were considered for this Environmental Assessment (EA). The Upgrade Route would include construction of an 11.6 mile-long, two-lane, all-season road between Kotzebue and Cape Blossom with a stream crossing of Sadie Creek via the Lower Crossing Option.

The route would begin at the intersection of New Hillside Road and Air Force Road, and travel along Air Force Road south past the existing landfill through U.S. Air Force (USAF) property at the Kotzebue Long-Range Radar Site (LRRS) to the KEA wind farm. From here, the route proceeds south and east approximately 8.9 miles to the Cape Blossom beach access ramp. This alternative would upgrade an existing road corridor by widening, realigning, and upgrading 2.7 miles of Air Force Road and the KEA wind farm access road. The route does not cross June Creek. The community supports the Upgrade Route.

Turnouts and ramps to the tundra would be constructed along the road near trail crossings and potentially in other areas. These turnouts would also be used for staging equipment and materials during construction. The road surface width would be 24 feet, and the road base width would be approximately 72 feet dependent on site specific topography. Side slopes 3:1 or steeper would be constructed. The road bed would be up to 8 feet thick to provide permafrost protection and minimize subsurface thaw. The embankment height would also be engineered to minimize potential road surface snow drifting. Cross culverts would be installed as necessary to equalize drainage.

An approximately 550 feet by 650 feet staging pad that would be used as a parking and staging area would be constructed on the east side of the road about 0.25 miles north of the shoreline. A beach access ramp would be constructed at the terminus of the road above high tide line. No construction would occur below the high tide line. Up to 10 feet of soil would be excavated during construction of the beach access ramp, and the excavated material would be used during construction of the staging pad to avoid additional wetland impacts or disposed of in an approved site. Polystyrene foam boards would be installed at the bottom of the excavation to insulate the permafrost. Aggregate embankment material and then crushed aggregate base course would be placed on top of the insulation to complete the beach access ramp.

The road would be constructed on private land owned by KIC and NANA with construction easements or ROWs issued to DOT&PF. The road would be platted for public use. All Native Allotments would be avoided. Road material would be purchased from a local commercial source. The material would be installed during winter on geotextile fabric placed on the tundra for stabilization. A leveling course may be required under the geotextile depending on tundra tussock heights. Clearing may occur but would be limited to brush removal within the roadway footprint. After breakup, the road would be compacted and graded, and the final material course of crushed aggregate would be added.

3.3 Past, Present and Potential Future Actions

Cumulative impacts could occur from other past, present and future projects developed as a result of the proposed Cape Blossom Road project or occur within the same time frame or geographic area. No potential future projects have been identified. One project, KIC's Iggy Hill material site, is studied as a present action because it is the most likely gravel source for the road based on proximity, the large quantity of gravel required and lower delivery costs. Purchasing gravel from other regional material sites would require barging large quantities of gravel to Kotzebue and transferring to trucks which would increase road construction costs.

Iggy Hill material site is currently in the final planning stage. Material site development will begin in winter 2013/2014 (Norton 2013a). KIC has selected a site development contractor and holds the following development permits: NWAB Title 9 Zoning Permit, USACE Section 404 permit (POA-2011-1077), and State of Alaska Land Use Permit (LAS 28743). KIC is planning to construct a 9-mile long, all season gravel road from Iggy Hill to Kotzebue and has applied to the State of Alaska for an overland ice road permit to assist with development of the material site in winter 2013/2014 (Norton 2013a). Gravel from the Iggy Hill material site would be used for present and future construction and maintenance projects near Kotzebue. It is considered in the cumulative impact assessment because it is the closest material source to the Cape Blossom Road project area, and gravel delivery by truck would be the least expensive choice.

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4 Environmental Consequences

This section describes the existing environment in the vicinity of the Proposed Action. The environmental consequences for the Upgrade Route and the No-Action Alternative are compared and discussed. Direct, indirect, and cumulative effects are also addressed.

Environmental consequences are defined in 40 Code of Federal Regulation (CFR) Section 1508.8: "Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action, and occur later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR §1508.8)." The regulation uses effects and impacts synonymously.

Direct, indirect, and cumulative effects can be beneficial or detrimental. Ecological, aesthetic, historic, cultural, economic, social, and health effects are determined for the Proposed Action and all alternatives. Components, structures, and functions of natural resources are considered when determining effects.

Cumulative impacts result from the "…incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time." (40 CFR § 1508.7).

All avoidance, minimization, and mitigation measures are identified. Mitigation includes:

- "Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments."
  (40 CFR §1508.20)

4.1 Right-of-Way Impacts

4.1.1 Existing Conditions

Native lands along the proposed road corridor are KIC and NANA. KIC is a Native Village Corporation, and NANA is a Native Regional Corporation. Both were formed under ANCSA (Public Law 92-203) (BLM 1971). Additionally, the City of Kotzebue, the Native Village of Kotzebue, USAF, KEA, USACE, Alaska Department of Natural Resources (ADNR), and U.S. Bureau of Land Management (BLM) would all have an interest or involvement for the ROW currently identified.

The Native Village of Kotzebue Indian Reorganization Act (IRA), through a deed from KIC, owns New Hillside Road. New Hillside Road connects Ted Stevens Way and Air Force Road. Maps of the area often erroneously refer to New Hillside Road as Ted Stevens Way (HP-0002(104)/60778).

The Upgrade Route travels through USAF property at the Kotzebue LRRS. KEA holds the lease for the wind farm property from KIC.

Currently, land along the proposed Cape Blossom Road corridor is predominately accessed by all-terrain vehicles in the summer and snow machines in the winter. Existing access to private Native Allotments in the project area is across the tundra or from the beach. The 25-foot wide Buckland trail (EIN 12, D1) easement begins on Sadie Creek approximately 100 feet east of the proposed road crossing and is used for winter access to Buckland. The ANCSA 17(b) easement allows use by foot, dogsled, animals, snow machines, two- and three-wheeled vehicles, and small all-terrain vehicles weighing less than 3,000 pounds (BLM 2005). The existing winter trail easement is located along portions of the proposed road alignment. The proposed road alignment would cross the NWAB Kotzebue-to-Buckland trail.

The land ownership and winter trails are shown in Figure 1.1. No camps, cabins, or other structures are located along the proposed road corridor. Several ANCSA 14(c) campsites are located on the coast near the terminus of the road, but not within the proposed road corridor.

A complete Land Status Report is included in Appendix A.

4.1.2 Environmental Consequences

No-Action Alternative: A road would not be constructed from Kotzebue to Cape Blossom, and ROW procurement would not occur.

Direct and Indirect Impacts: The southern-most portion of the proposed route is held by BLM. The State of Alaska has selected the lands. A ROW permit may be required from ADNR for a title interest in this area. NANA is currently working with BLM and ADNR to prioritize and negotiate the selection of this area. Any portion of the route crossing the LRRS site will require a ROW interest from the USAF in conjunction with the USACE Realty Office.

Highway easements will be acquired from NANA and KIC in a manner compliant with Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, related federal regulations, State law and DOT&PF policy guidelines. The ADNR would grant a ROW to cross Sadie Creek. The proposed Cape Blossom Road would be located 100-feet west of the Buckland ANCSA 17 (b) winter trail head on Sadie Creek. The road would cross the NWAB Kotzebue-to-Buckland trail, and the borough would issue a Conditional Use Permit. Turnouts with trail access ramps will be placed by existing traditional trails for access.

KEA will work with KIC to grant a non-objection for the proposed route to cross the wind farm and its associated utilities. The KEA wind farm is the only utility in the project area.

Kotzebue IRA would also grant an easement and ROW to DOT&PF for connecting the proposed Cape Blossom Road to New Hillside Road.

NANA, KIC, the City of Kotzebue, KEA and NWAB all support the proposed road project for its direct and indirect beneficial effects on the local economy. The anticipated ROW width is 300 feet.

Native Allotees have seasonal subsistence camps on the beach near the terminus of the road. No camps, cabins, or other structures would be acquired or relocated. The road would indirectly benefit campsite users and adjacent Native Allotment owners by providing year-round road access. Also, road access to Cape Blossom would likely result in additional requests for ROWs across KIC and NANA lands to Native Allotments.

Minorities and disadvantaged groups would benefit from positive, disproportional effects provided by all-season, vehicle access to the lands, subsistence resources, and camps in the project area.

The Upgrade Route crosses USAF property. Construction, operation, and maintenance of the road through LRRS property would involve completing a likely protracted ROW procurement process with the USAF and the USACE. The route would provide beneficial improvements on the existing road between New Hillside Road and the KEA wind farm.

Cumulative Impacts: Additional ROW transfers from KIC and NANA and development on some Native Allotments could be expected. Delivery of gravel for new construction projects would be facilitated by construction of the road.

4.1.3 Avoidance, Minimization and Mitigation

The Buckland trail and road intersections would be designed for safe crossing by trail users, including snow machines, dog sleds, and all-terrain vehicles. Turnouts and ramps will be placed by existing trails to cause less of a disturbance to the road corridor. Road construction would occur in winter when the trails are in use. DOT&PF would notify NWAB residents in advance of and during construction. The trails would remain open during construction, but access may be restricted periodically for safety. Appropriate signs would be placed on the road and on the trail during construction and operation.

4.2 Social Environment

4.2.1 Existing Conditions

There are approximately 3,200 residents in Kotzebue. Over 80 percent of the population is Alaska Native, primarily Inupiat Eskimo practicing a subsistence lifestyle. The subsistence lifestyle is important for sustaining cultural values, attitudes and beliefs; passing on traditional knowledge; and creating ties between kin groups and other residents (Simpson 1999). Inupiat Eskimos have inhabited the area for at least 600 years, and the historic Village of Kikiktagruk, now Kotzebue, was a hub of ancient arctic trading routes. The City of Kotzebue was incorporated as a Second Class City in 1958 (DCCED 2012). Because of its location at the confluence of the Kobuk, Noatak, and Selawik rivers, Kotzebue is the service and transportation center for the NWAB villages and serves as the transfer point for freight. Travel to and from Kotzebue is via aircraft, snow machine, boat, and all-terrain vehicle (DCCED 2012). About 5,000 tons of semi-perishable goods, basic construction supplies, and vehicles for the region arrive in Kotzebue via barge each year (King 2012 and King 2013). Approximately 3,000 tons stays in Kotzebue. These estimates are reflective of underlying base demand (King 2012), and do not include materials and supplies for capital projects or fuel (King 2013).

4.2.2 Environmental Consequences

No-Action Alternative: A road would not be constructed from Kotzebue to Cape Blossom, and no changes to the social environment would occur.

Direct and Indirect Impacts: The proposed Cape Blossom Road would have positive impacts on the social environment by providing, all-season passenger vehicle access to the lands, subsistence resources, and camps in the project area.

Cumulative Impacts: Development of the Iggy Hill material site would have a positive impact on the social environment by providing a nearby gravel source needed to construct and maintain roads, pads, and other features. Combined with the beneficial impacts from the proposed Cape Blossom Road, the community would benefit from both projects.

4.3 Economic Environment

4.3.1 Existing Conditions

Kotzebue has a cash economy that is dependent on government, transportation, fishing, construction, and service industry jobs. Most of the available work is seasonal, and many residents rely on the strong non-cash subsistence economy (City of Kotzebue 2012). The value of the subsistence economy is not counted in dollars, but in food harvested and the byproducts of the hunt that supply materials for clothing, arts, and crafts. Byproducts such as antlers, tusks, bones, and skins are used for carvings, jewelry, garments, toys, and other artworks. Cash revenues can be earned from selling these items, but the most important benefit of the subsistence economy is the nutritional value of the food it supplies to the family and village (Simpson 1999).

About 71 percent of residents are in the labor force, with 56 percent of those employed. Unemployment is just over 29 percent (US Census 2010). The majority of employment is through the school district, Maniilaq Association, City of Kotzebue, and NWAB. Maniilaq Association is a non-profit corporation representing 12 Federally-recognized tribes. Maniilaq coordinates Tribal and traditional assistance programs and environmental and subsistence protection services, and is one of the NWAB’s largest employers (Maniilaq 2012). The Red Dog Mine, located north of Kotzebue nearer to the Village of Kivalina, is another large regional employer. Commercial fishing provides some seasonal employment. In 2011, 89 commercial fisheries permit holders were registered in Kotzebue.

The average median household income is almost $67,000, and the per capita income was about $23,000. The income estimates are given in 2010 dollars adjusted for inflation (US Census 2010). Approximately 15 percent of residents have incomes below the poverty level. Most residents of Kotzebue rely on subsistence to supplement their income (DCCED 2012).

4.3.2 Environmental Consequences

No-Action Alternative: A road would not be constructed from Kotzebue to Cape Blossom. Positive benefits from improved access to subsistence hunting and gathering areas would not occur. New jobs and additional revenues would not be created by road construction and maintenance.

Direct and Indirect Impacts: The proposed Cape Blossom Road would have positive impacts on the economic environment by providing jobs and increased revenue for the construction contractors and material suppliers. The road would benefit some subsistence users by providing all-season, passenger vehicle access, and would allow those unable to ride snow machines and all-terrain vehicles to hunt and gather on the lands adjacent to the corridor.

Cumulative Impacts: The development of the Iggy Hill material site and construction of the proposed Cape Blossom Road would have positive impacts on the local economy by providing jobs and revenue from the sale and delivery of gravel.

4.4 Local Land Use and Transportation Plans

4.4.1 Existing Conditions

The project area is located on the Baldwin Peninsula in the NWAB south of the City of Kotzebue. The northern portion of the road is within the municipal boundary. The southern part of the alignment is located in an area recommended for annexation by the City of Kotzebue. The proposed road project is included in and consistent with the City of Kotzebue *Comprehensive Plan* (City of Kotzebue 2013).

The undeveloped project area is within the NWAB Subsistence Conservation Zoning District and was determined to be of high importance to borough residents for subsistence resources and activities (NWAB 2009a). The districts are designated to conserve the natural ecosystem, promote access to subsistence resources, and includes lands used regularly for subsistence harvest. The road through the Subsistence Conservation District would be permitted as a conditional use under the NWAB Title 9 code. Title 9 provides the authority to control and regulate future land development within the NWAB in accordance with land use policies. After a public notice and hearing, the Planning Commission makes the decision to issue the Conditional Use Permit (Chase 2013). The project must apply to the NWAB Planning Commission for rezoning of the road corridor (Title 9, Article VIII, Section 9.28.220) because the proposed road is located outside the Resource Development and Transportation Corridor Districts. The project is consistent with the NWAB transportation objectives described in the *Northwest Arctic Borough Comprehensive Plan* (NWAB 1993).

Local government resolutions in favor of the road were passed by NWAB, the City of Kotzebue, NANA, and KIC. KIC and NANA have provided letters reaffirming their intention of granting easements for the road (NANA 2012) (KIC 2012).

The proposed road project is consistent with the *Northwest Alaska Transportation Plan* (DOT&PF 2004) and is included in SAFETEA-LU legislation funding.

The State of Alaska *Northwest Area Plan* (ADNR 2008) allows for the authorization of transportation facilities across State-owned waterbodies.

4.4.2 Environmental Consequences

No-Action Alternative: A road would not be constructed from Kotzebue to Cape Blossom, and land use would not change.

Direct and Indirect Impacts: The proposed road would be compatible with landowner and management intent and would not impact local or regional land use or transportation plans.

Cumulative Impacts: There would be no cumulative impacts to land use or transportation plans from development of the Iggy Hill material site and proposed road to Cape Blossom.

4.5 Cultural Resources

4.5.1 Existing Conditions

Currently, 99 Alaska Heritage Resource Survey sites are located within 3 miles of the proposed road Alternative A routes. The majority of the sites are located in and around the modern community of Kotzebue. A 2006 Northern Land Use Research (NLUR) survey tested and supported a hypothesis that cultural resources sites on the upper Baldwin Peninsula would be located less than half a mile from the coast, with the possible exception of Sadie Creek, which has been identified as an access route for interior subsistence activities. The closest sites to the project are found along Air Force Road on the Upgrade Route.

NLUR built on the 2006 survey conclusions and classified most of the route south of the wind farm as a Type A, low probability area for cultural resources (DOT&PF 2012a). Sadie Creek and in the vicinity of the proposed beach access area were classified as Type B, high probability areas. Type A low probability areas are defined as lands located more than half a mile from the shoreline, except along the banks of the main channel of Sadie Creek. Type B high probability areas are defined as lands located within half a mile of the shoreline, including the banks of the main channel of Sadie Creek.

NLUR’s 2012 cultural resources research design included 100 percent helicopter survey coverage of the low probability areas and a combination of helicopter, pedestrian, and subsurface testing surveys in high probability areas. Pedestrian and subsurface testing would have been conducted in low probability areas if areas had characteristics that would make it attractive for human occupation. During this survey, no sites were identified.

The pedestrian survey of the high probability areas of the Sadie Creek crossings revealed limited evidence of recent land use in the form of modern trash. No paleontological remains were found within the survey area. No new sites, features, or artifacts potentially eligible for listing on the NRHP were recorded during the 2012 survey for either the low or high probability areas. Cultural resources in the project area are described in the Kotzebue to Cape Blossom Road Environmental Document, Cultural Resources Survey.

4.5.2 Environmental Consequences

No-Action Alternative: A road would not be constructed from Kotzebue to Cape Blossom, and cultural resources would not be impacted.

Direct and Indirect Impacts: Based on the results of the 2012 field observations and literature reviews, the alignment south of the wind farm does not warrant additional archaeological field surveys.

The south end of the alignment is located within half a mile of Kotzebue Sound and was classified as a high probability area for this study based on its proximity to the coast. Observations made during the helicopter survey noted the flat terrain was waterlogged and covered with tussock tundra, and the area did not warrant subsurface testing. No sites, features, or artifacts potentially eligible for listing on the NRHP were recorded during the 2012 survey.

The SHPO has concurred that the Proposed Action will result in no historic properties affected (Appendix B).

Cumulative Impacts: There would be no cumulative impacts to cultural resources from development of the Iggy Hill material site and proposed road to Cape Blossom.

4.5.3 Avoidance, Minimization, and Mitigation

Archeological materials, features, and other potentially significant cultural remains are commonly buried, and therefore would not likely be identifiable from the surface or revealed in limited subsurface sampling. If during ground disturbing activities additional, significant cultural resources are encountered, all work in the area would cease until it is evaluated by an archaeologist and the landowner. The SHPO would be notified.

If human remains are found, all project activity will cease until the Alaska State Troopers, DOT&PF, SHPO, and local officials are contacted. If remains are found within Federal or Tribal lands, the Native American Graves Protection and Repatriation Act would be implemented. Immediate steps to secure and protect the remains and cultural items would be implemented. Local Native Alaskan organizations likely to be culturally affiliated with the discovered remains would be notified.

SHPO concurs with the DOT&PFs finding of no historic properties affected. The concurrence letter is included in Appendix B.

4.6 Wetlands

4.6.1 Existing Conditions

In summer 2012, wetland studies were conducted for the proposed road corridor. The study area encompassed a 1,000-foot corridor (500 feet on either side of the assumed centerline). The study provided a delineation and a wetland functions and values assessment for the proposed Cape Blossom Road corridor.

Wetlands and waters of the U.S. were mapped using the digital National Wetland Inventory (NWI) (USFWS 2012) and aerial imagery. NWI identified wetlands on the Baldwin Peninsula and project delineated wetlands in the road corridor are shown on Figure 4.1. The results were field verified during the wetland survey in August 2012. Field wetland determinations were completed for 68 sites. The wetland determinations were performed using the USACE 3-parameter approach. Wetlands are dominated by hydrophytic plants, with hydric soils and hydrologic regimes. Wetlands and waters of the U.S. are characterized using Cowardin et al. (1979), and Viereck et al. (1992) was used to assign vegetation class.

A functional assessment was performed using recommendations summarized in Regulatory Guidance Letter (RGL 09-01) (USACE 2009). Incidental observations of wildlife use and human activities were also noted.

The entire length of the road corridor and most of the Baldwin Peninsula are wetlands. Wetlands mapped in the study area include: permanently flooded; semi-permanently flooded; seasonally flooded-saturated emergent; seasonally flooded-saturated and saturated broadleaf and needleleaf; and seasonally flooded-saturated and saturated emergent and shrub complex.

The survey shows the northern portion of the study area is dominated by saturated wetlands, as are Sadie Creek and June Creek and their tributaries. The southern portion is dominated by emergent wetlands in drained lake basins with lowland physiography. Wetlands in the project area are delineated, and a functional assessment is included, in the Kotzebue to Cape Blossom Road 2012 Environmental Study in Appendix C.

Table 4.1 shows the wetlands within the proposed Cape Blossom Road corridor. The project would require a USACE Section 404/10 Individual Permit for construction and operation of the road.

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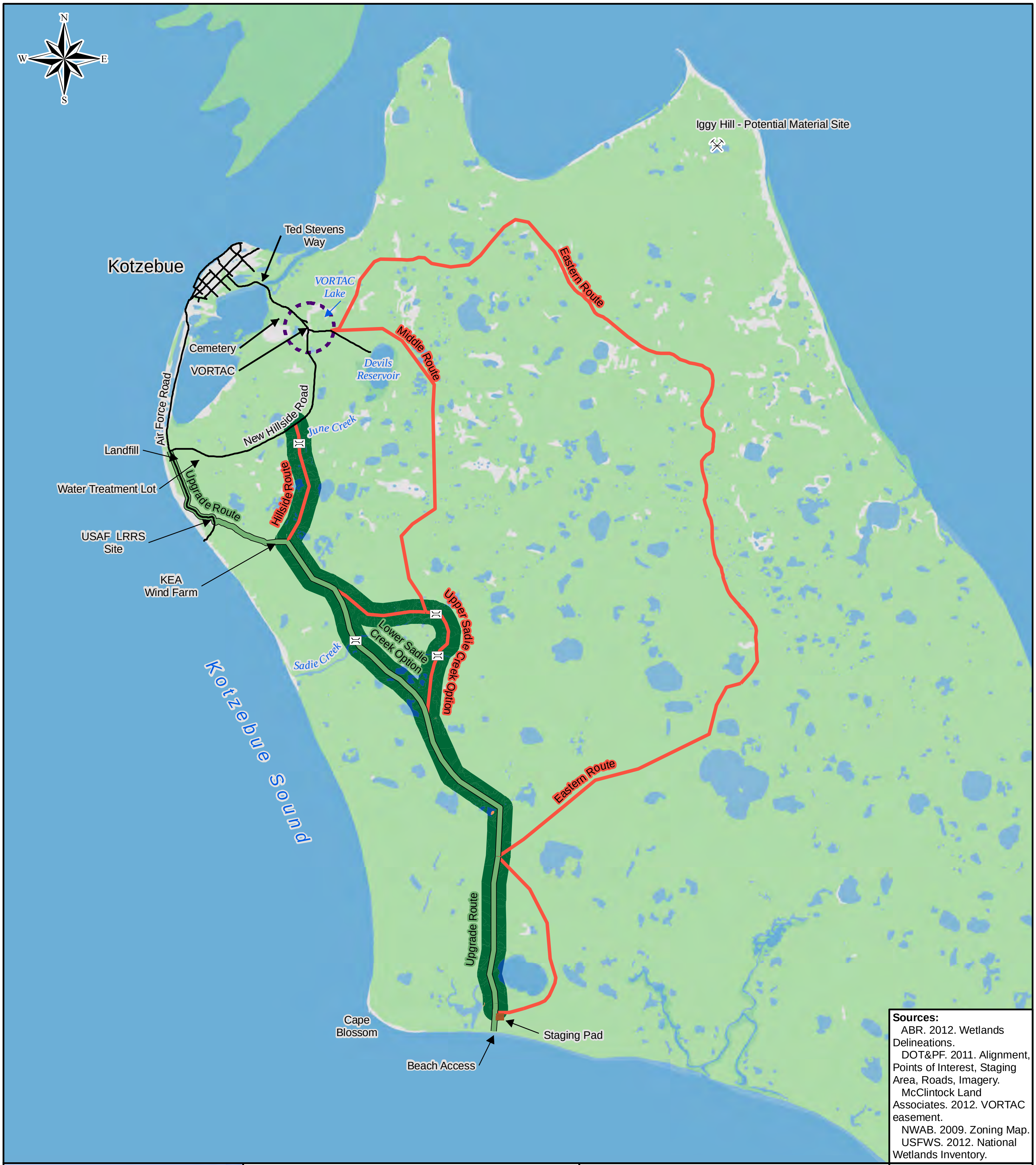
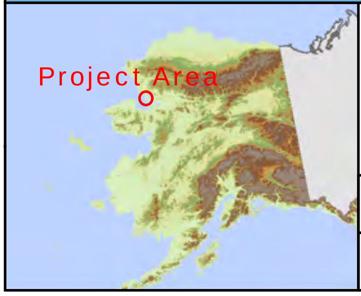


Sources:
ABR. 2012. Wetlands Delineations.
DOT&PF. 2011. Alignment, Points of Interest, Staging Area, Roads, Imagery.
McClintock Land Associates. 2012. VORTAC easement.
NWAB. 2009. Zoning Map.
USFWS. 2012. National Wetlands Inventory.



Kotzebue to Cape Blossom Road Wetlands and Waterbodies

The Baldwin Peninsula is designated by the Northwest Arctic Borough as a Subsistence Conservation Zoning District.

Date:	Revision:	Figure:
9/3/2013	3	4.1

Legend

⚒ Material Site
⊠ Stream Crossing
▭ VORTAC Easement
🟫 Staging Pad

Route Alternatives
🟩 Upgrade Route
🟥 Dismissed

NWI Wetland Type
🟦 Waterbody
🟩 Wetland

Surveyed Wetland Type
🟦 Waterbody
🟩 Wetland
🟧 Upland

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Table 4.1. Cape Blossom Road Wetland Footprint and Fill Quantities

Road Segment	Length (miles)	72-Foot Road Footprint (acres)	300-Foot Right-of-Way Footprint (acres)	Total Fill [1] Quantity (cubic yards)
Upgrade Route	11.6	104	430	889,000
Staging Pad			9	112,000

[1] – Maximum footprint acreage and fill quantity estimates are based on an 8-foot high, 24-foot wide road surface with 3:1 side slopes; these calculations assume a constant 72-foot wide road base. Turnouts are included in the road footprint and fill quantity.

4.6.2 Environmental Consequences

No-Action Alternative: A road would not be constructed from Kotzebue to Cape Blossom, and wetlands would not be impacted by road construction.

Direct and Indirect Impacts: The proposed road would permanently impact wetlands and waters of the U.S. along the proposed ROW. The estimated permanent wetland loss by segment is shown in Table 4.1. According to the National Wetland Inventory, the northern section of the Baldwin Peninsula contains over 100,000 acres of wetlands and mapped waterbodies (USFWS 2012). Based on a 72-foot road bed, the project would permanently impact approximately 104 acres of wetlands for the Upgrade Route. The percentage of permanent wetland losses on the Baldwin Peninsula would be about 0.1 percent for construction of the Upgrade Route. Based on the percentage of wetland loss and the amount of similar wetlands on the Baldwin Peninsula, impacts would be minor.

Road access may encourage land owners to develop portions of their land. Because the Baldwin Peninsula is mostly wetlands, it would likely be necessary to fill wetlands to support new development. Indirect impacts to tundra wetlands could result from development of nearby land within the proximity of a new road.

Cumulative Impacts: Approximately 9 acres of wetlands would be impacted by excavation during the development of the Iggy Hill material site (USACE 2012). The material used to construct the proposed Cape Blossom Road may be obtained from the Iggy Hill material site or other local or regional sources.

There would be indirect cumulative impacts to wetlands from development of the Iggy Hill material site and Cape Blossom Road created by the development of land near the proposed road.

4.6.3 Avoidance, Minimization and Mitigation

Wetlands cannot be avoided along the road alignment.

DOT&PF has minimized the wetland footprint to the extent practicable during preliminary alternative route siting and design. Minimization measures would be incorporated into the preliminary design. Steeper side slopes that limit the width of the fill footprint to the minimum necessary for a stable road base would be constructed when practicable. Turnouts at trail crossings and other areas along the road and the staging pad approximately 0.25 miles from the road terminus would be used for staging construction equipment and supplies. Additional staging areas used strictly for construction are not anticipated.

The road would be constructed on geotextile fabric and no ROW clearing or excavation would take place. Up to 10 feet of soil would be excavated during construction of the beach access ramp, and the excavated material would be used during construction of the staging pad to avoid additional wetland impacts or disposed of in an approved site. Dredging along the road corridor would be limited to the installation of culverts at June Creek and Sadie Creek if the foundation investigation determines culverts are appropriate. Dredged material would be temporarily stockpiled near the excavation site and used as backfill or disposed of in an approved site. Construction limits would be clearly marked to minimize accidental wetland disturbance. Construction activities off the embankment would protect the tundra in accordance with project permits by using temporary matting, ice roads, and ice pads. Construction of the stream crossing would require the use of temporary matting and an ice pad. Stream banks and vegetation would not be disturbed outside the road footprint.

An Erosion and Sediment Control Plan, Stormwater Pollution Prevention Plan, and Hazardous Material Control Plan would be implemented to protect streams and wetlands, and to minimize the introduction of sediment and runoff. State water quality standards would be adhered to during construction. Best management practices (BMPs) would be implemented to minimize disturbance to wetlands and streams. BMPs include locating stockpiles away from streams and lakes; and equipment would not be parked overnight, maintained or fueled within 100 feet of a stream channel.

4.7 Fish & Wildlife

A wildlife habitat assessment was performed for the proposed road corridors. Fish habitat evaluations and population surveys were conducted at Sadie Creek to determine the presence and distribution of resident, amphidromous, and anadromous fish populations. Incidental wildlife sightings were recorded during field studies. Avian resources were studied via aerial survey and specifically sought to determine the presence within, or use of, the project area by yellow-billed loons and cliff-nesting raptors.

4.7.1 Anadromous or Resident Fish Present

4.7.1.1 Existing Conditions

Fish surveys were conducted in July and August 2012 at Sadie Creek, the largest stream in the project area. Minnow traps, seine nets, and fyke nets were deployed to collect fish. The results of the surveys show greater fish abundance in August than in July at the sample sites. Ninespine sticklebacks were the most abundant, with almost 1,200 fish collected at 9 of the 10 sample sites. The catch rate for the ninespine stickleback was over 21 fish per hour. Thirty-eight northern pike were captured, representing the second most common fish caught. Threespine sticklebacks were captured in low numbers during July and August at the farthest downstream survey sites. Three species of whitefish, including broad whitefish, humpback whitefish, and least cisco, were also caught in the north and south forks of Sadie Creek. Subsistence fishers harvest whitefish at the mouth of Sadie Creek in June (Barr 2012). Alaska blackfish were caught during August sampling at the farthest inland site on Sadie Creek in near slack water (DOT&PF 2012c).

Sadie Creek, June Creek, and other smaller drainages crossed by the proposed road are not listed as anadromous fish streams by the Alaska Department of Fish and Game (ADF&G) *Atlas to the Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes.* ADF&G does not identify any anadromous fish streams in the project area.

Chum salmon are known to occur in Kotzebue Sound (Menard and Kent 2011). The physical characteristics of Sadie Creek suggests salmon runs are not likely to occur because of its low gradient, slow flow, and fine organic substrates (Bjornn and Reiser 1991). No salmon or other anadromous fish were captured in Sadie Creek during the July or August 2012 surveys.

Based on the types of fish collected and the depth of water in the channels, Sadie Creek likely provides overwinter habitat for some fish in some areas greater than 5 feet deep. In general, water depths of less than 5 feet indicate the areas likely freeze to the bottom and ground naturally during the winter (grounded ice). The depths of June Creek and Sadie Creek at the crossing locations are reported by a local community member to be greater than 5 feet. A stream crossing survey measured the depth of Sadie Creek at the crossing location at 6 feet (Miller 2013).

Fish presence and abundance in Sadie Creek is discussed in the Kotzebue to Cape Blossom Road 2012 Environmental Study in Appendix C.

4.7.1.2 Environmental Consequences

No-Action Alternative: A road would not be constructed from Kotzebue to Cape Blossom, and drainage structures would not be installed in Sadie Creek and June Creek. No impacts would occur.

Direct and Indirect Impacts: Winter construction at stream crossing locations with un-grounded ice would create short-term impacts to fish if they are present. Once flow resumes in spring, construction would be completed. Drainage structures and culverts would be designed and installed to facilitate flow and fish passage. Fish passage would not be impacted. Water withdrawal could occur for use as a dust control agent during construction and road maintenance. Proper withdrawal methods with approved pumps and screens on intake structures would be used and would reduce the likelihood of fish impingement at the screen/water interface. Water withdrawal from fish bearing waterbodies could create minor impacts.

Road access would not likely create more fishing on the stream at the crossing locations because other, more productive fishing spots are available. Therefore, indirect impacts would not occur.

Cumulative Impacts: There would be no cumulative impacts to Sadie Creek fish from development of the Iggy Hill material site and proposed road to Cape Blossom.

4.7.1.3 Avoidance, Minimization and Mitigation

Construction in the creeks would take place in winter. In the spring, during the final compacting, addition of the final crushed aggregate course, and grading of the road, a construction window would be established with ADF&G. The Storm Water Pollution Prevention Plan (SWPPP) and BMPs will also be implemented when work is being conducted by or in streams.

4.7.2 Essential Fish Habitat

There is no designated essential fish habitat (EFH) in the project area (2005). The National Oceanographic and Atmospheric Administration (NOAA) designated Kotzebue Sound as EFH; however, there are no plans to construct any improvements below the high tide line near Cape Blossom.

4.7.3 Wildlife Resources

4.7.3.1 Existing Conditions

Numerous species of birds and mammals occur in the project area. Aquatic and terrestrial habitats in the project area are important for breeding and foraging waterfowl and shorebirds. According to the U.S. Fish and Wildlife Service (USFWS), about 160 species of birds are found in the surrounding area during late spring and summer (USFWS 2011).

Shrub and tundra habitats provide forage for herbivores such as caribou and moose and cover for small animals like foxes and hares. Caribou, moose, shorebirds, and water birds temporarily occupy and use 73 percent of the study area in a variety of wildlife habitats (DOT&PF 2012b). Moose can be found year-round on the Baldwin Peninsula in low densities (Georgette and Loon 1993).

Waterbodies in the project area provide foraging habitat for waterfowl, loons, moose, and river otters. Wildlife habitat suitability was assessed for the project corridor. The results for birds, mammals, and fish are provided in the Kotzebue to Cape Blossom Road 2012 Environmental Study in Appendix C.

The Baldwin Peninsula is designated as a caribou migratory area by ADF&G. Information from the Western Arctic Caribou Herd radio collar satellite research program conducted by ADF&G shows caribou would be locally available on the peninsula. One collared caribou tracked through the area from 1988 through 2008. Caribou migrate through the area from August to November (ADF&G 2003).

USFWS has designated Kotzebue Sound as polar bear feeding critical habitat (USFWS 2010). The NOAA Environmental Sensitivity Index (ESI) identifies Kotzebue Sound as habitat for beluga whales, ringed seals, spotted seals, bearded seals, and Pacific walrus (NOAA 2002). Figure 4.2 shows mammal habitats. The waterfowl ESI shows tundra swan habitat along the eastern coast of the Baldwin Peninsula. The southern half of the project area, generally south of Sadie Creek, provides habitat for yellow-billed loon, greater scaup, northern pintail, Pacific loon, and red-breasted merganser. Red-throated loon habitat is located on the Baldwin Peninsula and in Kotzebue Sound (NOAA 2002). Figure 4.3 shows waterfowl habitat.

Incidental sightings of Pacific and red-throated loons were made during the June 2012 aerial bird survey. Pacific loons are the most common loon breeding in northwest Alaska where they nest on shores, islands, and emergent vegetation of shallow and deep lakes. During the June study, 48 Pacific loons were recorded, and 2 red-throated loons were observed on a lake near the south end of the survey area. Red-throated loons nest on smaller, shallow ponds.

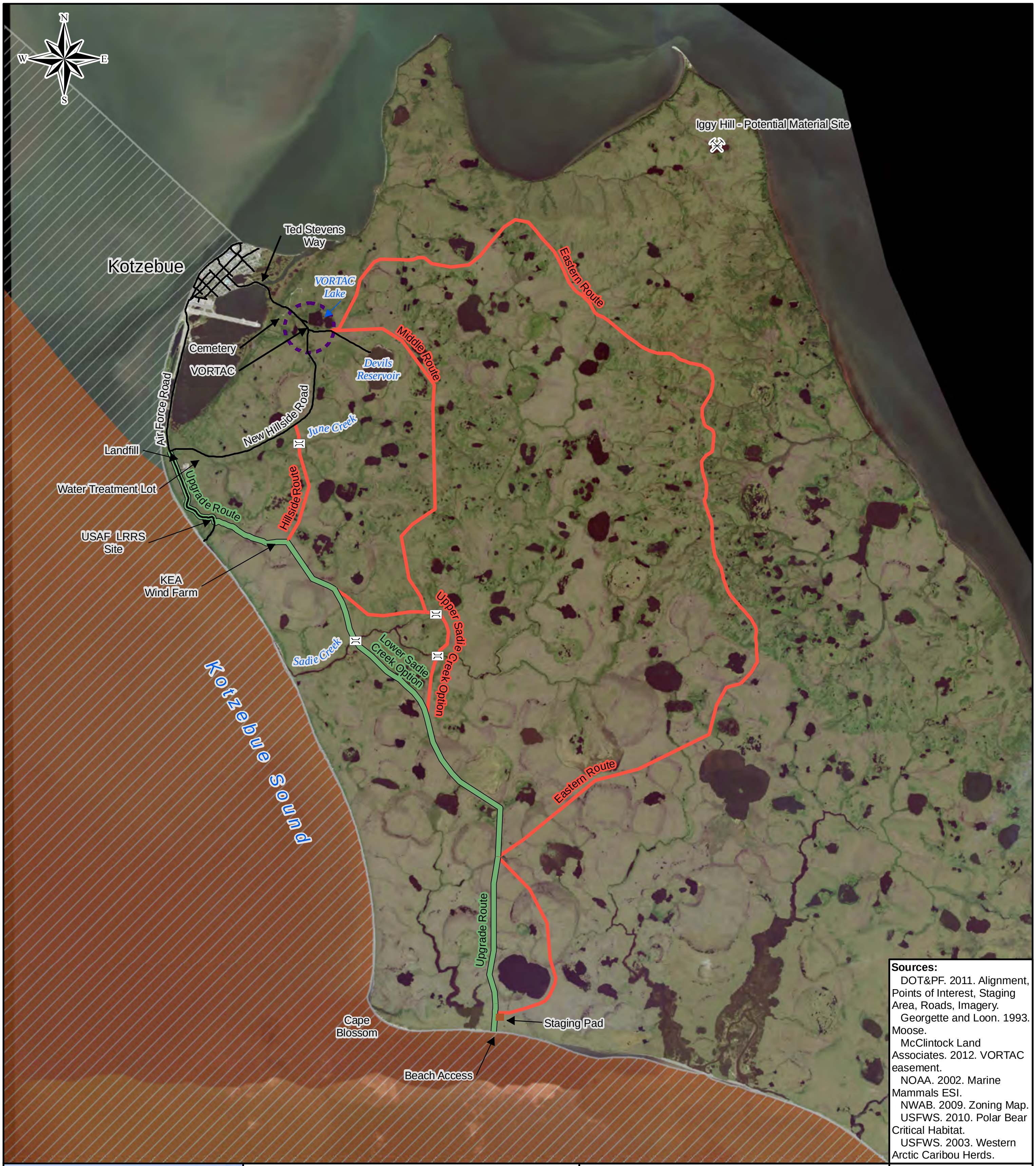
No raptors or raptor nests were found on the bluffs along the southwest coast at Cape Blossom. Active erosion of the bluff in some areas would make it unsuitable for nesting. Some areas provide moderate value nesting habitat for peregrine falcons, rough-legged hawks, and low value habitat for gyrfalcons and golden eagles. Whitewash identified at one location is likely a roosting perch.

4.7.3.2 Environmental Consequences

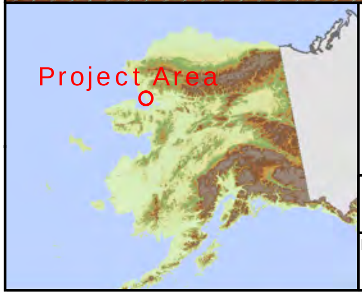
No-Action Alternative: A road would not be constructed from Kotzebue to Cape Blossom and no impacts would occur.

Direct and Indirect Impacts: Winter road construction would avoid all impacts to migratory birds, raptors, and caribou migration. Road construction would continue in spring on the same footprint covered by gravel in winter; there would be no additional ground disturbance and no impacts to migratory bird or raptor nesting areas. Moose can be found year-round on the peninsula and minor impacts to foraging areas would occur. Indirect impacts to wildlife would be caused by improved access to subsistence hunting areas, and there would be a potential for vehicle/animal collisions. Some wildlife may avoid the road area during construction and operation. The project would not impact any habitat below the high tide line of Kotzebue Sound.

Cumulative Impacts: There would be no cumulative impacts to wildlife from development of the Iggy Hill material site and proposed road to Cape Blossom.



Sources:
DOT&PF. 2011. Alignment, Points of Interest, Staging Area, Roads, Imagery.
Georgette and Loon. 1993. Moose.
McClintock Land Associates. 2012. VORTAC easement.
NOAA. 2002. Marine Mammals ESI.
NWAB. 2009. Zoning Map.
USFWS. 2010. Polar Bear Critical Habitat.
USFWS. 2003. Western Arctic Caribou Herds.



Kotzebue to Cape Blossom Road Selected Mammal Habitat

The Baldwin Peninsula is designated by the Northwest Arctic Borough as a Subsistence Conservation Zoning District.

Date:	Revision:	Figure:
9/3/2013	3	4.2

Legend

- ⚒ Material Site
- ⌧ Stream Crossing
- ▨ VORTAC Easement
- 🟫 Staging Pad

Marine Mammals
- ▨ Beluga Whale
- 🟫 Bearded Seal and Walrus

Route Alternatives
- 🟩 Upgrade Route
- 🟥 Dismissed

Note: All offshore areas are polar bear feeding critical habitat, ringed seal habitat, and spotted seal habitat.
All onshore areas are Western Arctic caribou habitat and moose habitat.

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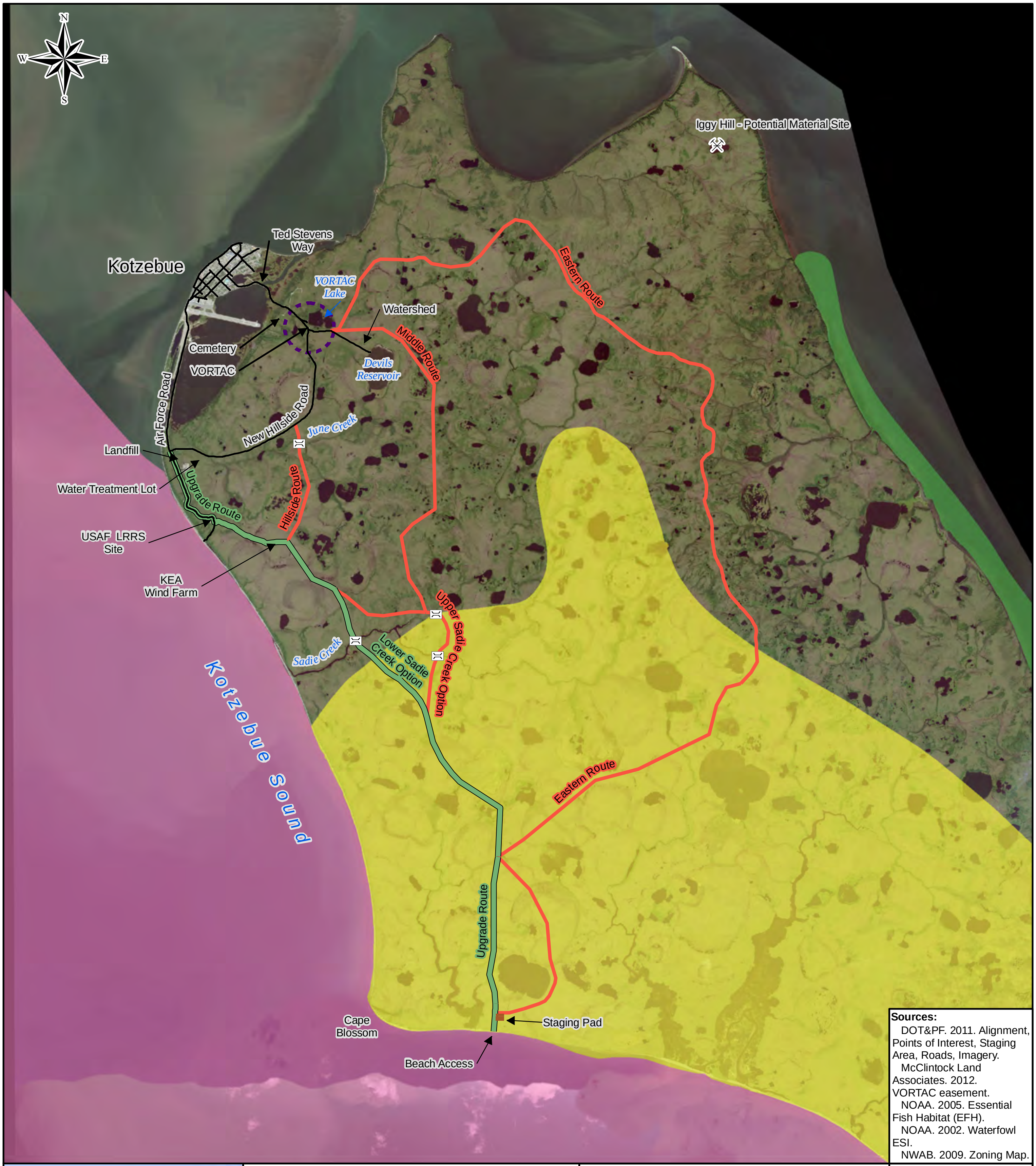
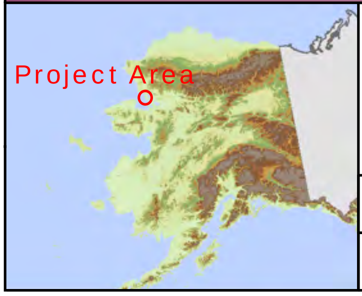


Sources:
DOT&PF. 2011. Alignment, Points of Interest, Staging Area, Roads, Imagery.
McClintock Land Associates. 2012. VORTAC easement.
NOAA. 2005. Essential Fish Habitat (EFH).
NOAA. 2002. Waterfowl ESI.
NWAB. 2009. Zoning Map.



Kotzebue to Cape Blossom Road Selected Waterfowl and Essential Fish Habitat

Miles
0 1 2 4

The Baldwin Peninsula is designated by the Northwest Arctic Borough as a Subsistence Conservation Zoning District.

Date:	Revision:	Figure:
9/3/2013	3	4.3

Legend

⚒ Material Site
⊠ Stream Crossing
▚ VORTAC Easement
🟫 Staging Pad

Route Alternatives
🟩 Upgrade Route
🟥 Dismissed

Waterfowl
🟩 Tundra swan
🟪 Red-throated loon
🟨 Yellow-billed loon, Greater Scaup, Northern Pintail, Pacific Loon, Red-breasted Merganser, and Red-throated Loon

Note: All offshore areas are essential fish habitat (EFH).

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4.7.4 Golden and Bald Eagles

4.7.4.1 Existing Conditions

Bald eagles are uncommon on the Baldwin Peninsula and rarely seen in the summer. Golden eagles are more common (Sweeney 2012). Suitable raptor nesting habitat in the project area is limited to coastal bluffs and cliffs on the west and south coasts of the Baldwin Peninsula. All potential breeding habitats within 3 miles of the proposed road corridor were surveyed via helicopter. No raptors or nests were observed during the aerial survey in June 2012. The Kotzebue to Cape Blossom Road 2012 Environmental Study in Appendix C describes the results of the raptor survey.

The Iggy Hill material site is located approximately 200 feet above Hotham Inlet. According to KIC, the hill is a gentle incline, and no raptor activity has been spotted in the area. Site specific raptor surveys were not required during USACE permitting (Norton 2013b).

4.7.4.2 Environmental Consequences

No-Action Alternative: A road would not be constructed from Kotzebue to Cape Blossom and no impacts would occur.

Direct and Indirect Impacts: No bald or golden eagles were observed in the project area during the aerial survey. Active erosion of the bluff in some areas would make it unsuitable for nesting. No impacts to bald and golden eagles are anticipated.

The hill adjacent to the Iggy Hill material site would not likely be suitable for raptor nesting and no impacts to raptor nesting habitat are anticipated. The gravel used to construct the proposed Cape Blossom Road may be obtained from the Iggy Hill material site, or other local or regional sources.

Cumulative Impacts: The Proposed Action and development of the Iggy Hill material site would not impact raptor nesting habitat. Therefore, there would be no cumulative impacts to bald or golden eagles from development of the Iggy Hill material site and proposed road to Cape Blossom.

4.8 Threatened and Endangered Species

4.8.1 Existing Conditions

There are no Endangered Species Act (ESA)-listed species in the project area. The Baldwin Peninsula is not designated as polar bear, Pacific walrus, spectacled eider, or Steller’s eider critical habitat. No terrestrial critical habitat is within the project area. Yellow-billed loons are candidate species for listing under the ESA.

All potential breeding habitats for the yellow-billed loon within 3 miles of the proposed road corridor were surveyed. Yellow-billed loons often nest on fish bearing lakes in coastal tundra. Numerous waterbodies adjacent to the proposed road could provide suitable nesting and rearing habitat. Loons make their nests at the water's edge and raise their young on lakes in coastal and inland low-lying tundra (ADF&G 2012a). In the mid-1990s, USFWS conducted a breeding pair survey on the Baldwin Peninsula; one adult was observed on a lake outside the 2012 survey area (Earnst 2004). No yellow-billed loons or nests were observed during the June 2012 aerial surveys.

The results of the yellow-billed loon survey are described in the Kotzebue to Cape Blossom Road 2012 Environmental Study in Appendix C.

4.8.2 Environmental Consequences

No-Action Alternative: No ESA-listed threatened or endangered species occur in the project area. Yellow-billed loons were not spotted during the 2012 survey, and no sightings have been documented in the project area. No impacts would occur to ESA species under the No-Action Alternative.

Direct, Indirect, and Cumulative Impacts: There are no ESA-listed species or designated critical habitat in the project area.

To protect migratory birds during nesting and brood rearing, USFWS recommends avoiding land clearing in the project area between May 20 and July 20 (USFWS 2009). Initial construction of the proposed road would occur in winter and would not impact yellow-billed loon or any other active migratory bird nests. During the road completion after breakup, compaction and installation of the final gravel surface would take place on the footprint of the road, pad, turnouts, and trail and beach access points. Additional areas outside the existing construction footprint would not be disturbed; therefore, no impacts to yellow-billed loon or other migratory bird nests would occur.

The project area is dotted by lakes and ponds. Waterbodies 5 feet deep or less would be expected to freeze to the bottom each winter and would not support fish. Larger lakes are in the project area which may support fish, but all are located greater than 100 feet from the road corridor. Because yellow-billed loons nest on the shores of fish bearing lakes, and all potential fish bearing lakes in the project area would be avoided; yellow-billed loon rearing or nesting areas would not be impacted by construction. The proposed Cape Blossom Road would not impact any ESA-listed or candidate species.

4.9 Subsistence

4.9.1 Existing Conditions

Subsistence activities occur year round throughout the Baldwin Peninsula. Late spring to early summer (late May to early June) is the busiest season of subsistence use each year. Residents of Kotzebue, Kivalina, Noatak, and Noorvik all frequent the peninsula for subsistence hunting. The remaining villages of the NWAB use the waters bordering the peninsula for subsistence purposes (Schroeder et al. 1987).

Kotzebue residents rely on a combination of subsistence resources including terrestrial mammals, marine mammals, fish, berries, plants, birds, and eggs. Most subsistence resources areas require access by boat (during open water season) or a snow machine (in winter). More easily available and harvested resources are often taken opportunistically. Sadie Creek is the site of subsistence hunting for birds, fish, and caribou (oral comment from public meeting in Buckland 5/11/12).

Moose and caribou can be found on the peninsula, but are usually hunted along the Noatak, Kobuk, and Selawik river drainages from late August to early November. Some Kotzebue residents hunt moose in the fall on the peninsula, but moose are taken throughout the year as needed (Georgette and Loon 1993).

Marine mammals are an important part of the Baldwin Peninsula subsistence lifestyle and diet. Once the Kotzebue Sound sea ice begins to form in October, hunters begin searching for bearded and spotted seals. Bearded seals are the primary marine mammal targeted. Most seal hunting by local subsistence users takes place in the marine waters surrounding Kotzebue, but some residents travel to other communities (Georgette and Loon 1993). Bearded seals are also hunted about 10 miles south of Cape Blossom (oral comment from public meeting in Buckland 5/11/12).

Fish make up the largest portion of the subsistence diet and are found in the marine waters surrounding the Baldwin Peninsula, at the mouth of Sadie Creek, Riley Wreck, and Iglugruat near Cape Blossom. Chum salmon, sheefish, and whitefish make up the majority of the fish diet (Georgette and Shiedt 2005). Fish camps south of the city and near the mouth of Sadie Creek are used to process the fish away from the dust of the city (DOT&PF 2012c). Whitefish are harvested at the mouth of Sadie Creek in June (Barr 2012).

Plants and berries make up a smaller portion of the subsistence diet, and are gathered throughout the peninsula from late July through September (DOT&PF 2012c). Many people travel by boat to harvest locations, but some harvest takes place in the Kotzebue area. Popular spots are between Cemetery Hill and Sadie Creek, and along the beach road (Georgette and Loon 1993) outside of the project area. The project area is a prime subsistence use area for plant and berry gathering. Many favorable berry gathering areas are found throughout the Baldwin Peninsula (DOT&PF 2012c).

Birds and eggs make up a small portion of the subsistence diet. A large percentage of households harvest these items. They are a prized seasonal resource and are readily available close to Kotzebue. Migratory ducks and geese and resident ptarmigan species constitute most of the harvest. Ptarmigan are often hunted incidentally during other subsistence hunts. The migratory birds are taken in the spring and fall from the lakes and other areas of the peninsula (Georgette and Loon 1993). Subsistence hunters from Noatak have been known to use the northern part of the Baldwin peninsula to harvest upland birds. The first waterfowl of the year is usually taken in late April or early May.

4.9.2 Environmental Consequences

No-Action Alternative: A road would not be constructed from Kotzebue to Cape Blossom. No impacts would occur. Subsistence use would continue to occur as it does currently.

Direct and Indirect Impacts: The proposed road is likely to have positive effects for subsistence users through improved access to parts of the Baldwin Peninsula, especially during the breakup and freeze up season when all-terrain vehicles, snow machines, and boats cannot be used.

Some berry and plant habitat will be eliminated by the new road footprint. Increases in dust emissions may also have negative impacts on berries, and subsistence users may avoid gathering in areas that are too dusty. The road would provide passenger vehicle access to favored berry locations, and other new locations would be more accessible with the new road.

Cumulative Impacts: The majority of fauna traverse through the Iggy Hill project area to better feeding grounds (USACE 2012). Some fauna would avoid the material site during migration, but migration would not be impeded by the material site or the road. The road would enhance subsistence hunting and gathering by providing improved access. Cumulative impacts to subsistence resources would not occur from operation of the Iggy Hill material site and road to Cape Blossom.

4.9.3 Avoidance, Minimization, and Mitigation

A dust palliative would be installed on the completed road as part of the construction project and would reduce dust impacts to adjacent berry picking areas. By constructing the road embankment in winter, the project would comply with the Migratory Bird Treaty Act by adhering to the USFWS recommended vegetation clearing spring and summer timing windows. Alterations to vegetated sites would take place outside of the nesting periods.

4.10 Water Body Involvement

4.10.1 Existing Conditions

Waterbodies on the Baldwin Peninsula in the project area consist of thaw lakes and small streams. The thaw lakes are shallow, and most freeze to the bottom in winter (City of Kotzebue 2012). No fill would be placed in thaw lakes in the project area during road construction. The proposed road would cross Sadie Creek. This creek is not designated as navigable by the USACE (USACE 1995) or the U.S. Coast Guard (USCG 2000). USACE would regulate the placement of fill in the creek under Section 404 of the Clean Water Act, and an Individual Permit would be required for construction. The Kotzebue to Cape Blossom Road 2012 Environmental Study in Appendix C and the Kotzebue to Cape Blossom Road 2012 Spring Breakup Study: Sadie Creek report in Appendix D describes the results of hydrologic studies conducted along the project corridor.

Sadie Creek and its tributaries are slow flowing incised streams with soft mud and organic bottom substrates. Surface drainage in the vicinity of the proposed road flows to the west, following June Creek and Sadie Creek into Kotzebue Sound (DOT&PF 2012d). The upper portion of the peninsula has permafrost extending to a depth of several hundred feet. The permafrost contains large volumes of ground ice and is considered shallow (DOT&PF 2011a).

Spring breakup monitoring was performed in May 2012 at four proposed stream crossing locations; including two sites on Sadie Creek, one site on a tributary (northern branch) of Sadie Creek, and one site on an unnamed swale near June Creek. Water depths and velocities were measured and peak breakup discharge was calculated, with results ranging from 13 to 339 cubic feet per second. At the monitoring locations, peak water depths ranged from approximately 1 to 5 feet, and peak velocities ranged from 0.4 to 5.6 feet per second; both were measured in the stream thalwegs (DOT&PF 2012d).

Field surveys for fish species and quantities in the project area were conducted in August 2012. Water velocities and depths were measured at three sites; one on the northern branch of Sadie Creek just downstream of the proposed crossing location, one on Sadie Creek upstream of the proposed crossing location, and one near the headwaters of Sadie Creek. Discharge was calculated from cross sectional velocities and depth. Total discharge for August 2012 at the sampling sites ranged from 2 to 10 cubic feet per second (0.1 to 0.3 cubic meters per second) (DOT&PF 2012c).

Sadie Creek is a narrow, low-lying lake for most of the summer months. The mouth of the creek is built up by tides and wave action from Kotzebue Sound. As rain runoff accumulates, the elevated gravel bar at the mouth holds the water in place until enough pressure builds up to release and cause flow. Local residents indicate certain storm events from the west cause seawater to infiltrate the channel (DOT&PF

2012d). The Sadie Creek drainage area is estimated to be 35 square miles (DOT&PF 2011a). Hydraulic model estimates would be used to design appropriate drainage structures for each location.

At the end of the proposed Cape Blossom Road, the shore is prone to erosion from a 50-year storm according to local elders. The shore area is reportedly inundated during severe storms, and storm surge can sometimes deposit debris on the tundra below 15 feet elevation (Norton 2012b). Storm surges are generally from the east-southeast (Norton 2013b).

Two lakes and the surrounding property adjacent to the proposed road corridor have been set aside for use as a future watershed by the City of Kotzebue. Figure 1.1 shows the watershed location.

No federally designated wild or scenic rivers are in the project area.

4.10.2 Environmental Consequences

No-Action Alternative: A road would not be constructed, and Sadie Creek would not be crossed. No impacts would occur to waterbodies.

Direct and Indirect Impacts: All lakes would be avoided along the proposed Cape Blossom Road corridor. No impacts would occur to seasonal thaw lakes. A stream crossing would impact Sadie Creek. The stream crossing has the potential to affect flow velocities by changing the characteristics of the stream bottom.

Cumulative Impacts: There would be no cumulative impacts to streams and lakes in the Cape Blossom Road project area from operation of the Iggy Hill material site.

4.10.3 Avoidance, Minimization and Mitigation

The Sadie Creek crossings would not likely be grounded ice in winter. The project would adhere to all compliance measures in the ADF&G permit to protect fish habitat. The stream crossings would be engineered to meet the estimated hydraulic flow. Vegetation disturbance would be kept to a minimum at stream approaches and crossings. Appropriate drainage structures would be designed to minimize impacts at stream crossings.

4.11 Hazardous Waste and Contaminated Sites

4.11.1 Existing Conditions

The ADEC contaminated sites database search showed 54 known sites in Kotzebue. Twenty-two of these sites are closest to and along the Upgrade Route and are associated with the Kotzebue LRRS.

Required remediation work has been completed at all of the 22 known contaminated sites, but institutional controls (IC) have been imposed at several sites where contamination persists. Table 4.2 shows the status of the LRRS contaminated sites, and Figure 4.4 shows the location of the sites (ADEC 2012a). Alaska Department of Environmental Conservation (ADEC) approval is required prior to soil disturbance at the IC sites.

Table 4.2 Status of Kotzebue LRRS Contaminated Sites

Site(s)	Contaminant(s)	Status
SS-01 Waste Accumulation Area 1	Drum storage–waste oil and solvents	Cleanup Complete
SS-02 Waste Accumulation Area 2, Landfill	Diesel range organics (DRO) General refuse Tar	Cleanup Complete – Institutional Controls
SD-03 Road Oiling	Pesticides Shop wastes	Cleanup Complete
ST-04 White Alice Tanks	DRO Petroleum, oil and lubricants (POL)	Cleanup Complete
ST-05 Beach Tanks	Diesel DRO Xylenes	Cleanup Complete – Institutional Controls
SS-06 Spill Area 1	Diesel	Cleanup Complete
SS-07 Former Water Supply Lake	Polychlorinated biphenyl (PCB) Pesticides	Cleanup Complete
SS-08 Barracks Pad	DRO	Cleanup Complete
SS-09 PCB Spill	PCB	Cleanup Complete
SS-10 Solvent Spill	PCB	Cleanup Complete
SS-11 Jet Fuel Spill	Jet Fuel	Cleanup Complete
SS-12 Spill Areas 2 and 3	Diesel DRO	Cleanup Complete – Institutional Controls
SS-13 Land farm	POL	Cleanup Complete
ST-14 East Tanks	DRO Gasoline Range Organics (GRO)	Cleanup Complete
SS-15 Garage Power Plant	DRO GRO	Cleanup Complete
SS-16 Navigational Aid Buildings	DRO	Cleanup Complete
SS-17 PCBs at Building 102	PCB, DRO	Cleanup Complete
SS-18 Truck Fill Stand	DRO	Cleanup Complete – Institutional Controls
SS-19 PCB Spills at South Fence	DRO PCB	Cleanup Complete – Institutional Controls
SS-20 Septic Holding Tank	Metal PCB Pesticides	Cleanup Complete – Institutional Controls
AOC 2 POL Line	POL	Cleanup Complete
AOC 8 White Alice Garage	Petroleum PCB	Cleanup Complete

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Kotzebue to Cape Blossom Road
Kotzebue LRRS Contaminated Sites

0 750 1,500 3,000 Feet

Date: 9/3/2013

Scale: 1 in = 1,500 feet

Revision: 3

Figure: 4.4

Legend

Contaminated Sites

- ▲ Cleanup Complete
- ▲ Institutional Controls

Route Alternatives

- 🟩 Upgrade Route

Land Status

- ▨ KEA Windfarm
- 🟩 ANCSA - City
- 🟧 KIC Patent
- 🟨 KIC & NANA
- 🟥 Native Allotment

Sources: DOT&PF, BLM, DNR, McClintock Land Associates Inc.

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There are no other known contaminated or hazardous waste sites identified in the project area (ADEC 2012a). During preliminary engineering and environmental field studies, no areas of concern were identified. No demolition would be associated with the project, and no known asbestos or leaking fuel tanks were identified along the proposed route.

The City of Kotzebue operates a permitted (SW2A010-13) Class II landfill approximately 3 miles south of Kotzebue off Air Force Road along the Upgrade Route. Construction debris is accepted (ADEC 2012b).

The Environmental Protection Agency (EPA) lists 11 Resource Conservation and Recovery Act large, small, and conditionally exempt waste generators in Kotzebue. The Kotzebue LRRS on Air Force Road along the Upgrade Route is listed as a small-quantity generator (EPA 2012b). No other generators are located in the project area.

4.11.2 Environmental Consequences

No-Action Alternative: A road would not be constructed, and no impacts would occur from contamination or hazardous wastes.

Direct and Indirect Impacts:

For the remainder of the project corridor, no known hazardous waste sites, generators, or contaminated sites are identified in the project area. Therefore, contamination or hazardous waste would not likely be encountered during construction, and no impacts would be expected.

4.11.3 Avoidance, Minimization and Mitigation

The construction contractor would develop a Hazardous Materials Control Plan to address spill response and the storage and handling of hazardous materials, including fuel and lubricants. If leaks or spills occur, all contaminated material and soils would be contained and disposed of properly.

The construction contractor would be required to stop work and notify the DOT&PF Project Engineer if suspected contaminated soil or water is encountered. DOT&PF would notify ADEC in compliance with 18 Alaska Administrative Code 75.300. All contamination would be handled and disposed of in accordance with an ADEC-approved corrective action plan. All solid waste generated during construction would be disposed of in the Kotzebue Class II permitted landfill.

4.12 Air Quality Conformity

4.12.1 Existing Conditions

In accordance with the Clean Air Act (42 United States Code 85), EPA sets National Ambient Air Quality Standards (40 CFR 50) for six criteria pollutants: carbon monoxide (CO), lead, ozone, nitrogen dioxide, sulfur dioxide, and particulate matter (PM). PM with a diameter of 2.5 microns or less ($PM_{2.5}$) and PM_{10} are regulated criteria pollutants. $PM_{2.5}$ is the result of wood smoke and PM_{10} is the result of dust. Kotzebue is in attainment for all criteria pollutants, including CO and PM_{10} (EPA 2012a).

The Federal Highway Administration does not require the project to undergo a transportation conformity analysis for CO or PM_{10} because Kotzebue and the Baldwin Peninsula are not located in non-attainment or maintenance areas (40 CFR Parts 51 and 93).

In Kotzebue and on the Baldwin Peninsula, unpaved roads are used by light-duty passenger vehicles, all-terrain vehicles, and snow machines. Dust from unpaved roads can occur during dry periods between ice breakup and freeze-up. Dust accumulation on the tundra could result in melting permafrost (LHMP 2008).

The amount of dust potentially generated by the project during construction and operation depends on the 1) type and gradation of the road materials, 2) type and intensity of traffic loading, 3) climate, 4) type of dust suppressant, 5) drainage, 6) thermal stability, and 7) available maintenance resources (ADEC 2006).

4.12.2 Environmental Consequences

No-Action Alternative: A road would not be constructed to Cape Blossom, and the No-Action Alternative would have no effect on air quality.

Direct and Indirect Impacts: The road embankment would be constructed during the winter, and fugitive dust would not be expected when working with the frozen material. After breakup when construction resumes, temporary air quality impacts would occur in the vicinity of the road. During dry periods, minor localized impacts from vehicles driving on the road and wind blowing across the road would create dust.

Cumulative Impacts: All-season, passenger vehicle access to Native Corporation land adjacent to the proposed Cape Blossom Road could result in construction and use of gravel and dirt driveways and pads. The gravel surfaces would create additional dust during dry periods. Operation of the Iggy Hill material site and gravel delivery would create dust impacts.

4.12.3 Avoidance, Minimization and Mitigation

Constructing roads to ensure structural integrity, providing gravel surfaces, increasing moisture content, and posting lower speed limits are effective means of controlling dust (ADEC 2006).

Material stockpiles, when left in place over the winter, would be covered. During the spring, when the road is graded and the top course is added, water would be applied to control fugitive dust. Dust palliatives would be installed during construction. Sound engineering, good drainage, use of geotextile fabric under a solid road base with a gravel surface, and watering during dry periods would reduce dust emissions.

4.13 Floodplains Impacts

4.13.1 Existing Conditions

The Baldwin Peninsula is characterized by rolling, lake-dotted lowlands that include sloping hills with approximately 350 feet maximum elevation. The NWAB and the City of Kotzebue participate in the National Flood Insurance Program (FEMA 2012) and regulate the protection of property from floodwaters and permit projects through Title 9 of the borough code. There are no mapped floodplains within the project area.

Flooding in Kotzebue has historically resulted from coastal storms and wind-driven tidal surges. The primary flooding and erosion hazards in the project area are from melting permafrost, ice jams, snow melt, and rainfall. Flooding around streams is usually repetitive, occurring in the same place under similar conditions, and is therefore fairly predictable (NWAB 2009b). Flood flows are influenced by precipitation type, rainfall amounts, breakup meltwater quantities, icing conditions, drainage area, ground cover, soil types, terrain, and storage potential.

A spring breakup study in 2012 was conducted at Sadie Creek and at a swale near June Creek. In 2012, spring breakup began in mid-May on the Baldwin Peninsula. Peak water surface elevation occurred between May 22 and 24 at Sadie Creek and on May 28 on the swale near June Creek. The amount of accumulated ice was not sufficient to impact the breakup processes, and negligible backwater effects because of ice were observed at Sadie Creek. Maximum breakup channel top widths at the study locations ranged between 6 and 300 feet. The swale near the June Creek tributary underwent local melt processes until enough backwater formed to degrade the snow and induce flow (DOT&PF 2012d). The Kotzebue to Cape Blossom Road 2012 Spring Breakup Study: Sadie Creek Report is included in Appendix D.

At the end of the proposed Cape Blossom Road, the shore is prone to erosion from a 50-year storm according to local elders. This shore area is reportedly inundated during severe storms, and debris is sometimes deposited above the beach on the tundra (Norton 2012b). Storm surges are generally from the east-southeast and do not travel farther inland than an elevation of 15 feet (Norton 2013b).

The project does not involve a regulatory floodway and would not likely increase the backwater elevation of the 100-year floodplain. The project would conform to applicable Federal, State, and local floodplain protection standards and is consistent with Executive Order 11988. No occupancy of the floodplain would occur.

4.13.2 Environmental Consequences

No-Action Alternative: A road would not be constructed to Cape Blossom, and the No-Action Alternative would have no effect on the floodplains.

Direct and Indirect Impacts: Design of the road and stream crossings would eliminate flood impacts to the road and surrounding area. The beach access will end above mean high water and outside of the active beach zone so it will not impact the natural beach erosion and sediment transport.

The Sadie Creek crossing location has not been designated as a flood hazard zone. Culverts would be designed to accommodate 50-year flood events. Bridges would be designed to withstand 100-year flood flows. Stream crossings would be designed to protect the road and surrounding land. There would be no adverse effects to the floodplain.

Cumulative Impacts: There would be no additive impacts associated with the Iggy Hill material site.

4.13.3 Avoidance, Minimization and Mitigation

This area has not been designated as a flood hazard area. Drainage structures and culverts would be designed in accordance with the DOT&PF’s Alaska Highway Drainage Manual.

4.14 Noise Impacts

4.14.1 Existing Conditions

There are no permanent noise receptors identified in the project area. Noise receptors are locations that may be affected by noise. Sensitive noise receptors include residences, schools, churches, parks, hotels, hospitals, libraries, and other public buildings.

Existing roads near the project area include New Hillside Road and Air Force Road. Vehicles use the roads to access the landfill, LRRS site, wind farm, and subsistence hunting, fishing and gathering areas. Snow machines and all-terrain vehicles travel over the tundra and on the beaches in the proposed project area. There are no camps within or adjacent to the proposed road ROW. There are Native Allotments and camps located on the beach south of the proposed Cape Blossom Road. The closest allotments and camps are located at the end of the proposed road along the shore. The nearest Native Allotment is approximately 180 feet from the proposed road. The road corridor comes within approximately 300 feet of another allotment. All other allotments are over 1,600 feet from the closest point of the road.

The proposed Cape Blossom Road project does not meet the definition of a Type I or Type II project, and therefore does not require a noise analysis or consideration of noise abatement (DOT&PF 2011b).

4.14.2 Environmental Consequences

No-Action Alternative: A road would not be constructed to Cape Blossom. Noise in the project area would be associated with traffic on New Hillside Road and Air Force Road. Snow machines and all-terrain vehicles would continue to operate on the beaches, streams, tundra, and winter trails. Because there are no permanent sensitive noise receptors, there would be no impacts.

Direct and Indirect Impacts: Temporary noise from road construction would occur. Subsistence camp users would temporarily be impacted by noise from road construction, passenger vehicles, and road maintenance equipment. Construction noise would be short-term and minor. Generally, hunters use the camps on the coast near Cape Blossom in January for ringed seals and in May for ringed and bearded seals (Whiting et al. 2011). However, camp users could be present at any time during the year. Other than camp users, there are no noise receptors in the project area.

Cumulative Impacts: There would be no additive impacts associated with the development of the Iggy Hill material site. Delivery of material to construct driveways and pads would increase use of the road, but any minor noise increases would be temporary. The only receptors are camp users along the shore near Cape Blossom.

4.14.3 Avoidance, Minimization and Mitigation

Material delivery trucks traveling through the City of Kotzebue would be required to coordinate traffic near potential noise receptors based on the City’s requirements.

4.15 Water Quality

4.15.1 Existing Conditions

The Baldwin Peninsula is characterized by thaw lakes from permafrost melting. These lakes are typically shallow and freeze to the bottom in winter (City of Kotzebue 2012). Numerous thaw lakes are in the project area and Sadie Creek. Most of the project area is undeveloped, and there are no known contaminant sources that would cause water quality degradation. There are no known impaired waterbodies in the project area. There is no municipal stormwater system, and there would be no mix of discharges from a permitted industrial facility.

Devil’s Lake supplies the City of Kotzebue with water through pipelines connected to the city’s water treatment plant. Previously, VORTAC Lake supplied water for the city, but this lake is no longer used because of an inoperable pump. Two lakes, designated as part of the City of Kotzebue’s watershed, are located adjacent to the proposed road corridor. Additionally, the City of Kotzebue is in the process of securing funding to complete municipal groundwater wells.

Water quality measurements were collected in July and August 2012. Data collection included temperature, pH, and specific conductance. Mean water temperatures in Sadie Creek were 10.6 to 12.1°Celsius (C) in July and between 14.0 to 16.5°C in August. The pH was considered normal for tundra streams and measured between 6.0 and 7.1. Specific conductance ranged from 59.2 to 964.0 microsiemens per centimeter; the values were variable across the sites and between July and August sampling events. Dissolved oxygen ranged from 66.2 to 91.2 percent. The results are included in the Kotzebue to Cape Blossom Road 2012 Environmental Study in Appendix C.

4.15.2 Environmental Consequences

No-Action Alternative: A road would not be constructed to Cape Blossom, and there would be no impacts to water quality.

Direct and Indirect Impacts: Minor, short-term impacts to water quality would result from culvert placement, drainage structure construction, and stormwater runoff from the road. Accidental spills or leaks from vehicles or heavy equipment also have the potential to cause water quality impacts. Construction of un-grounded stream crossings in winter would cause impacts to water quality. During spring breakup, mixing of sediment and water would temporarily increase turbidity levels. The existing vegetative mat outside the roadway footprint will be preserved.

The road would be designed, constructed, and maintained to be protective of the watershed areas. The proposed road is a sufficient distance from the watershed source lakes, and no impacts are anticipated.

Cumulative Impacts: No streams, rivers, or lakes are within or flow through the proposed Iggy Hill material site. No materials would be placed in Kotzebue Sound. Development of the Iggy Hill material site would not impact water quality (USACE 2012). Accidental spills or leaks from vehicles using Cape Blossom Road could cause water quality impacts.

4.15.3 Avoidance, Minimization and Mitigation

The construction contractor would be required to develop a Spill Prevention, Control, and Countermeasures (SPCC) Plan, Hazardous Materials Control Plan, and a SWPPP. No equipment or vehicles would operate within flowing creeks. Fueling or equipment maintenance would not be performed within 100 feet of waterbodies. Equipment would be routinely inspected and serviced to prevent leaks and accidental spills. The Hazardous Materials Control Plan would establish procedures for responding to accidental spills.

Potential water quality impacts would be minimized through the use of BMPs and implementation of the project SWPPP. The SWPPP would identify all receiving waters and specify the structural and procedural BMPs to be used during construction to prevent erosion and untreated runoff from reaching nearby waterbodies.

4.16 Permits and Authorizations

Construction of a new road requires numerous permits and authorizations. The permits are listed in Table 4.3.

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Table 4.3. Cape Blossom Road Permits and Authorizations

#	Permit or Plan; Agency	Statute / Regulation	Definition	Why Permit is Required	Data Needs	Commentary
Federal Permits and Authorizations						
1	National Environmental Policy Act (NEPA) Document Environmental Assessment (EA) Federal Highway Administration (FHWA)	Public Law (PL) 91-190, 42 U.S. Code (USC) §4321-4327, January 1, 1970, as amended; Council on Environmental Quality, 40 Code of Federal Regulations (CFR) §1502.9; 15 USC 719(h)(c)(3)	NEPA is a national mandate for the protection of the environment; requires full consideration of reasonable project alternatives to minimize potentially adverse impacts to the human and natural environment, and provides public disclosure of the environmental impacts associated with federal actions.	NEPA is triggered by the need for federal permits and approvals. A detailed statement of environmental effects of the project, in this case an EA.	• Purpose and need • Alternatives description • Evaluation of direct, indirect, and cumulative impacts	• FHWA will be the lead federal agency • Signed Finding of No Significant Impact (FONSI) for an EA
2	Section 404 Clean Water Act (CWA) Wetlands Dredge or Fill Permit; U.S. Army Corps of Engineers (USACE)	CWA Section 404, 33 USC §1344; 33 CFR 320-330	Authorizes USACE to issue permits (Section 404) for the discharge of dredge or fill material into federally designated wetlands and waters	A Section 404 permit is necessary for the placement of fill into wetlands and other waters of the U.S.	• Description of project activity • Location information • Requires identification of quantity and footprint of fill material for the roads and stream crossings • Requires completion of the EA process and a signed FONSI. • Requires selection of the Least Environmentally Damaging Practicable Alternative (LEDPA)	• USACE adheres to NEPA guidelines for all permits • USACE must select the LEDPA for the 404 CWA permit • Permit will be issued after the FONSI and LEDPA has been signed for the EA
3	Right of Way; Bureau of Land Management (BLM)	43 CFR 2800-2807	Grants permission to use public lands for the construction and operation of transportation systems.	A road crossing public lands requires authorization.	• Description of project activity • Estimated schedule for constructing, operating, maintaining and terminating the project • Map of proposed location and existing adjacent facilities	• BLM adheres to NEPA guidelines • Coordinates all regulations and actions with State and local governments and other entities.
4	Endangered Species Act (ESA) Section 7 Consultation; U.S. Fish and Wildlife Service (USFWS)	ESA, § 7(a)(2); 16 USC § 1531-1544	Federal agencies that permit, license, fund, or otherwise authorize activities must ensure their actions will not jeopardize the continued existence of any listed species.	Section 7 Consultation will occur in conjunction with the EA.	• Consultation with USFWS • Preparation of Biological Evaluation, as required	• Included in the NEPA process • FHWA as lead federal agency for the EA will initiate Section 7 consultation. • Winter construction will avoid nesting birds
5	Migratory Bird Treaty Act (MBTA); USFWS	MBTA 16 USC § 703-712	Prohibits taking of migratory birds unless specifically exempt or authorized; taking can include loss of habitat.	Must be addressed as part of the EA.	• Consultation with USFWS	• Included in the NEPA process • Early coordination with USFWS regarding data collection requirements and timing windows for construction activities

#	Permit or Plan; Agency	Statute / Regulation	Definition	Why Permit is Required	Data Needs	Commentary
6	ANCSA 17(b) Trail Easement; BLM and NANA	Public Law 92-203 43 USC §1616(b)	ANCSA 17 (b) authorizes the reservation of public easements on lands conveyed to Native Regional and Village Corporations.	Road crossing of the Buckland Winter ANCSA 17(b) trail (EIN 12, D1) easement requires authorization	• Location • Purpose	• NANA Regional Corporation would coordinate with BLM and provide a letter of non-objection for the road crossing easement. • BLM Department Manual, Public Lands, Part 601, Chapter 4 establishes procedures for the administration of an easement
State Permits and Authorizations						
7	Cultural, Historical, and Archeological Resources Consultation (Section 106 Review); Alaska Department of Natural Resources (ADNR), Office of History & Archaeology (OHA), and State Historic Preservation Office (SHPO)	National Historic Preservation Act (NHPA), § 106, 16 USC § 470 et seq.; Executive Order 11593, Protection and Enhancement of the Cultural Environment; Alaska Historic Preservation Act, Alaska Statute (AS) 41.35.010-240	Provides for the identification and protection of historic, archeological, and cultural properties; requires federal agencies to avoid and minimize impacts to properties on or eligible for the National Register of Historic Places.	Must be addressed as part of the EA.	• Consultation with ADNR, OHA, and SHPO	• Included in the NEPA process • Completion of a Section 4(f) Evaluation
8	Section 401 Certification – Certificate of Reasonable Assurance; Alaska Department Environmental Conservation (ADEC) Division of Water Quality	CWA, Section 401; 33 USC § 1344; 18 Alaska Administrative Code(AAC) 15	Authorizes the state to grant, deny, or condition certification of CWA Section 404 permits	Must accompany Section 404 permits.	• USACE will notify ADEC automatically when Section 404 permit application is received	• Coordination with ADEC is necessary • Necessary for USACE Section 404 permit authorization

#	Permit or Plan; Agency	Statute / Regulation	Definition	Why Permit is Required	Data Needs	Commentary
9	Right of Way (State-owned non-marine waters and submerged lands); ADNR, Division of Mining, Land, & Water State (DMLW)	AS 38.05.850 11 AAC 96	Access across state land for trails, roads, ditches, requires authorization from the State	Permanent Crossing of State Land.	• Project Description • General vicinity and site maps (1:250,000 or 1:63,360) • Duration and season • Specific location, including proposed access routes (GPS coordinates, township, range, section, meridian, and size of area) • Boundaries and dimensions of the proposed area and relation to geographic features • Site description (current condition, improvements, use, materials present, noting any trash, garbage, debris, or signs of possible contamination) • Locations and dimensions of structures and storage area • Location and type of crossing • Plans, specifications • Site map	• NEPA not required • State will complete a Best Interest Finding
10	Temporary Land Use Permit (Non-Marine Waters and Submerged lands); ADNR, DMLW State Right of Way	AS 38.05.850; 11 AAC 96 11 AAC 58.210	Temporary activities occurring on state lands, including activities in non-marine waters and submerged lands.	For temporary project activities including staging and construction.	• Project Description • General vicinity and site maps (1:250,000 or 1:63,360) • Duration and season • Specific location, including proposed access routes (GPS coordinates, township, range, section, meridian, and size of area) • Boundaries and dimensions of the proposed area and relation to geographic features • Site description (current condition, improvements, use, materials present, noting any trash, garbage, debris, or signs of possible contamination) • Locations and dimensions of structures and storage areas Location and type of crossing • Plans, specifications • Site map	• NEPA not required • State will complete a Best Interest Finding • State of Alaska is the submerged landowner at Sadie Creek

#	Permit or Plan; Agency	Statute / Regulation	Definition	Why Permit is Required	Data Needs	Commentary
11	Alaska Pollutant Discharge Elimination System (APDES) General Permit (GP) for Stormwater Associated with Large and Small Construction Activities for Alaska Construction General Permit (CGP); ADEC, Division of Water	CWA § 402; 33 USC §1342; 40 CFR §122	Allows for discharge of stormwater / surface water runoff from soil disturbing construction activities exposing one or more acres of cleared land to potential erosion and runoff to nearby surface waters.	Project disturbs greater than 1 acre and therefore requires a permit.	• Stormwater Pollution Prevention Plan (SWPPP) • An applicant is required to submit a Notice of Intent to gain coverage under the GP	• NEPA not required • Generally submitted immediately before construction activities commence
12	Title 16 Fish Habitat Permit; Alaska Department of Fish and Game	Alaska Fishway Act, AS 16.05.841 and Anadromous Fish Act AS 16.05.871	Project must notify and obtain authorization and approval for all activities within the limits of ordinary high water (OHW) of any streams with fish presence.	Advice should be sought on ways to protect fish.	Title 16 Fish Habitat Permit to Conduct In-Water Activities Affecting Anadromous Fish Streams: • Type and purpose of project • Location and type of crossing (including legal description) • Plans, specifications, and aerial photos • Project timeframe • Description of any alteration, modification, bed, bank, or floodplain (including temporary or material deposited or removed), stream diversion, etc. • Time of year when crossing would occur • Description of precautions to minimize adverse impacts to fish and other aquatic organisms • Hydraulic evaluation	• NEPA not required • Required for alteration or motorized crossing of fish-bearing streams
State Construction Plans						
13	SWPPP; ADEC, Division of Water	CWA 33 USC 1251 et seq. § 402 ADEC approval under CWA Section 401	Developed as part of the APDES CGP for stormwater and as required by the U.S. Environmental Protection Agency the SWPPP is intended to prevent and minimize releases of stormwater into state waters.	ADEC certifies APDES Stormwater CGPs for construction of the project facilities.	• Stormwater Pollution Prevention Team • Site description • Site map • Summary of potential pollutant sources • Spill prevention and response procedures • Maintenance • Erosion and sediment controls • Management of runoff • Employee training • Control measures • Monitoring • Inspections and documentation	• Refer to APDES CGP (#11) for industrial stormwater.

#	Permit or Plan; Agency	Statute / Regulation	Definition	Why Permit is Required	Data Needs	Commentary
Local Permits and Authorizations						
14	Community Infrastructure and Conditional Use Permit; Northwest Arctic Borough (NWAB) Planning Department	Title 9 of NWAB Code	The Planning Department implements land use regulation according to Title 9 of NWAB code. For road construction in the Subsistence Conservation District, a Conditional Use Permit is required for development. Requires Planning Commission decision and approval.	Permit required for community infrastructure projects including roads.	• Project Location • Proposed Use • Structures or fill in: streams, or wetlands • Any fresh water usage • Fuel storage • Development in the floodplain or flood prone areas	• NEPA not required • Fee required • Roads and placement of fill in wetlands in the Subsistence Conservation District of the NWAB requires a Conditional Use Permit • Requires 20-day Public Notice and Planning Commission Public Hearing and Approval

Notes:

AAC – Alaska Administrative Code

ADEC – Alaska Department of Environmental Conservation

ADNR – Alaska Department of Natural Resources

APDES – Alaska Pollutant Discharge Elimination System

AS – Alaska Statute

BLM – U.S. Bureau of Land Management

CGP – Construction General Permit

CFR – Code of Federal Regulation

CWA – Clean Water Act

DMLW – Division of Mining, Land, & Water

EA – Environmental Assessment

ESA – Endangered Species Act

FHWA – Federal Highway Administration

FONSI – Finding of No Significant Impact

FWCA – Fish and Wildlife Coordination Act

GP – General Permit

LEDPA – Least Environmentally Damaging Practicable Alternative

MBTA – Migratory Bird Treaty Act

NEPA – National Environmental Policy Act

NWAB – Northwest Arctic Borough

PL – Public Law

OHA – Alaska Department of Natural Resources, Office of History & Archaeology

SHPO – State Historic Preservation Officer

SWPPP – Storm Water Pollution Prevention Plan

USACE – U.S. Army Corps of Engineers

USC – U.S. Code

USFWS – U.S. Fish and Wildlife Service

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4.17 Construction Impacts

4.17.1 Existing Conditions

No construction projects are planned for the proposed Cape Blossom Road project area other than the proposed action. Ongoing construction activities are limited to the City of Kotzebue projects and road maintenance. The largest ongoing project is the Airport Reconstruction Project within the Kotzebue city limits.

Construction impacts from the proposed Cape Blossom Road would be temporary. Construction would be phased as funding becomes available. Most of the construction would occur in winter. After breakup, the road would be compacted and graded, and a final crushed aggregate course would be laid.

4.17.2 Environmental Consequences

Right-of-way: NANA and KIC would grant DOT&PF site control though temporary construction easements. A temporary land use permit from the State of Alaska to construct the road across Sadie Creek would also be required. BLM would provide a Right-of-Way Grant to construct the Upgrade Route through LRRS property. Access on the winter trails would be temporarily interrupted during construction. Snow machine traffic would be routed around the work zones as required for safety.

Social Environment: There are no impacts associated with construction on the social environment.

Economic Environment: Local workers and material suppliers would be positively impacted by income generated during construction.

Local Land Use and Transportation Plans: There are no associated construction impacts on land use or transportation plans.

Cultural Resources: There is minimal excavation associated with project construction; therefore, it is unlikely new cultural sites would be discovered. If artifacts are found, construction would be halted on that segment until DOT&PF and SHPO were notified and an assessment was performed.

If human remains are found, all project activity will cease until the Alaska State Troopers, DOT&PF, SHPO, and local officials are contacted. The area would be secured and local Native Alaska organizations likely to be culturally affiliated with the discovered remains would be notified.

Wetlands: Construction would permanently impact approximately 113 acres of wetlands for the Upgrade Route.

Anadromous and Resident Fish: ADF&G does not identify any anadromous fish streams in the project area, and no anadromous fish were identified in Sadie Creek during the summer field study. Streams would not likely freeze to the bottom at the road crossing locations if they are greater than 5 feet deep. Therefore, construction would impact overwinter fish habitat if they are present. Water from lakes and streams in the project area could be used as a dust control agent during construction. ADF&G approved pump sizes, withdrawal velocities, and intake structure screens would be used to reduce the likelihood of fish impingement. Water withdrawals from fish bearing waters would be permitted by ADF&G. Any impacts to fish would be minor.

Essential Fish Habitat: There is no designated EFH in the project area, and therefore no impacts.

Wildlife Resources: Winter road construction would avoid all impacts to migratory birds and caribou migration. Wildlife present in the project area may temporarily avoid active construction sites. Minor, temporary construction impacts may occur to some species traversing through the area.

Golden and Bald Eagles: Golden and bald eagle nesting areas have not been identified in the project area. Bald eagles are not common to the area. Suitable raptor nesting habitat is limited to the coastal bluff near the southern end of the road. Construction would occur in winter outside of the nesting season. Therefore, no construction impacts would occur.

Threatened and Endangered Species: There is no federally designated critical habitat in the project area. No ESA-listed species were found in the project area during field reconnaissance. Yellow-billed loons are candidate species. No occurrences have been documented in the project area, no critical habitat has been designated, and construction would occur in winter outside of the migratory bird nesting season. Therefore, no construction impacts would occur to yellow-billed loons or ESA-listed species.

Water Body Involvement: Construction impacts to waterbodies would be minimized with winter construction of the stream crossings. The placement of drainage structures and culverts would not under normal conditions increase water velocity, but these activities could result in ice accumulation. During storms or breakup when higher flow conditions occur, the culverts would increase velocities. There would be no construction impacts to thaw lakes in the project area.

Hazardous Waste and Contaminated Sites: Most of the project area is undeveloped, and there would be no impacts anticipated during construction from existing contamination. Coordination with ADEC would occur prior to construction of the Upgrade Route near known remediated sites. If contamination is encountered, the DOT&PF Project Engineer would be notified and cleanup would occur according to ADEC requirements. A Hazardous Materials Control Plan would be developed and adhered to during construction. If leaks or spills occur during construction, contaminated materials would be contained and disposed of as required by ADEC guidelines. Solid wastes from construction would be properly disposed of in the local landfill.

Air Quality: Operation of heavy equipment and hauling of fill material can create dust. Roads would be watered as necessary to reduce dust during final compaction and grading and when the final course of crushed aggregate is added after breakup. Temporary air quality impacts from dust may occur during construction.

Floodplains: No materials would be stored within the floodplains during construction. Culverts at drainage crossings would be properly installed and would have adequate capacity. The beach access ramp above the tidelands would be constructed in winter when Kotzebue Sound is frozen, and there would be no likelihood of storm surges inundating the area. No construction impacts to floodplains would occur.

Noise: While construction would generate noise, there are no permanent receptors in the undeveloped project area; therefore, construction noise would not impact any sensitive receptors. As the road nears the beach at Cape Blossom, there are multiple camps on Native Allotments. Camp users may experience short-term minor noise impacts from heavy equipment during construction.

Water Quality: No excavation or vegetation clearing is proposed, and winter construction is planned. After spring breakup, work would include final compaction and grading and addition of a crushed aggregate top-course. Increases in turbidity and temporary minor impacts to water quality may occur during breakup from sediment-laden runoff. Construction equipment and vehicles would be inspected for leaks and properly maintained to avoid spills. Fueling and equipment maintenance would not occur within 100 feet of waterbodies.

Stormwater runoff would be addressed prior to construction with the development of a project SWPPP and the use of BMPS and erosion and sediment control measures. Fuel spill and leaks would be addressed prior to construction in a Hazardous Materials Control Plan and SPCC Plan.

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5 Comments and Coordination

5.1 Scoping

DOT&PF conducted meetings with local governments and agencies while working on the Kotzebue to Cape Blossom Road Reconnaissance Report. DOT&PF initiated public and agency coordination for the Kotzebue to Cape Blossom Road project EA in the spring of 2012. DOT&PF presented the project at the joint NWAB and City of Kotzebue Planning Commission meeting on March 22, 2012, after completion of the project's Reconnaissance Study. The project team created and updated contact lists for Federal, State and local agencies; as well as borough, city, Tribal and ANCSA entities in the NWAB to prepare for the scoping outreach.

A project website was developed and hosted by DOT&PF to provide access to information about the project (http://dot.alaska.gov/nreg/capeblossomroad/). The website provided a history of the project, the current status, the *Kotzebue to Cape Blossom Road Reconnaissance Study* and the *Feasibility Analysis: Kotzebue Deep Water Port/Airport*, contact information, and a mechanism for sending comments directly to the project team.

5.1.1 Agency Scoping

On April 9, 2012, letters were sent to 13 Federal and 16 State agencies seeking formal comments on the proposed project. The letter included the purpose and need and a figure showing the alternative routes to be examined and considered in this document. In response to some agency preferences, a follow up email was sent on April 10, 2012, containing the original letter content and attachment, and making the same request that was in the April 9, 2012 letter.

The scoping letter and follow up email was also sent to borough, city, Tribal and ANCSA entities on April 9, 2012 and April 10, 2012. All letter and email recipients were invited to attend the Kotzebue May 10, 2012 scoping meeting. All were encouraged to contact the project team if they desired a scoping meeting in their NWAB community. The deadline for formal comments was May 31, 2012. Scoping letters, attachments, and responses are contained in Appendix E.

Pursuant to Section 106 of the National Historic Preservation Act, letters were sent on June 17, 2013 to 26 State and local agencies and organizations seeking comments on impacts to cultural resources in the project area. No local agencies or organizations provided comments. On July 10, 2013, SHPO concurred there are no historic properties present in the Proposed Action's area of potential effect (APE), and no historic properties would be affected.

Table 5.1 summarizes the agencies’ comments. Written agency comments were received from the USACE, USFWS, and ADF&G.

Table 5.1. Agency Comment Summary

Category	Issue
Bird Nesting Seasons	Clearing, excavation, and fill activities in potentially suitable nesting habitats should be completed prior to the nesting season (May 20 through July 20) to avoid impacts to breeding migratory birds.
Cultural Resources	Concur with the Federal Highway Administration's (FHWA) determination that no historic properties are present in the project's APE, and no historic properties will be affected.
Endangered Species	Three species listed as threatened under the ESA may occur in the project area: spectacled eiders, Alaska-breeding Steller's eiders, and polar bears. Candidate species under the ESA including yellow-billed loons and Pacific walrus may also occur in the project area.
Fish Habitat	With brief review, Sadie Creek is likely used by anadromous and resident fish species. Sadie Creek is likely to be nominated for inclusion in the Anadromous Waters Catalog during 2012 or 2013, based on fish sampling. In addition to considering fish passage and water conveyance at stream crossings, we recommend the design criteria also focus on protecting stream health by maintaining riparian, floodplain, and tidal processes. The shorter, western-most route will have the lowest overall impact to fish and wildlife resources and will disturb lower quantities of wetland habitat and require less overall gravel and gravel mining. The reroute of the western route avoiding Sadie Creek appears to provide the highest likelihood of the most flow accommodating stream crossing structures for the cost and have the lowest potential for adverse impacts on fish, their passage and habitat. The shorter, western-most route will have the lowest overall impact to fish and wildlife resources.
Invasive Weeds	Implement BMPs for minimizing the introduction and proliferation of invasive species
Mitigation	Policy regarding impacts to fish and wildlife habitat includes first avoiding, then minimizing, and finally compensating for the remaining unavoidable impacts. If impacts are unavoidable, then it is recommended that compensatory mitigation for the unavoidable impacts by restoring or permanently protecting equal or higher-value wetlands nearby.
Road Design and Alignment/Route	Prefers the most direct route from Kotzebue to Cape Blossom that will have the least impact on higher-value wetlands and required new construction. Encourages consideration of steeper side slopes and construction of a one-lane

Table 5.1. Agency Comment Summary

Category	Issue
	road with turnouts. Consider these options where practicable and where safety is not compromised. All routes carry potential for impacts to wildlife due to increases in human access to the area. These road alternatives could cause localized negative effects on wildlife and they could increase access to subsistence resources. Sadie Creek crossing location and bridge design will need to address the hydro geomorphology of Sadie Creek.
Subsistence Impacts	Access to the area of the proposed road alternatives is already present via snow machine and ATV so, at least initially; it is likely that access and increased activity would not be significantly different post-construction than that already occurring. All the alternatives could provide increased access to subsistence resources including wild game, fish, and berries. See Wildlife Impacts
Wetlands	Seek ways to avoid or minimize adverse impacts to higher-value wetland habitats, including shrub thickets that may not be classified as wetlands by the Clean Water Act.
Wildlife Impacts	All routes carry some potential for impacts to wildlife resources primarily from increases in human access to the area and associated local avoidance by wildlife such as caribou, moose, and bears. Activity along the road may cause potential diversion of caribou away from Kotzebue during their spring and fall migrations, and possibly during winter. This occurrence would not impact the Western Arctic Caribou Herd, but could impact subsistence harvest in some years (ADF&G 2012b). Localized negative effects on wildlife from these road alternatives would likely be modest. The eastern-most routes could provide enough increased access to achieve a reduction in the northern Baldwin Peninsula moose population through both harvest and avoidance of the area by moose, providing additional support for the more western route.

5.1.2 Public Scoping

Scoping meetings were held in Kotzebue on May 10, 2012 and in Buckland on May 11, 2012. The Buckland meeting was the only meeting requested by an area community. A combined meeting notice was used for both meetings. The Buckland meeting date changed from May 10, 2012 to May 11, 2012, to accommodate the Buckland K-12 school graduation ceremony. The public scoping meetings were advertised in emails, public notices, flyers, the *Arctic Sounder* newspaper (May 3 and May 10, 2012), and broadcast on KOTZ radio. The radio broadcast reached radio listeners throughout the NWAB. Initial notice was provided on April 9 and 10 in the scoping letters, and follow up emails were sent on April 30 containing a meeting flyer. A follow up on May 3 provided notice of the Buckland date change. The local entities, NANA, Maniilaq, NWAB, City of Kotzebue, and others, printed and posted the flyers on bulletin boards in Kotzebue, Buckland, and surrounding communities.

At the public meetings, residents shared knowledge of the area and natural resources that assisted in the development of the alternatives and the Proposed Action. The comments described the affected environment and alternative routes and made design suggestions. Four written comments were received from the public. Meeting announcements, mailing lists, presentations, attendance sheets, and written and email comments are included in Appendix E.

Table 5.2 provides a summary of the public scoping comments.

Table 5.2. Public Scoping Comment Summary

Category	Issue
Barges	First barges arrive in Buckland around the 1st of July.
Construction Material Sources	Use of Pipes Pit for gravel and consider barge or trucking to get it to the site. Gravel is available in Buckland.
Erosion	Take a look at erosion along the proposed routes.
Offshore conditions	There are rough waters at Cape Blossom.
Project Support	The Village of Buckland will fully support the project because fuel prices (fuel oil & diesel) are very high. The project will help reduce fuel costs.
Purpose and Need	Future port is important to the NWAB and surrounding communities because it will improve transportation and lower costs of goods in the region. Reduces fuel costs.
Region Energy Development	Port will be important to future oil and gas drilling and production in the area.
Schedule for project	Proposed action has been a priority for the community for many years. Keep to an approved schedule, and do not question this project. We have been waiting for 25 years for this project to start. Waiting will drive up construction costs and will affect this project.
Scoping Information	Informative meeting, proposal staff has good information, and appreciate willingness to hear concerns of the community and for providing food for the

Table 5.2. Public Scoping Comment Summary

Category	Issue
	attendees.
Subsistence Areas	Buckland meeting allows team to understand issues in the surrounding communities, particularly subsistence.
Subsistence Resources	Sadie Creek is the site of subsistence hunting for birds, fish, or caribou. Avoiding Sadie Creek is a good idea. Bearded seals are hunted about 10 miles straight out from Cape Blossom.
Transportation	The road would make it possible for family members to bring needed goods as far as Cape Blossom and then be transported via boat to Buckland.
Wildlife	Caribou frequent the coast. Caribou that go through Kivalina cross the Baldwin Peninsula.

Project support letters were received from NANA and KIC confirming their commitment to provide easements for the Cape Blossom Road alignment. The letters are included in Appendix E.

6 Section 4(f) Evaluation

There are no publicly owned parks, recreation areas, or wildlife refuges in the vicinity of the proposed Cape Blossom Road Upgrade Route. SHPO concurred with FHWA findings of no historic properties present in the Proposed Action's APE, and no historic properties would be affected.

The Cultural Resources Survey contains more information on the study's findings and eligibility of sites along the Upgrade Route.

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Appendix A Land Status Report, Proposed Kotzebue to Cape Blossom Road

LAND STATUS REPORT

PROPOSED KOTZEBUE TO CAPE BLOSSOM ROAD

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November 2012

State of Alaska Department of Transportation and Public Facilities
AKSAS PROJECT NO: 76844/NCPD-0002(204)

INTRODUCTION

The State of Alaska Department of Transportation and Public Facilities (DOT&PF) is preparing an Environmental Document and other related documents or evaluations in support of Federal permit and authorization decisions necessary for the development of an all season road from Kotzebue, Alaska to Cape Blossom on the Baldwin Peninsula. The road would improve access and enhance safety between Kotzebue and the shoreline at Cape Blossom and support the siting of a landing for ocean vessel traffic. Kotzebue is the transportation and economic center for the Northwest Alaska region, so the road would benefit Kotzebue and villages in the Northwest Arctic Borough. The Environmental Document will fully meet the requirements of the National Environmental Policy Act (NEPA) (40 CFR Part 230), the regulatory requirements of the Council on Environmental Quality (42 U.S.C. 4321-4370a and 40 CFR 1500), procedures for implementing NEPA (33 CFR 230) and the NEPA regulatory requirements of the Federal Highway Administration (FHWA).

This project will update the land status report and map prepared in October 2006 by McClintock Land Associates, Inc. in support of the Kotzebue Airport Relocation Feasibility Study. Several key accomplishments have occurred in Kotzebue with regard to Alaska Native Land Claims Settlement Act (ANCSA) land status. Final ANCSA selections were coordinated with the Bureau of Land Management (BLM) in compliance with the Alaska Land Transfer Acceleration Act. (Public Law 108-452). Final land survey of ANCSA exterior boundaries both Kikiktagruk Inupiat Corporation (KIC) and NANA Regional Corporation (NANA) in the area, as well as the survey for all ANCSA 14(c) lands for individual subsistence claims and lands for municipal community expansion were completed during the summer of 2012.

This report will identify existing land interest, ownership of adjacent property, rights-of-way, and other land interests within the project area. A land use inventory summarizes all ANCSA conveyance documents, U.S. Surveys, BLM and State Master Title Plats, recorded plats and subdivisions, agreements, leases, rights-of-way, 17(b) easements, and Native

Allotment certifications for land actions within the project area. An excel spreadsheet summarizes all documents which are provided electronically in PDF format and in hard copy. All are shown on an updated land status map. Information on planned and proposed land uses, potential conflicts on and adjacent to the route alternatives are provided. All land status information is based on the most current federal, state and officially recorded documents. An assessment of land use compatibility issues affecting the proposed road routes (as it relates to documented land status) and potential actions is also provided.

COMMUNITY PROFILE

Kotzebue is located on a 3-mile long sand spit at the end of the Baldwin Peninsula in Kotzebue Sound, 26 miles above the Arctic Circle. The community lies at approximately 66° 53.2' N, 162° 32.1' W. (Sections 2 and 3, Township 17 N., R. 18 W., Kateel River Meridian.) The community is bordered by Kotzebue Sound to the west and Hotham Inlet (locally referred to as “Kobuk Lake”) to the east. There is also a tidal lagoon behind the City. Hotham Inlet meets Kotzebue Sound that is part of the Chukchi Sea.

Kotzebue serves as a regional center for villages in the Northwest Arctic Borough and one in the North Slope Borough. Kotzebue Sound was named after Russian explorer Otto von Kotzebue who 'discovered' it in 1818. The site was the hub of ancient arctic trading routes for local Natives as well as Russian Natives across the Bering Straits for hundreds of years. A post office was established in 1899.

The local name for the site is Kikiktagruk and is believed to have been occupied by Iñupiat Eskimos for at least 9,000 years. It may be one of the oldest settlements in both North and South America. Kotzebue had a 2010 population of 3,201 and has an annual growth rate of 3.9%. Approximately 70-75% of the population is Native Alaskan (Iñupiat Eskimo). The community is highly dependent upon a traditional subsistence lifestyle as a supplement to their income.

LAND STATUS WITHIN THE PROPOSED PROJECT AREA

The land status is shown for areas near the proposed Cape Blossom road alignments within:

Township 15 North, Range 16 West, Kateel River Meridian
Township 15 North, Range 17 West, Kateel River Meridian
Township 15 North, Range 18 West, Kateel River Meridian
Township 16 North, Range 16 West, Kateel River Meridian
Township 16 North, Range 17 West, Kateel River Meridian
Township 16 North, Range 18 West, Kateel River Meridian
Township 17 North, Range 16 West, Kateel River Meridian
Township 17 North, Range 17 West, Kateel River Meridian
Township 17 North, Range 18 West, Kateel River Meridian
Township 18 North, Range 17 West, Kateel River Meridian
Township 18 North, Range 18 West, Kateel River Meridian

The land status is described below and is depicted on the Land Status Map.

EXISTING LAND OWNERSHIP AND AGENCY JURISDICTION

Land Ownership

The primary landowners within the project area are Kikiktagruk Inupiat Corporation (KIC), NANA Regional Corporation (NANA), the City of Kotzebue, and Native Allottees. The State of Alaska filed a General Services Grant selection within Township 15 North, Range 18 West, Kateel River Meridian over the land which is considered for the Cape Blossom Port development.

KIC is the Native Village Corporation for the village of Kotzebue which incorporated and organized in 1973 in accordance with Section 8 of the Alaska Native Claims Settlement Act (ANCSA), as amended, Public Law 92-203, 85 Stat. 688, 43 U.S.C. 1601 et. seq., and the laws of the State of Alaska. KIC is headquartered in Kotzebue, Alaska and has 1,953 original shareholders.

KIC owns the interest in the surface estate and NANA owns the subsurface estate through Interim Conveyance and Patent. Interim Conveyance is title to unsurveyed land and Patent is title to surveyed land. NANA has surface and subsurface ownership to some of the lands in the project area. Native Allottees own both surface and subsurface estate.

AGENCY JURISDICTION

Northwest Arctic Borough

The Northwest Arctic Borough (NAB) was formed in June 1986 and is a home rule borough and is the local political subdivision of the State of Alaska. The Borough encompasses approximately 36,000 square miles and is the second largest borough in Alaska. Kotzebue is the largest community in the Borough. As a home rule borough with planning and zoning authority, the NAB is responsible for issuing permits for most projects in or affecting lands within the Borough. Title 9 of the NAB Code provides the authority for the NAB to guide, control, regulate and prohibit future development of land within the Borough in accordance with its land use policies and the NAB Comprehensive Plan. According to the Borough Planning Director, the proposed project area is in a Subsistence Conservation Zone, however, there are exceptions made for development.

Bureau of Land Management

The Bureau of Land Management (BLM) has a mandate pursuant to ANCSA §13(a) to survey and Patent lands selected under the ANCSA to Alaska Native Corporations. They are also required to survey land applied for by Alaska Natives pursuant to the *1906 Native Allotment Act* and the *Alaska Native Veterans Allotment Act of 1998* and land to the State of Alaska under the *Alaska Statehood Act of 1959* (Statehood Act). The Alaska Conveyance Program is the mechanism for accomplishing these transfers. BLM retains interim jurisdiction on lands that were selected but not yet conveyed to KIC and NANA as well as to the State of Alaska.

Section 17(b) of the ANCSA, 43 U.S.C. 1616(b), authorizes the reservation of public easements on lands conveyed to Native Regional and Village Corporations. Such easements are referenced by Easement Identification Number (EIN) on the easement map. Department Manual 601 DM 4 (September 11, 1984) establishes procedures for the administration of easements that are under the jurisdiction of the Department of the Interior. It provides that the Department of the Interior agency whose land is accessed by the easement shall administer an easement reserved pursuant to Section 17(b) of ANCSA. Any uses which are not specifically listed are prohibited.

U.S. Air Force

The Federal Government granted Patent 1236172, USS 10393, Lot 1 to the U.S. Air Force for the Kotzebue Long Range Radar Site (LRRS) within the core township for KIC. Under ANCSA, KIC filed selections of all unappropriated public land within the core township of Kotzebue with land selection application F-14850-A. The Air Force site has since disbanded the site. Although BLM was not able to make former military sites available for conveyance to a Corporation, Section 201 of the Alaska Land Transfer Acceleration Act (ALTAA) made it possible for these sites which were top-filed to be made available for conveyance to ANCSA Corporations like KIC. The U.S. Air Force desires to dispose of this site, and is in the process of conducting an environmental clean-up of the parcel. To date, BLM has not received a relinquishment notice from the U.S. Air Force. The relinquishment notice would indicate that the cleanup is completed and the site is ready for disposal to KIC.

The preferred *Upgrade Route* begins at the Hillside Road and traverses through a restricted area, the Air Force parcel (Patent 1236172, USS 10393, Lot 1) to the Kotzebue Electric Association Wind Farm Lease. A portion of this road is covered by a 60 foot ANCSA 17(b) Easement reservation (EIN 15 C5) is reserved in KIC and NANA’s Interim Conveyance. The Air Force Road was originally withdrawn (F-01258) for a 100 foot wide road from Kotzebue to the Air Force Station. This road was intended to be used by the U.S. as long as they needed it and was to be used only by them. A Native Allotment (Patent 50-86-0267) near the Air Force site was conveyed but was made subject to the reservation of the Air Force road. The road continues on to the Windmill farm that is leased from KIC to the Kotzebue Electric Association.

U.S. Bureau of Indian Affairs/Kotzebue IRA Council

The Bureau of Indian Affairs (BIA) has trust responsibilities over Native Allotments held in restricted title. The Native Village of Kotzebue is the federally recognized Tribal Government for the Qikiktagrukmiut, the original inhabitants of Kotzebue. The Kotzebue IRA Council is a sovereign entity formed under the Indian Reorganization Act of 1934 which was amended and applied to Alaska in 1936. The Kotzebue IRA has undertaken the trust functions for Native Allotments around Kotzebue under Public Law 93-638, the *Indian Self-Determination and Education Act*, through contract with the BIA. The Realty program provides information, counseling, and other assistance to Alaska Natives concerning pending Native Allotment claims, forest management, general land management, property rights, probate matter, and wills.

KIC granted ownership of the Hillside Road to the Kotzebue IRA through Quitclaim Deed on September 15, 1998 (Book 52, Pages 185-190).

City of Kotzebue

The City of Kotzebue is the local Municipal Government for the Community of Kotzebue that was established pursuant to Alaska Statutes Title 29. The City has jurisdiction over lands within their municipal boundaries. Under Municipal Code 17.36.090(D), the Planning Commission has the power to "Studying and making recommendations regarding the advisability, location and design of any proposed public building, park, right-of-way or other public use of land within the city. Before any final action is taken on a proposed public capital improvement within the city, including state and federal capital improvements, plans, and drawing of the proposed improvement shall be submitted to the planning commission for its review and recommendation." Portions of the all of the proposed routes are located within the City Municipal Boundaries. The *Hillside Road route* (currently dismissed as an option) would be located adjacent to the City Watershed which was surveyed in 2012.

Federal Aviation Administration

VORTAC SITE

On January 14, 1977, FAA submitted an application for a 100-foot wide Right-of-Way (F-23302) in Kotzebue for the construction of an access road to the VORTAC facility. NANA and KIC issued letters of non-objection to FAA for the construction of a road (F-23302) on January 31, 1977.

On August 16, 1979, the PHS Department Health, Education and Welfare sent a letter to BLM requesting that an easement be reserved on lands that would soon be transferred to KIC and that BLM retain land under a 3(e) determination. The requests were made so that the City of Kotzebue could have access to its municipal potable water facilities for the purpose of use and maintenance. The VORTAC structures have been in use since 1970 and the Devil's Lake structure has been used since 1975. The structures requested for BLM retention include a 1,050 foot long compacted silt dam located in the FAA withdrawal, a 30x24 foot water heating plant located within 200 feet south of the dam, and the VORTAC reservoir. On December 20, 1979 BLM approved the grant of a Right-of-way Grant for 1,667.88 x 100 feet and serialized the reservation as F-23302.

The land status of the road beyond the Bridge was complicated by various Airport related withdrawals made over the years starting in 1964. The VORTAC site (PLO 3830) was withdrawn on September 17, 1965. Other infrastructure related to the construction of the VORTAC, including the road right-of-way, waterline easement and power line easement were reserved for the benefit of FAA. The VORTAC road also serviced the community of Kotzebue by providing access to the water reservoir.

In addition to the VORTAC site, other land rights included a Native Allotment, a permit to the State of Alaska for an Avigation and Hazard Easement, existing and future ANCSA 17(b) easements, a 2,000-foot buffer around the VORTAC antenna and the watershed KIC intends to deed to the City of Kotzebue.

VORTAC Road

On January 14, 1977, FAA submitted an application for a 100-foot wide Right-of-Way (F-23302) in Kotzebue for the construction of an access road to their VORTAC facility. On January 31, 1977, NANA and KIC issued letters of non-objection for the construction of the road (F-23302) to FAA. BLM approved the right-of-way grant for 1,667.88 x 100 feet for F-23302 on December 20, 1979. When KIC received Interim Conveyance No. 544 on September 2, 1982, the conveyance was subject to the reservation of right-of-way F-23302 for an access road granted to FAA. A letter from Robert D. Arnold to KIC on June 21, 1982, stated, “EIN 66 C5 Delete this existing trail easement as access to the VORTAC station will be provided for by an agreement between FAA and KIC Access via granted right-of-way F-23302 50’ FAA is also available.”

As grantee, FAA was entitled to all the rights, privileges and benefits granted by the terms of the grant during the term of the grant, until it expired, was relinquished or was modified by the mutual consent of KIC and the FAA. This right-of-way called VORTAC Access Road (Renamed Ted Stevens Way) Project reserved a total of 1667.88 feet long x 100 feet wide for a total of 3.83 acres and shown on drawing ALD-OTZ-040.002X. The easement was not reserved on the subject 3(e) lands because the right-of-way was reserved for the FAA, and the FAA had control of the subject lands at the time. It is apparent that FAA’s original intent was to reserve a 100-foot access road. BLM granted a twenty-year term right-of-way with an expiration date of December 20, 1999.

The Kikiktagruk Inupiat Corporation received Interim Conveyance #544 on September 2, 1982. The IC reserved right-of-way F-23302 under ANCSA Section 14(g). Such interest applies to lessees, contractees, permittees, and grantees of rights-of-way and easements that originated before ANCSA. The corporation was required to honor the provisions of the right-of-way, permit or lease for its duration.

Upon receipt of IC #544 in 1982, administrative agency BLM waived jurisdiction of this road to KIC. The right-of-way expired on December 20, 1999. This road was included in the agreement for KIC to reconvey it to the City of Kotzebue under 14(c)(3).

LAND STATUS OWNERSHIP IN THE PROJECT AREA

KIKIKTAGRUK INUPIAT CORPORATION

KIC has an original land entitlement of 161,280 acres pursuant to the terms of ANCSA §12(a) from the United States Government. KIC also received an additional selection entitlement of land under ANCSA 12(b), which is the “second-round selection” of land that is allocated from NANA Regional Corporation (NANA) out of its 12(b) pool. KIC has a combined ANCSA Section 12(a) and Section 12(b) entitlement of 208,350 acres. KIC did not have sufficient land to fulfill its entitlement within their original withdrawal area, so they selected their remainder from a deficiency area outside of their original withdrawal area. There is a mixture of KIC and NANA ownership throughout the project area.

The Bureau of Land Management has conveyed approximately 205,873 acres of surface estate by either Interim Conveyance or Patent to KIC. Approximately 2,477 acres remains to be conveyed. During the summer of 2012, KIC as Survey Contractor to BLM completed the field work on all of the ANCSA 14(c) lands, and remaining ANCSA exterior boundaries for its complete entitlement. When the plats are approved by BLM, KIC can transfer title to all vested occupants of 14(c) lands and land to the City of Kotzebue and BLM can issue final Patent to all ANCSA lands.

The title that KIC receives is subject to specific exceptions and reservations to the United States from the lands granted, including the subsurface estate, ANCSA 17(b) easements, valid existing rights, requirements, third party interests created by the U.S. Government pursuant to ANCSA Section 14(g), and requirements of ANCSA 14(c).

NANA REGIONAL CORPORATION

NANA Regional Corporation merged with 10 of 11 Northwest Alaska villages in the Region in 1976. As a result, NANA owns both surface and subsurface lands of 10 villages encompassed by the merger. KIC did not join in the merger but their land ownership is bordered by NANA surface and subsurface within the project area.

NANA's total entitlement is 2,256,074.69 areas. In their most recent figures, NANA has received 136,324.53 acres of its entitlement. The 12(c) selections are the Regional Corp selections in which NANA receives both surface and subsurface. NANA was also entitled to receive land under ANCSA 14(h)(8) which are referred to as "in lieu selections." NANA owns both surface and subsurface estate of these "in lieu" lands. Acquisition of a right-of-way will involved KIC/NANA split estate and NANA surface/subsurface fee simple title.

KIC ANCSA Land Ownership

KIC received title to the surface estate of certain real property located within the following lands around Kotzebue from the Bureau of Land Management (BLM). These conveyances are specific to the project area:

Interim Conveyance 004

The surface estate of Interim Conveyance 004 was issued to Kikiktagruk Inupiat Corporation and recorded in Book 5, Pages 574-583 on July 12, 1977.

Interim Conveyance 024

The surface estate of Interim Conveyance 024 was issued to Kikiktagruk Inupiat Corporation and recorded on December 29, 1975.

Interim Conveyance 062

The surface estate of Interim Conveyance 062 was issued to Kikiktagruk Inupiat Corporation and recorded on July 6, 1977.

Interim Conveyance 544

Surface estate of Interim Conveyance 544 was issued to Kikiktagruk Inupiat Corporation on September 2, 1982.

Interim Conveyance 759

The surface estate of Interim Conveyance 759 was issued to Kikiktagruk Inupiat Corporation and recorded on December 5, 1983.

Interim Conveyance 1364

Surface estate of Interim Conveyance 1364 was issued to Kikiktagruk Inupiat Corporation on September 15, 1988.

Interim Conveyance 1404

Surface estate of Interim Conveyance 1404 was issued to Kikiktagruk Inupiat Corporation on December 14, 1987.

Interim Conveyance 1359

The surface estate of Interim Conveyance 1359 was issued to Kikiktagruk Inupiat Corporation on September 21, 1987.

Interim Conveyance 1556 & Corrected Interim Conveyance 1892

The surface estate of Interim Conveyance 544 was issued to Kikiktagruk Inupiat Corporation and recorded on September 2, 1982 in Book 23, Pages 894 - 906. Corrected Interim Conveyance 1892 was issued on June 27, 2005 and recorded as 2005-000283-0 on July 5, 2005 to identify Native Allotments to be excluded.

Interim Conveyance 1627

The surface estate of Interim Conveyance 1627 was issued to Kikiktagruk Inupiat Corporation on August 1, 1995.

Interim Conveyance 1849

The surface estate of Interim Conveyance 1849 was issued to Kikiktagruk Inupiat Corporation on October 25, 2002 and recorded as 2002-000662-0 on November 22, 2002.

Corrected Interim Conveyance 1895

Surface estate of Interim Conveyance 1895 was issued to Kikiktagruk Inupiat Corporation on June 27, 2005 and recorded as 2005-000300-0 on July 6, 2005. This Interim Conveyance corrected I.C. 580 dated December 28, 1982 recorded in Book 24 beginning at page 663, Kotzebue Recording District.

Corrected Interim Conveyance 2192

Surface estate of Interim Conveyance 2192 was issued to Kikiktagruk Inupiat Corporation on December 11, 2008 and recorded as 2009-000024-0 on January 20, 2009. This Interim Conveyance corrected I.C. 544 dated September 2, 1982 recorded in Book 23 beginning at Page 894, Kotzebue Recording District.

Corrected Interim Conveyance 2207

Surface estate of Interim Conveyance 2207 was issued to Kikiktagruk Inupiat Corporation on March 3, 2009 and recorded as 2009-000095-0 on March 12, 2009. This Interim Conveyance corrected I.C. 544 dated September 2, 1982 recorded in Book 23 beginning at Page 894, Kotzebue Recording District. The Native Allotment F-86934, USS 13832 was excluded.

Patent 50-82-0133

Patent for Surface estate was issued to KIC on September 22, 1982 and recorded in Book 23, Pages 914-918.

Patent 50-83-0025

Patent for Surface estate was issued to KIC on December 28, 1982 and recorded in Book 24, Pages 670-672.

Patent 50-83-0063

Patent for Surface estate was issued to KIC on February 8, 1983 and recorded in Book 24, Pages 795-796.

Patent 50-87-0130

Patent for Surface estate was issued to KIC on December 23, 1986.

Patent 50-88-0033

Surface estate of Patent was issued to KIC on December 21, 1987.

NANA REGIONAL CORPORATION, INC.

Interim Conveyance 545 & Corrected Interim Conveyance 1892

Corrected IC was issued to NANA Regional Corporation, Inc. for the subsurface estate and recorded as 2005-000295-0 on July 5, 2005.

Interim Conveyance 1893

Corrected IC of the subsurface estate was issued to NANA Regional Corporation, Inc. and recorded as 2005-000283-0 on July 5, 2005.

Corrected Interim Conveyance 1894

Corrective Interim Conveyance 1894 was issued for the subsurface estate to NANA Regional Corporation, Inc. on June 27, 2005 and recorded as 2002-000662-0.

Patent 50-82-0134

Patent 50-82-0134 for the subsurface estate was issued to NANA on September 2, 1982.

Patent 50-87-0130

Patent 50-87-0130 for the subsurface estate was issued to NANA and recorded in Book 32, Pages 545-546.

Patent 50-88-0033

Patent 50-88-0033 for the subsurface estate was issued to NANA and recorded in Book 33, Pages 839-840.

Patent 50-2003-0290

The surface and subsurface estate of Patent 50-2003-0290 was issued to NANA on June 4, 2003.

KIKIKTAGRUK INUPIAK CORPORATION ANCSA 14(C) OBLIGATION

ANCSA §14(c)

Under ANCSA §14(c), KIC was required to reconvey the surface estate of certain lands to individuals, organizations, municipal governments and airport operators. Section 14(c)(1) refers to land occupied as of December 18, 1971 as a primary place of residence, primary place of business, reindeer husbandry headquarters site, or subsistence campsite. ANCSA §14(c)(2) refers to non-profit organizations. ANCSA §14(c)(3) provides for conveyances to municipal governments for community expansion and §14(c)(4) refers to airports.

ANCSA §14(c)(1) & (2)

There are numerous 14(c)(1) subsistence campsites located throughout the mapping area. Concentrations of subsistence campsites are located on KIC land at the Noatak River, on Shesolik Spit, and the Little Noatak River. There are no subsistence campsite claims within the proposed alignments of Cape Blossom Road that might conflict with the proposed road. The 14(c) claims were surveyed by BLM contractors during the summer of 2012. Platting of these claims are expected to be completed in 2013.

ANCSA §14(c)(3)

Pursuant to the terms of ANCSA §14(c)(3), all ANCSA village corporations are required to reconvey land to municipalities or to the State in Trust to meet present and foreseeable community use and expansion.

The provision states:

> *“the Village Corporation shall then convey to any Municipal Corporation in the Native village or to the State in trust for any Municipal Corporation established in the Native village in the future, title to the remaining surface estate of the improved land on which the Native village is located and as much additional land as is necessary for community expansion, and appropriate rights-of-way for public use, and other foreseeable community needs: Provided, That the amount of lands to be transferred to the Municipal Corporation or in trust shall be no less than 1,280 acres unless the Village Corporation and the Municipal Corporation or the State in trust can agree in writing on an amount which is less than one thousand two hundred and eighty acres; Provided further, That any net revenues derived from the*

> *sale of surface resources harvested or extracted from lands reconveyed pursuant to this subsection shall be paid to the Village Corporation by the Municipal Corporation or the State in trust: Provided, however, That the word "sale", as used in the preceding sentence, shall not include the utilization of surface resources for governmental purposes by the Municipal Corporation or the State in trust, nor shall it include the issuance of free use permits or other authorization for such purpose."*

ANCSA §14(C)(3) Agreement

KIC and the City of Kotzebue signed an agreement on May 17, 1996, in complete satisfaction of KIC's ANCSA §14(c)(3) obligation. By this agreement, KIC agreed to convey land to the City to meet present and foreseeable public needs. KIC's ANCSA 14(c) Map of Boundaries (MOB) was submitted to the Bureau of Land Management on May 6, 2008 and the one year ANILCA 902 (b) Statute of Limitation has elapsed so judicial challenges cannot be filed on KIC 14(c) decisions. The 14(c)(3) agreement identifies the following land to be conveyed to the City of Kotzebue. Acreages are approximate and will be conformed upon survey:

- A new landfill site consisting of 45 acres.
- Kotzebue Wastewater Treatment site consisting of 29.14 acres.
- Sewage lagoon parcel consisting of 13.25 acres.
- A watershed consisting of 350 acres.
- A waterline utility easement consisting of 6.26 acres.
- A waterline utility easement consisting of 8.52 acres.
- A water utility line consisting of 2.85 acres.
- Ted Stevens Way right-of-way consisting of 10.90 acres.
- Cemetery road right-of-way consisting of 1.52 acres.
- A recreation parcel consisting of 5.00 acres.
- The watershed/utility corridor consisting of 650 acres.

The proposed road alignments do not conflict with any of lands that will be conveyed to the City of Kotzebue pursuant to ANCSA 14(c)(3). However, *the dismissed Hillside Route* is located very close to the 320 acre City watershed parcel.

ANCSA §14(c)(4)

ANCSA §14(c)(4) is the provision providing for the reconveyance of airports that existed as of December 18, 1971. KIC implemented this provision for portions of the Kotzebue airport. The provision states:

> *"the Village Corporation shall convey to the Federal Government, State, or to the appropriate Municipal Corporation, title to the surface estate for airport site, airway beacons, and other navigational aids as such existed on December 18, 1071, together with such additional acreage and/or easements as are necessary to provide related governmental services and to insure safe approaches to airport runways as such airport sites, runways, and other facilities existed as of December 18, 1971."*

The Federal Aviation Administration claimed a storage shed, easement and the previous site for the VORTAC antenna (which was destroyed) pursuant to ANCSA 14(c)(4). KIC denied the application and the FAA filed a mandatory injunction requiring KIC to convey title to the United States for the surface estate of the land on which the VOR facility at the Ralph Wien Memorial Airport was located, together with such additional acreage and easements as are necessary to provide the government services related to that facility. A Stipulation of Dismissal was filed in the U.S. District Court on March 1, 2011.

ANCSA §14(c) Map of Boundaries and Survey

Bureau of Land Management (BLM) regulations in 43 CFR 2650.5-4, ANCSA require Corporations to prepare and submit Maps of Boundaries depicting lands qualified as ANCSA §14(c) reconveyances to BLM. The KIC ANCSA 14(c) Map of Boundaries was the official map that depicts the location of all 14(c) land to be surveyed by BLM. KIC submitted their final ANCSA 14(c) Map of Boundaries depicting the location of all 14(c) land on May 8, 2008. The survey field work on all KIC's 14(c) lands was completed during the summer of 2012. Platting and approval of the parcels will take a year. Once approved by BLM, KIC will be able to give deeds to all valid claimants.

LAND OWNERSHIP OF THE PROPOSED CAPE BLOSSOM ROUTES

Introduction

There are four alternative routes proposed to access Cape Blossom*: Eastern Route*, *Middle Route*, *Upgrade Route*, and *Hillside Route.* The *Upgrade Route* and *Hillside Route* include crossings of Sadie Creek and June Creek. The *Eastern Route*, *Middle Route, and Hillside Route* have been dismissed as proposed alternatives.

Existing Access

There are 26 miles of local gravel roads, used by cars, trucks and motorcycles during the summer. Snowmachines are preferred in winter for local transportation. Existing surface access to the Terminal Area from Kotzebue is by Third and Fifth Avenues. Third Avenue was paved in 1996, becoming the first paved road in Kotzebue.

The only road, leading south from town passes through the Airport within the safety area of Runway 8. The road is used to access summer fish camps, the sanitary landfill, an Air Force radar site, and properties along the coast to the south. There is a gate controlling access to the airport operating area via this road, although it is not always used.

Former VORTAC Lake Road was renamed Ted Stevens Way. During the effort to reconstruct Ted Stevens Way, the City of Kotzebue needed site control for a 100 foot road right-of-way. BLM reserved a 60-foot road under an ANCSA 17(b) easement. KIC owned the underlying interest of the 17(b) easement and had to use two legal descriptions to transfer the 100-foot road to the City of Kotzebue, one for the 60 foot 17(b) easement and another for an additional 40 feet. Since the VORTAC site has a 2,000-foot restrictive easement, KIC requested a waiver from FAA to grant the additional 40 feet needed for the road right-of-way for that portion of the road inside the excess 3(e) site. This right-of-way was granted to the City of Kotzebue by KIC with Quitclaim Deed recorded on April 18, 2001 in Book 58, Pages 59-60. KIC granted a right-of-way to the City of Kotzebue on January 14, 2003 for the Ted

Stevens Way extension. It was recorded as 2003-000025-0, Kotzebue Recording District on January 16, 2003. This 14(c)(3) road was surveyed in 2012.

In 1997, the Bureau of Indian Affairs (BIA) funded the construction a 3.7 mile, $6 million road east of Kotzebue Lagoon to divert traffic around the airport runway and to serve the community as the link to the new solid waste facility. The Hillside Road connects Ted Stevens Way to the City's landfill, wind generation site and cemetery. KIC granted a right-of-way to the Kotzebue IRA Council for the Hillside Road project adjoining the easterly right-of-way of the Air Force Road (EIN 53 C5) located within the East ½ of Section 21, T. 17 N., R. 18 W., K.R.M. This right-of-way grant included conditions and a reverter clause. The Hillside road was granted to the IRA with a proper legal description but the road right-of-way was not monumented. During the Cadastral Survey of the ANCSA 14(c) lands in 2012, portions of Hillside Road that adjoin 14(c)(3) parcels were monumented.

Bison Street, Caribou Way and Ted Stevens Way from Third Avenue to Devils Lake were upgraded a distance of two miles. The upgrading included grade raising, widening, drainage and surfacing, as well as minor erosion protection in the tidal area near town. Bicycle and pedestrian traffic between town and the Hillside Road was also accommodated.

A right-of-way, F-033395, located within Sec. 11, T. 17 N., R. 18 W., K.R.M. was granted for a power line to Kotzebue Electric Association, Inc., under the provisions of the act of February 15, 1901 (43 U.S.C. 959), as amended; Kikiktagruk Inupiat Corporation also granted an easement for an electric line to Kotzebue Electric Association in Sections 16, 21 and 28 of T. 17 N., R. 18 W., K.R.M. on March 27, 1984.

A 100 foot right-of-way, F-23302, located within Sec. 11, T. 17 N., R. 18 W., K.R.M. was granted for an access road to the Federal Aviation Administration, under the provisions of Public Law 94-579 (October 21, 1976) Title V (43 U.S.C. 1761-1771).

PERMITS AND LEASES

The KIC Lands Department issues gravel permits to KlC shareholders and other permittees that need gravel for projects in the City of Kotzebue. KIC has two active gravel permits and will probably receive gravel permits at Nimiuk Point and Arctic Circle in the near future.

Kikiktagruk Inupiat Corporation granted a lease agreement for a windmill site to Kotzebue Electric Association in Section 25 and 35 of T. 17 N., R. 18 W.. K.R.M. on July 7, 2003.

The Department of the Air Force granted an Easement for Right of Way for Electric Power Transmission or Communication Facilities to the Kotzebue Electric Association on November 18, 1986. This easement was recorded in Book 31, Pages 316-318.

UNITED STATES BUREAU OF LAND MANAGEMENT EASEMENTS

ANCSA §17(b) Easements

There are two 17(b) Easements (25 foot trail easements) that could be impacted by proposed *Upgrade and Hillside routes* to Cape Blossom: the Trail to Buckland (EIN 12, D1) and the Trail to Noorvik (EIN 8, D1, and D9). The uses allowed on these 25 foot trail easements are travel by foot, dogsled, animals, snowmobiles, two and three wheeled vehicles, and small all terrain vehicles (less than 3000lbs GVW). The season of use is limited to winter. If an all season road is constructed to Cape Blossom, considerations of the road impacts should be included in the environmental process and engineering of the road. Trail crossings and road access will need to be considered. 17(b) Easements reserved throughout the Baldwin Peninsula are shown on the land status map. They include the following:

EIN 76 C4:

An easement twenty (20) feet in width for the City of Kotzebue’s existing waterline from the west boundary of Tract B Parcel 2, in Sec. 11, T. 17 N., R. 18 w., Kateel River Meridian., southeasterly to the south boundary of Tract B Parcel 2 in Sec. 11, T. 17 N., R. 18 w., Kateel River Meridian. The uses allowed are those activities associated with the construction, operation, and maintenance of the waterline facility.

EIN 77 C4:

An easement twenty (20) feet in width for an existing powerline from the west boundary of Tract B Parcel 2 in Sec. 11, T. 17 N., R. 18 w., Kateel River Meridian, southeasterly to the south boundary of Tract B in Sec. 11, T. 17 N., R. 18 w., Kateel River Meridian. The uses allowed are those activities associated with the construction, operation and maintenance of the powerline facility.

EIN 8a C5:

An easement sixty (60) feet in width for an existing road from the west boundary of Tract B Parcel 2, in Sec. 11, T. 17 N., R. 18 W., Kateel River Meridian, southeasterly through Tract B Parcel 2 to the southern boundary of Tract B Parcel 2. The uses allowed are those listed above for a sixty (60) foot wide road easement.”

EIN 8 D1, D9:

An easement for an existing access trail twenty-five (25) feet in width from the edge of State patented submerged lands near Kotzebue within Tract 5, U.S. Survey No. 2645 within Secs.

2 and 11, T. 17 N., R. 17 W., Kateel River Meridian. The uses allowed are those listed above for a twenty-five foot wide trail easement.[1] The season of use will be limited to winter.

EIN 12 D1:

An easement twenty-five (25) feet in width for an existing access trail from the west section line of Section 18, T. 16 N., R. 17 W., Kateel River Meridian, southeasterly to public land. The uses allowed are those listed above for a twenty-five foot wide trail easement. The season of use will be limited to winter.

EIN 15 C5:

An easement sixty (60) feet in width for an existing road from the south boundary of patent No. 1236172, in Section 16, T. 17 N., R. 18 W., Kateel River Meridian, southerly to public land in T. 16 N., R. 18 W., Kateel River Meridian. The uses allowed are those listed for a sixty (60) foot wide road easement.

EIN 53 C5:

A transportation and communications easement sixty-five (65) feet in width for an existing road and two (2) buried communications cables, from the southern edge of patented State land in Sec. 16, T. 17 N., R. 18 W., Kateel River Meridian, southerly to the north boundary of the U.S. Air Force withdrawal. The uses allowed are those listed for a sixty (60) foot wide road easement and those use associated with the construction, operation and maintenance of the communication cable facilities.

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[1] *25-Foot Trail – The uses allowed on a twenty-five (25) foot wide trail easement are: travel by foot, dogsled, animals, snowmobiles, two- and three-wheeled vehicles, and small all-terrain vehicles (less than 3,000 lbs. Gross Vehicle Weight (GVW)).*

RS 2477 Rights of Way

“Revised Statute 2477 (RS 2477) was a congressional grant of rights of way which provided: "The right of way for the construction of highways over public lands, not reserved for public uses, is hereby granted." RS 2477 was repealed in 1976 which marked a dramatic change in federal land management policy. However, the RS 2477 rights of way that existed at that date expressly remained a valid existing right. As a result there are thousands of RS 2477 rights of way across the western United States and Alaska which, as congress intended, provided an important role in settling those areas. In Alaska, these rights of way continue to play an essential role in accessing Alaska's lands. In Kotzebue, two RS2477’s were nominated but they are not reserved and are thus not shown on the map. To date, DNR has researched over 2,000 routes and determined that approximately 647 qualify under the RS 2477 statute.”[2]

RS2477

Casefile Summary: RST 124, Nimiuk Point-Shungnak Trail. Nominated Only

The Nimiuk Point-Shungnak trail is located in northwestern Alaska, east of Kotzebue. The route is an extension of RST #1738, Kotzebue- Nimiuk Point. The trail runs eastward from Nimiuk point on the Baldwin Peninsula across Hotham Inlet, then follows Riley channel of the Kobuk River eastward to Noorvik. The route continues eastward, following Nazaruk Channel and Melvin Channel northeastward to the Kobuk River and Kiana. The route crosses the Squirrel River and continues northeastward through the Kobuk Valley National Park, generally following the north shore of the Kobuk river. The trail passes through Ambler, then heads southeastward over lowlands surrounding the Kobuk river. The route crosses Pitkin Lake and continues on southeastward to Shungnak. Portions of the route cross over water. The location of the trail, based on historical evidence, has been mapped by DNR, Division of Land Personnel, on USGS 1:63,360 Kotzebue D-1 and D-2, Selawik C5, C-6, D-3, D-4, D-5

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[2] *State of Alaska, Department of Natural Resources, Public Information Center on line.*

and D-6, Baird Mountains A-1, A-2 and A-3, Ambler River A-4, A-5 and A-6, and Shungnak D3 quadrangle maps. The route is approximately 200 miles long.

Casefile Summary RST 1738 Kotzebue - Nimiuk Point Trail. Nominated Only
The Kotzebue-Nimiuk Point Trail is located in northwestern Alaska. The route runs from the City of Kotzebue southeastward, crossing the Baldwin Peninsula to Nimiuk Point. The location of the trail, based on historical evidence, has been mapped by DNR, Division of Land personnel, on USGS 1:63,360 Kotzebue D-1 and D-2 quadrangle maps. The route is approximately 29 miles long.

NATIVE ALLOTMENT ACT

Pursuant to the Native Allotment Act of May 17, 1906, any Alaskan Native of full or mixed blood who was either head of a family or 21 years old could apply for no more than 160 acres of non-mineral land from the Department of Interior, BLM. Native Allotees receive title in the form of a Certificate, which is a legal document that conveys beneficial possession of land and contains a patent number protected against alienation and taxation by the U.S. Government. The Village of Kotzebue is the Federally-recognized Tribal government representing the Qikiktagrukmiut. "Kotzebue IRA" is the main service provider for Native Allotment administration in Kotzebue. Several allotments near Kotzebue have been taken out of restricted status. The Kotzebue IRA Resources Program provides services to restricted Native Allotment and Townsite owners within their geographical service area. The IRA staff helps to resolve trespass issues, and processes sales, leases and permits. This process is time consuming due to the steps that staff must take to process sales, leases and permits. These restrictions are placed to protect the best interest of owners or their heirs.

Restricted Deeds

"Restricted" deeds are protected against taxation and alienation, and cannot be conveyed or encumbered without approval by the Secretary of the Interior (BIA). Restricted lands mean that:

- The property is tax-exempt from all taxes.

- Income from the land cannot be taxed. (If the land is rented, leased or sold, the money cannot be taxed, just the interest, and it does not need to be reported to the IRS.

- The land cannot be seized, taken away, trespassed upon, or be subject to liens. The land receives protection by the Federal Government from unauthorized seizure by the State, Federal and City governments for anything (not even the IRS). No one can trespass on the land, and no can place liens against the land.

- Restricted landowners can obtain free real estate services and counseling. (638 Services Providers or the BIA)

- The Bureau of Indian Affairs must approve all transactions (sales, leases, rights-of-way, rents, gift deeds, mortgages, etc.)

Unrestricted Deeds

"Unrestricted" deeds mean that the land is removed from a protected status in a manner approved by the Secretary of the Interior (BIA). The land is taxable, alienable and no longer under the BIA's jurisdiction.

Unauthorized Use.[3]

Prior to approval of the allotment application, the agency having jurisdiction of the land retains unauthorized use abatement responsibility. In the case of BLM lands, at least, BIA assumes this responsibility after the application is approved. Prior to approval, either agency may initiate unauthorized use investigation with BIA providing its findings to the district office for appropriate action.

Prior to approval, removal of resources or construction of improvements by a third party constitutes unauthorized use. An allotment applicant may, before approval, utilize resources for his/her personal use, but not for most commercial purposes except in the case of subsistence resources under State fish and game laws. After approval, the Allottee and BIA assume jurisdiction over all resources not reserved to the United States.

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[3] NATIVE ALLOTMENTS, BLM ALASKA HANDBOOK

Alienation of Interest

Certain activities on allotments are considered an alienation of interest. If cultural resources, for example, may be adversely affected by proposed development, the BIA must observe the requirements of Section 106 of the National Historic Preservation Act before approving a change in an allotment’s restricted status.

Revocable Use Permits

P. L. 93-638 Service Providers must comply with several regulatory authorities in granting leases or permit on trust lands. 25 U.S.C. Sec. 415. deals with “Leases of restricted lands” and 25 CFR 162.3 provides procedures for Leasing/Permitting, Grazing, Probate and Funds Held in Trust.

25 U.S.C. 169 and 25 USC 415 provide procedures for the granting of leases and permits on restricted land. This authority is cited in the beginning of the Revocable Use Permit (RUP) that grants permission to State of Alaska, Department of Transportation/Public Facilities to gain access on restricted land for the purposes of conducting topographic surveys, Geotechnical work, soils inspection, and wetlands delineation. The compensation amount is negotiated between the 638 Service Provider and the Allottees.

The regulations were revised on January 22, 2001 in the areas of probate, funds held in trust for Indian tribes and individual Indians, leasing/permitting, and grazing. These revisions are meant to further fulfill the Secretary's fiduciary responsibility to federally recognized tribes and individual Indians. Revisions to leasing/permitting regulations implement the Indian Agricultural Resource Management Act and address appropriate procedures for entering into leases and permits on Indian lands and, more importantly, aid in properly determining and accounting for the value of such leases to individual land owners and tribal entities. The effective date for the implementation date of the regulations is March 23, 2001. Included below are portions of the regulations and a web site to view the regulation.

169.3 Consent of landowners to grants of right-of-way.

(a) No right-of-way shall be granted over and across any tribal land, nor shall any permission to survey be issued with respect to any such lands, without the prior written consent of the tribe.

§169.4 Permission to survey

Anyone desiring to obtain permission to survey land for a right-of-way across individually owned, tribal or Government owned land held in restricted status must file a written application with the Secretary. Upon receipt of an application made in compliance with the regulations of part 169, the Secretary may grant the applicant written permission to survey.

Native Allotments within the subject area include:

<u>T. 17 N., R. 17 W., KRM</u>

50-96-0070
50-96-0028, Lot 3, Tract 41
50-89-0224

<u>T. 17 N., R. 18 W., KRM</u>

50-85-0400, Lots 2, 4, and 5
50-85-0121
50-97-0162
50-84-0474, Lot 2
50-2005-0361
50-84-0339, Lots 2, 3, and 6
50-84-0771
50-86-0267, Lot 2

<u>T. 18 N., R 17 W. and 18 W., KRM</u>

50-96-0079, U.S.S. 10915, Lots 1 and 2
50-95-0341, U.S.S. 10911 and 10935, Lot 1
50-96-0219, U.S.S.10911, Lot 2
50-96-0085, Tract 37
50-84-0497 U.S.S. 5299, Lot 3
50-89-0177
50-89-0535
50-95-0644
50-95-0028 Lot 3, Tract 41
50-84-0406
50-95-0569
50-89-0224 U.S.S. 6761
50-96-0070
50-95-0556 U.S.S. 10855, Lot 6, U.S.S. 10925

T. 16 N., 18 W., KRM

50-91-0367, U.S.S. 10663
50-95-0508, U.S.S. 10855, Lots 2 & 3
50-96-0080, U.S.S. 10855, Lot 1
50-95-0620, U.S.S. 10855, Lot 4
50-95-0640, U.S.S. 10855, Lot 5
50-95-0556, U.S.S. 10855, Lot 6
50-95-0195, U.S.S. 10858, Lot 7
50-96-0649, U.S.S. 10858, Lot 9
50-97-0202, U.S.S. 10854
50-2006-0214, U.S.S.10850
50-2005-0522, U.S.S. 10001, Lot 3
50-2005- 0409 U.S.S. 10801, Lot 2

T. 17 N., R. 16 W., KRM

50-86-0263, Lots 1 and 2, U.S.S. 6764
50-96-0220, U.S.S 10858

T. 17 N., R. 18 W., KRM

50-91-0055, U.S.S. 10393, Lot 2
50-86-0065, Lots 4 and 5
50-96-0366, Lot 1

T.15 N., R.16 W. KRM

50-95-0408, Lots 1 and 2, U.S.S. 10792
Portion of 50-2005-0005, Lots 2 and 3,

T. 15 N., R. 17 W., KRM

50-95-0298, U.S.S. 10800, Lot 2
50-95-0299, Lot 2, U.S.S. 10800
50-86-0224, U.S.S. 6761
50-95-0297, Lots 1 and 2, U.S.S. 10846
50-95-0338, Lots 3 and 4, U.S.S. 10846
50-2004-0329, U.S.S. 10847, Lot 1
50-2005-0005, Lot 1 and portions of Lot 2 and 3, U.S.S. 10847

T. 15 N., R. 18 W., KRM

50-2006-0124, U.S.S. 10850
Portion of 50-2005-0409, Lot 2, U.S.S. 10801
Portion of 50-96-0363, Lot 1, U.S.S. 10801
Portion of 50-2005-0522, Lots 3 and 4, U.S.S 10801
Portion of 50-95-0298

T. 16 N., R. 16 W., KRM

50-95-0334, U.S.S. 10852, Lot 1 and U.S.S. 10851, Lot 1
50-95-0403, U.S.S. 10852, Lot 2
50-95-0404, U.S.S. 10852, Lot 3
50-98-0238, U.S.S. 10853, Lot 2
50-95-0259, U.S.S. 10851, Lot 2

T. 16 N., R. 18 W., KRM

50-95-0556, U.S.S. 10855, Lot 6, U.S.S. 10925
50-96-0195, U.S.S. 10855, Lot 7
50-95-0607, U.S.S. 10855, Lot 8
50-96-0649, U.S.S. 10855, Lot 9
50-97-0202, U.S.S. 10854

50-2006-0124, USS 10850
Portion of 50-2005-0409, Lot 2, U.S.S. 10801
Portion of 50-2005-0522, Lots 3 and 4, U.S.S 10801

DEVELOPMENT PLANS AND PLANNED USES

ANILCA §1407 Shareholder Homesite Program

§1407. §21 of the Alaska Native Claims Settlement Act is amended by adding a new subsection at the end thereof, as follows:

> *"(j) A real property interest distributed prior to December 18, 1991, by a Village Corporation to a shareholder of such Corporation pursuant to a program to provide homesites to its shareholders, shall be deemed conveyed and received pursuant to this Act: Provided, That the land received is restricted by covenant for a period not less than ten years to single-family (including traditional extended family customs) residential occupancy, and by such other covenants and retained interests as the Village Corporation deems appropriate: Provided further, That the land conveyed does not exceed one and one-half acres: Provided further, That the shareholder receiving the homesite, if the shareholder subdivides the land received, shall pay all Federal, State, and local taxes which would have been incurred but for this subsection, together with simple interest at six percent per annum calculated from the date of receipt of the land to be paid to the appropriate taxing authority.".*

KIC has considered implementing a shareholder homesite program near the community on unencumbered land located adjacent to Ted Stevens Way (which connects to Hillside Road, but remains undecided about its development. The homesite distribution allowed under ANILCA §1407 would accommodate 1,953 shareholders, whose parcels must be no more than 1½ acres in size.

The development will require the survey, platting and approval for multiple subdivisions, road access, and may require approximately 3,000 acres of unencumbered KIC land. If implemented, planning for the shareholder homesite subdivision is expected to take a minimum of two years. Many Alaska Native Corporations have initiated plans for Shareholder Homesite Programs only to discover that the costs and land requirements are too great to be feasible.

POTENTIAL CONFLICTS

Upgrade Route

- ANCSA 17(b) easement EIN 15 C5. for an easement sixty (60) feet in width for an existing road from the south boundary of patent No. 1236172, in Section 16, T. 17 N., R. 18 W., Kateel River Meridian, southerly to public land in T. 16 N., R. 18 W., Kateel River Meridian. The uses allowed are those listed for a sixty (60) foot wide road easement.
- ANCSA 17(b) easement EIN 53C5 for a transportation and communications easement sixty-five (65) feet in width for an existing road and two (2) buried communications cables.
- Windmill Farm. The Kotzebue Electric Association (KEA) has a lease from KIC for a windmill farm (Tract No. 1) that is approximately 3 miles from Kotzebue, but this alignment avoids the lease boundaries. The Department of the Air Force granted an Easement for Right of Way for Electric Power Transmission or Communication Facilities to the Kotzebue Electric Association on November 18, 1986.
- Patent 1236172, USS 10393, Lot 1 to the U.S. Air Force for the Kotzebue Long Range Radar Site (LRRS) which restricts access.
- Subsistence picking of wild plants/berries.
- Nesting areas of migratory birds/Animal habitats.
- Caribou migration.
- Hunting.
- Old village sites in the area – may have archeological restrictions.
- ANCSA 17(b) Easement for 25 Foot Winter Trail (EIN 12, D1).
- Native Allotments nearby

Dismissed Routes

Eastern Route

- ANCSA 17(b) Easement EIN 8, D1, D9for 25 foot Noorvik Winter Trail Easement.
- ANCSA 17(b) 25 Foot Winter Trail Easement (EIN 12, D1)
- Native Allotments nearby
- Subsistence picking of wild plants/berries.
- Nesting areas of migratory birds/Animal habitats.
- Caribou migration.
- Hunting.
- Proposed alternate (dismissed) airport relocation.

Middle Route

- ANCSA 17(b) Easement EIN 8, D1, D9 for 25 foot Noorvik Winter Trail Easement.
- Near City of Kotzebue Watershed area.
- Proposed alternate (dismissed) airport relocation.
- Subsistence picking of wild plants/berries.
- Nesting areas of migratory birds/Animal habitats.
- Caribou migration.
- Hunting.

Hillside Route

- 320 acre Kotzebue Water Shed parcel was surveyed during the summer of 2012, but is not yet platted nor conveyed by KIC to the City of Kotzebue under ANCSA 14(c)(3). Any road considered must not conflict with the Water Shed boundaries.
- Subsistence picking of wild plants/berries.
- Nesting areas of migratory birds/Animal habitats.

- Hunting.
- Possible Shareholder Homesite Subdivisions.
- Recreational areas.
- The proposed site for the Port is located in an area prone to erosion and inundation of high water due to 50 year storms according to local elders. This area reportedly goes totally under water during severe storms and large logs are deposited uplands on the tundra. This area was purposefully not selected by local people under the Native Allotment Act due to its unsuitability.
- Windmill Farm. The Kotzebue Electric Association (KEA) has a lease from KIC for a windmill farm (Tract No. 1) that is approximately 3 miles from Kotzebue, but this alignment avoids the lease boundaries. The Department of the Air Force granted an Easement for Right of Way for Electric Power Transmission or Communication Facilities to the Kotzebue Electric Association on November 18, 1986.
- ANCSA Regional Selections with application F-19154-22 by NANA that were top-filed by the State of Alaska with FF 44408 General Grants selection application in the Port area are in discussions with BLM and NANA.
- Proposed alternate (dismissed) airport relocation.

Upper Sadie Creek Option Route

- Subsistence picking of wild plants/berries.
- Nesting areas of migratory birds/Animal habitats.
- Caribou migration.
- Hunting.
- Increased noise may impact sea mammals and other wildlife.
- Native Allotments nearby.
- ANCSA 17(b) Easement for 25 Foot Winter Trail (EIN 12, D1).

Summary

The documentation of land status of the proposed routes for the Cape Blossom Road and detailed mapping of the land status is important to assist in the site selection of the preferred route. The land status map cumulates the documented conveyances and land actions of a large, growing community. The information in this report will supplement the local information provided on the community level.

REFERENCES

McClintock Land Associates, Inc.. *Kotzebue Airport Relocation Feasibility Study Land Status Report*. October 2006. Prepared for PDC, Inc. Engineers and Alaska Department of Transportation and Public Facilities.

NANA Regional Corporation. http://www.nana.com.

State of Alaska Department of Natural Resources Recorders Office and Division of Land, Water and Minerals.

Northwest Arctic Borough. http://www.nwabor.org

Native Village of Kotzebue IRA. http://www.kotzebueira.org

Alaska Department of Community and Economic Development. Community Database Online. http://www.commerce.state.ak.us

State of Alaska Department of Natural Resources online. http://dnr.alaska.gov/Landrecords

Bureau of Land Management Public Records.

Appendix B National Historic Preservation Act, Section 106, Consultation Letter

THE STATE
of ALASKA
GOVERNOR SEAN PARNELL

Department of Natural Resources

DIVISION OF PARKS AND OUTDOOR RECREATION
Office of History and Archaeology

550 West 7th Avenue, Suite 1310
Anchorage, Alaska 99501-3565
Web: http://dnr.alaska.gov/parks/oha
Phone: 907.269.8721
Fax: 907.269.8908

July 10, 2013

File No.: 3130-1R FHWA
3330-6N KTZ-00037, 3330-6 KTZ-00190,
3330-6N KTZ-00231, 3330-6N KTZ-00232

John W. Huestis, P.E.
Northern Region Area Engineer
Department of Transportation & Public Facilities
P.O. Box 21648
Juneau, AK 99802-1648

Federal Highway
Administration
JUL 12 2013
Juneau, Alaska

Subject: Kotzebue to Cape Blossom Road Project

Dear Mr. Huestis:

The Alaska State Historic Preservation Office (AK SHPO) received your correspondence (dated June 17, 2013) on June 20, 2013.

Following our review of the documentation, we concur with your determination that because the Kotzebue White Alice Communication System Historic District (KTZ-00037) has been adequately mitigated and subsequently demolished, it has been rendered **not eligible** for the National Register of Historic Places (NRHP). Further, we concur with your determination that KTZ-00190 no longer contributes to the historic district, but remains individually **eligible** for the NRHP under Criterion A. Finally, we concur that KTZ-00231 and KTZ-00232 are **not eligible** for the NRHP.

As there are no historic properties present within the project's area of potential effects (APE), we concur that a finding of **no historic properties affected** is appropriate for the proposed undertaking.

Your letter indicates that a great deal of consultation on potential effects to historic properties has been ongoing since at least late 2007. We are accustomed to receiving initiation letters that include preliminary information about the scope and scale of these types of projects as well as a preliminary definition of the APE, especially when there are potential effects to historic properties or when a cultural resource inventory is conducted. Our records do not indicate receipt of an initiation letter on the subject undertaking. Despite our concurrence with the determinations and finding of effect provided, in the future, we would greatly appreciate the opportunity to be involved in consultation early in an undertaking's planning (per 36 CFR 800.1[c]).

As stipulated in 36 CFR 800.3, other consulting parties such as the local government and Tribes are required to be notified of the undertaking. Additional information provided by the local government, Tribes, or other consulting parties may cause our office to re-evaluate our comments and recommendations. Please note that our comment letter does not end the 30-day review period provided to other consulting parties.

Should unidentified archaeological resources be discovered in the course of the project, work must be interrupted until the resources have been evaluated in terms of the National Register of Historic Places eligibility criteria (36 CFR 60.4) in consultation with our office.

Thank you for the opportunity to comment. Please contact Shina duVall at 269-8720 or shina.duvall@alaska.gov if you have any questions or if we can be of further assistance.

Sincerely,

Judith E Bittner

Judith E. Bittner
State Historic Preservation Officer

JEB:sad

Appendix C Kotzebue to Cape Blossom Road Project, 2012 Environmental Study

FINAL REPORT

KOTZEBUE TO CAPE BLOSSOM ROAD PROJECT

2012 ENVIRONMENTAL STUDY

PREPARED FOR

ALASKA DEPARTMENT OF TRANSPORTATION AND
PUBLIC FACILITIES, NORTHERN REGION
FAIRBANKS, ALASKA

UNDER CONTRACT TO

MICHAEL BAKER JR., INC.
ANCHORAGE, ALASKA

PREPARED BY

ABR, INC.–ENVIRONMENTAL RESEARCH & SERVICES
FAIRBANKS ◆ ANCHORAGE

KOTZEBUE TO CAPE BLOSSOM ROAD PROJECT

2012 ENVIRONMENTAL STUDY

FINAL REPORT

Prepared for:

Alaska Department of Transportation and Public Facilities, Northern Region

Under contract to:

Michael Baker Jr., Inc.
1400 West Benson Boulevard, Suite 200
Anchorage, AK 99503

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September 2013

Printed on recycled paper.

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ACKNOWLEDGMENTS

The work described here was conducted for the Alaska Department of Transportation and Public Facilities (DOT&PF; Ryan Anderson, Project Manager), under subcontract to Michael Baker Jr. (Derek Christianson Project Manager).

Janet Kidd served as ABR's technical manager for the subcontract and edited this report; Tom DeLong was ABR's contract manager. The loon and raptor surveys were conducted by Ann Wildman of ABR. Victor Jones and Sam Barr served as subsistence advisors from Kotzebue during the surveys (hired by DOT&PF). Corey Konik of Bering Air piloted the survey helicopter for loons and raptors. The wetland field survey was completed by Susan Ives and Erin Johnson of ABR. The fisheries field work was completed by Joel Gottschalk, Nick Haxton, Liz Miner, and Laura Gutierrez of ABR. Russel Row of Bering Air piloted the helicopter used for site access for the fisheries and wetlands surveys. Office support for report preparation was provided by ABR employees Dorte Dissing, Pam Odom, Nathan Jones, and Kim Allen.

INTRODUCTION

The Northern Region State of Alaska Department of Transportation & Public Facilities (DOT&PF) is evaluating potential development of an all season road from Kotzebue to Cape Blossom, on the Baldwin Peninsula, in the Northwest Arctic Borough, Alaska. The Kotzebue to Cape Blossom Road would connect the community of Kotzebue to Cape Blossom via an approximately 12 mile road. DOT&PF originally considered 4 build alternatives, 3 of which have been dismissed due to higher costs, larger footprints, environmental concerns and land ownership issues. The alternative currently being carried forward is the Upgrade Route and is the focus for further detailed environmental studies. The Upgrade Route would involve reconstructing Air Force Road south of the Hillside Road intersection, ending adjacent to the Kotzebue Electric Association. A new road would be constructed to the terminus at a beach access ramp near Cape Blossom. The Upgrade Route will cross Sadie Creek. When developing the study area for the environmental surveys, a new road from New Hillside Road was also being considered as a separate option. This option is part of the study area but has since been dismissed from consideration.

To satisfy permitting requirements associated with the study area, ABR, Inc.—Environmental Research & Services (ABR) performed several environmental surveys within the study area during the summer of 2012. The environmental surveys investigated the current condition of wetlands, fisheries, and avian resources within the study area. A wetlands assessment, wetland functional assessment, and wildlife habitat assessment were completed in support of the U.S. Army Corps of Engineers (USACE) Section 404 wetland permit application process. A survey of the study area was completed to assess resident and anadromous fish assemblages relative to available habitat in Sadie Creek. Studies of avian resources included an aerial survey for Yellow-billed Loons and cliff-nesting raptors. All environmental studies will be used to support an Environmental Assessment that is being prepared by DOT&PF as part of the National Environmental Policy Act (NEPA) process.

WETLANDS MAPPING AND FUNCTIONAL ASSESSMENT AND WILDLIFE HABITAT MAPPING

To satisfy permitting requirements associated with the Cape Blossom Road project, ABR performed a wetlands assessment, wetland functional assessment, and wildlife habitat assessment in support of the USACE Section 404 wetland permit application process. The wetlands study area is nearly 3,400 acres in size (Figure 1), comprising a 300 foot buffer around the existing windfarm access road from the intersection at New Hillside Road, and a 1,000 foot buffer around the remaining proposed alignment as described above (INTRODUCTION) (centered on –162.492° 66.810° WGS 1984). The legal land description for the study area is Kateel River Meridian:

- Township 17N, Range 18W, Sections14, 21, 23–28, 35, and 36;
- Township 17N, Range 17W, Sections 31 and 32;
- Township 16N, Range 18W, Sections 1–3 and 11–13;
- Township 16N, Range 17W, Sections 18, 19, 30, and 31; and
- Township 15N, Range 17W, Section 6.

METHODS

FIELD SURVEY

Routine wetland determinations were performed following the USACE 3-parameter approach (Environmental Laboratory 1987, USACE 2007) at each wetland determination plot. High resolution digital orthoimagery (DigitalGlobe 1.64-ft pixel resolution, acquired 2 and 4 August 2010) provided by Michael Baker and Associates was examined prior to field work and preliminary sample plots were selected to cover the range of visible photo signatures within the study area. To be classified as a wetland, a site must be dominated by hydrophytic plants, have hydric soils, and show evidence of a wetland hydrologic regime. A mobile Trimble® Nomad™ series GPS unit recorded the wetlands data (using the WetForm database) and GPS location, and provided field access to aerial imagery. WetForm is a proprietary relational database used to enter wetlands site data in the field, and facilitates the preparation of electronic copies of the USACE (2007) Regional Supplement dataform for each wetland determination plot.

Wetland determination plots consisted of a 10-m radius of homogenous vegetation, as specified by the 1987 Manual, although size and dimensions were modified as necessary to accurately characterize the plant community (e.g., a narrow plot to capture a riparian system). The absolute cover of each vascular plant species within the plot was visually estimated and the presence of hydrophytic vegetation was determined using the Dominance Test (i.e., the ratio of hydrophytic to upland plants) and/or the Prevalence Index (the weighted average of all species present), using the wetland indicator status per the 2012 National Wetland Plant List: Alaska (Lichvar and Karsetz 2012).

Hydric soils form if conditions of saturation, flooding, or ponding occur long enough during the growing season to develop anaerobic conditions in the upper 12 inches of the soil. Hydric soils often have thick organic deposits (histosols, histels, or histic epipedons) or have a low-chroma mineral soil matrix color with redoximorphic features, indicating a reducing environment. Soil pits were excavated to approximately 18 inches or to the depth of the active layer, if shallower, and the soil profile was described. Key characteristics, including color (Munsell Soil Color Charts 2009) and abundance of redoximorphic features were recorded. Soil profile descriptions also were compared with hydric soil criteria, as defined in the most current version of the Field Indicators of Hydric Soils in the United States (USDA NRCS 2010).

Wetland hydrology is defined as the presence of flooded or ponded surface water or saturation within the upper 12 inches of the soil profile, for at least 14 consecutive days during the growing season at a minimum frequency of 5 years out of 10. Surface and subsurface direct and indirect indicators of wetland hydrology were recorded at each site, including surface water, saturated soils, presence of and depth to water table, drift or sediment deposits, drainage patterns, and geomorphic position, as summarized in the standard USACE wetland determination dataform (USACE 2007).

Photos of soils and vegetation were taken at each plot. Additional information collected at each wetland determination plot included physiography, surface form, Viereck et al. (1992) Level

IV vegetation class, and observations of wildlife use (e.g., dens, browse, or scat) or human activity (e.g., fish racks or ATV trails).

In some cases, rapid verification plots also were sampled to help map wetlands, vegetation, and wildlife habitats. On field verification plots, the dominant plant species, Cowardin et al. (1979) code, and Viereck et al. (1992) Level IV vegetation class were recorded, in addition to site photographs and GPS location. Verification plots were typically sampled in areas where the wetland or upland status was well documented in the data from formal wetland determination plots. The data from verification plots was used to improve map accuracy by increasing the number of documented wetland ecotypes tagged to particular aerial photosignatures.

The National Weather Service records meteorological data at the Kotzebue Airport (Station 505076, WRCC 2012), with limited data available from 1949 to present. August 2012 mean air temperature (51.3° F) was slightly cooler than the long-term mean for August (1949–2012, 51.8° F) and NCDC normal mean for August (1981–2010, 51.7° F). August 2012 total precipitation (4.36 inches) was nearly double the long-term mean (2.14 inches) and NCDC normal mean (2.18 inches).

WETLANDS MAPPING AND CLASSIFICATION

Wetland boundaries were mapped on-screen using heads-up digitizing in ArcGIS software, the predominant approach employed by the U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) program (Dahl et al. 2009). Wetlands and waters were mapped at a scale of 1:1,500. Wetlands and waters were categorized per Cowardin et al. (1979) using NWI annotation, which describes the dominant vegetation and water regime. Digital NWI data (USFWS 2012) and a preliminary wetland assessment (ADOT&PF 2011) were reviewed prior to field efforts.

In addition to assigning Cowardin codes, each wetland polygon was assigned a physiography and Viereck et al. (1992) Level IV vegetation class. Physiography codes represent generalized geomorphologic features used to describe landscape position. The Viereck et al. (1992) Level IV vegetation classification uses plant species composition and community structure to classify common plant communities in Alaska. We combined the 3 mapped categories (physiography, Cowardin code, and Viereck class) to produce a set of unique land-cover types and then aggregated these distinct landcover types into broader ecologically related categories. For the purposes of this study, we aggregated the wetland types into Wetland Functional Types for descriptive and functional assessment purposes (as described in the Functional Assessment methodology, below).

Wetlands and waters within the study area were assessed to determine if they met the definition of navigable waters of the U.S., subject to jurisdiction under Section 10 of the Rivers and Harbors Act, and/or waters of the U.S., subject to jurisdiction under Section 404 of the Clean Water Act. Navigable waters of the U.S. are defined as “those waters subject to the ebb and flow of the tide shoreward to the mean high water mark and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity” (33 CFR 329). Waters of the U.S. are defined as navigable waters of the U.S.; tributaries to navigable waters of the U.S.; wetlands, lakes, and ponds adjacent to navigable waters or their tributaries; and other waters of the U.S. whose degradation or destruction could affect interstate or foreign commerce (40 CFR 230.3(s)).

FUNCTIONAL ASSESSMENT

A functional assessment was performed for each Wetland Functional Class using a rapid assessment procedure based on the Literature Review and Evaluation Rationale of the Wetland Evaluation Technique (Adamus et al. 1991), the Rapid Procedure for Assessing Wetland Functional Capacity (Magee 1998), and recommendations summarized in a recent Regulatory Guidance Letter (RGL 09-01) (USACE 2009). This guidance includes a dataform for objectively evaluating wetland functions and values, using hydrogeomorphic (HGM) principles. These criteria facilitate rapid assessment of the many landscape functions that are necessary for wetland ecosystem maintenance, including hydrology, water quality, wildlife and fisheries habitat, productivity, and supporting public needs, such as subsistence.

Hydrologic, water quality, ecologic, and sociologic functions performed by wetlands and waters in the study area were assessed through a combination of interpreting imagery, reviewing field data, and examining local topography. These sources were used to inform environmental conditions and characteristics for each Wetland Functional Class, including the size, landscape position, fish and wildlife use, plant community structure, and hydrologic regime, and used to rate each Wetland Functional Class as low, moderate, or high value, reflecting both the capability and opportunity for a given function to be performed.

Hydrologic functions assess the ability of a wetland to interact with surface and/or groundwater. Two general processes were evaluated:

- Flood flow regulation—detention of surface water (and to some degree groundwater) flow and consequential moderation of downstream flooding
- Erosion Control and Shoreline Stabilization—degree to which the wetland can reduce erosion

Water quality functions include the ability of a wetland to detain sediments, toxicants, and nutrients, and to export organic matter. Two general processes were evaluated:

- Sediment, nitrogen, and toxicant removal—retention of suspended sediment and associated toxicants and the detention and transformation of nitrogen and phosphorus from surface water entering the wetland
- Organic matter production and export—production of organic matter (primarily through plant growth) and contribution of organic matter to the food web

Ecological functions assess the relative ability of a wetland to support fish and wildlife populations and provide species and habitat diversity. Three general characteristics of each Wetland Functional Class were assessed:

- General habitat suitability—direct support of mammals and birds
- Fish habitat—direct support of fish
- Native plant richness—direct support of vascular plant species diversity
- Sociological functions assessed 2 broad categories:
- Subsistence/recreational/educational/scientific use—direct support of hunting and gathering activities, travel, and/or education, including scientific research

- Uniqueness and special status—supports federally listed species, high quality habitat, presence of rare features, and/or supports functions not commonly provided within the watershed

Based on the functional assessment outputs, wetlands and waters within the study area were categorized following the guidelines outlined in Appendix A of RGL 09-01:

Category I: High functioning wetlands—Uncommon wetlands that: 1) provide a documented life support function for threatened or endangered species; 2) represent a high quality example of a rare wetland type; 3) are rare within a given region; or 4) are undisturbed and contain ecological attributes that are impossible or difficult to replace within a generation, if at all.

Category II: High to moderate functioning wetlands—Wetlands that: 1) provide habitat for very sensitive or important wildlife or plants; 2) are difficult to replace (such as bogs); or 3) provide very high functions, particularly for wildlife habitat.

Category III: Moderate to low functioning wetlands—Wetlands that are important for a variety of wildlife species and can provide watershed protection functions depending on where they are located. Generally these wetlands will be smaller and/or less diverse in the landscape than Category II wetlands. These wetlands may have experienced some form of degradation, but to a lesser degree than Category IV wetlands.

Category IV: Degraded or low functioning wetlands—The smallest, most isolated, and least diverse wetlands that have likely been degraded by human activities.

HABITAT ASSESSMENT

Wildlife Habitat Types were derived by integrating information from Cowardin et al. (1979) codes, Viereck et al. (1992) Level IV vegetation classifications, and landscape characteristics (physiography). This process is similar to that used for classifying Wetland Functional Classes, except that upland vegetation types are included and the wildlife habitat classification aggregates vegetation and landscape data by characteristics considered important to wildlife, such as food availability, security (or escape), and shelter. These factors may be directly related to vegetation structure, forage quality or quantity, soils, hydrology, microtopography, and/or microclimate.

Incidental observations of wildlife were recorded during the wetland field survey in August. We conducted a literature review to identify the wildlife species likely to occur in the area, to summarize available information about wildlife-habitat relationships in the region, and to identify the wildlife habitats that may be important for each species. The importance of a habitat to a species may be a function of the seasonal availability of food or cover, the physical structure of vegetation, landscape physiography, or the spatial and temporal arrangement of habitat (Adamus et al. 1991). Habitats may be seasonally important for foraging, nesting, denning, or calving; predator protection or escape terrain; or for other important behavioral or life-history functions. The habitat assessment identified the Wildlife Habitat Types important for each species present.

RESULTS

WETLANDS MAPPING AND CLASSIFICATION

One team of 2 scientists collected wetlands, vegetation, and wildlife habitat field data 24–27 August 2012. Standard USACE field determinations were completed at 68 sites and verifications (rapid assessment technique to confirm previously documented conditions) were completed at 13 sites (Appendices A and B).

We identified 26 Cowardin classes in the study area: 7 non-navigable waters, 18 vegetated wetlands, and 2 uplands (Figure 2.1—2.12, Table 1). The northern portion of the study area is dominated by gently rolling water-shedding physiography supporting saturated wetlands. The relatively permanent waters (RPWs) Sadie Creek and June Creek and their tributaries flow through this area. The southern portion of the study area comprises numerous low-lying, drained lake basins, and hence wetland hydrology ranges from saturated to permanently flooded wetlands.

Results of field-based wetlands mapping and classification are in agreement with the preliminary wetland assessment included as an attachment to the Kotzebue to Cape Blossom Road Reconnaissance Study (ADOT&PF 2011), which identified small upland areas along the coastal margins of the peninsula in the current study area.

August 2012 had higher than normal precipitation and many waters were at flood stage during the field effort. The understory vegetation in riparian communities is likely underestimated due to the volume of water. All wetlands but 2 saturated deciduous shrub sites showed direct indicators of wetland hydrology (A1: Surface Water, A2: High Water Table, and/or A3: Saturation).

Waters

Although no field measures of electrical conductivity were taken, Permanently Flooded Subtidal Estuarine Waters (E1UBH, 0.80 acres) were mapped based on their proximity to Kotzebue Sound and likely saline influence. These waters were mapped near Cape Blossom, where 1 estuarine feature intersected the study area 2 times. Over 60 Permanently Flooded Ponds (PUBH, 60.48 acres) and portions of 4 Permanently Flooded Lakes (L1UBH, 33.67 acres) were mapped within the study area. Most ponds were small features (averaging about 1 acre) scattered within the northern portion of the study. Lakes (≥20 acres) were evenly distributed throughout the study area.

The RPWs Sadie Creek, June Creek, and their tributaries (R2UBH and R2USA, 14.44 and 1.03 acres, respectively) are Lower Perennial Rivers generally flowing east to west through the study area.

Wetlands

Wetlands mapped within the study area include Permanently Flooded, Semi-Permanently Flooded, and Seasonally Flooded-Saturated Emergent wetlands; Seasonally Flooded-Saturated and Saturated Broadleaf and Needleleaf wetlands; and Seasonally Flooded-Saturated and Saturated Emergent and Shrub complex wetlands.

Permanently Flooded Aquatic Beds (PAB3H, 2.97 acres) and shallow water littoral areas (L2AB3H and L2UB3H, 1.35 and 1.05 acres, respectively) were mapped in association with lakes and ponds, in depressional features throughout the study area.

Emergent wetlands were most frequently mapped in wet drained lake basins in the southern portion of the study area. Permanently Flooded Persistent Emergent (PEM1H, 18.73 acres) and Semi-Permanently Flooded Persistent Emergent (PEM1F, 129.13 acres) wetlands were mapped in lacustrine fringes and wet sedge tundra, meeting hydrology indicator A1 (Surface Water) with 2–8 inches of standing water. Dominant vegetation in PEM1H and PEM1F wetlands included creeping sedge (*Carex chodorrhiza*), round sedge (*C. rotundata*), white cottongrass (*Eriophorum scheuchzeri*), tall cottongrass (*E. angustifolium*), and purple marshlocks (*Comarum palustre*). The aquatic plant common bladderwort (*Utricularia macrorhiza*) in these communities further confirmed the assertion that these wetlands are permanently to semi-permanently flooded. The dwarf shrubs Alaska bog willow (*Salix fuscescens*), dwarf birch (*Betula nana*), and leatherleaf (*Chamaedaphne calyculata*) were observed atop hummocks and vermiculations in PEM1F wetlands. Seasonally Flooded-Saturated Persistent Emergent (PEM1E, 131.63 acres) wetlands were frequently dominated by tall cottongrass, white cottongrass, creeping sedge, water sedge (*C. aquatilis*), round sedge, and arctic sweetgrass (*Anthoxanthum arcticum*). Vermiculations and hummocks often provided microtopographic relief, with bog rosemary (*Andromeda polifolia*), Alaska bog willow, dwarf birch, and bog blueberry (*Vaccinium uliginosum*) common species on high points. PEM1E wetlands frequently had organic soils, meeting hydric soil indicator A1 (Histosol or Histel) or A2 (*Histic epipedon*) with a shallow active layer. Primary indicators of wetland hydrology were observed at all PEM1E wetlands, either A1 (Surface Water), or A2 (High Water Table) and A3 (Saturation). Saturated Persistent Emergent (PEM1B, 0.69 acres) wetlands were mapped in one area, along a drying lake margin invaded by bluejoint (*Calamagrostis canadensis*).

Seasonally Flooded-Saturated Broadleaf Deciduous Shrub (PSS1E, 36.75 acres) and Seasonally Flooded Broadleaf Deciduous Shrub (PSS1C, 0.05 acres) wetlands were willow (*Salix* spp.) dominated communities in swales and riparian areas, whose landscape positions indicated a high likelihood of seasonal flooding. Saturated Broadleaf Deciduous Shrub (PSS1B, 554.02 acres) wetlands were predominantly willow thickets dominated by tealeaf willow (*Salix pulchra*) and Richardson’s willow (*S. richardsonii*), located in riparian corridors, on moderate to steep slopes, or at previously disturbed sites. Some PSS1B wetlands were low birch–ericaceous communities dominated by dwarf birch and lingonberry (*Vaccinium vitis-idaea*), and others were alder thickets dominated by mountain alder (*Alnus viridis* ssp. *crispa*). Soils generally lacked thick organic deposits, and frequently met hydric soil indicators A13 (Alaska Gleyed) or A14 (Alaska Redox). Wetland hydrology indicator A3 (Saturation) was observed in nearly all PSS1B wetlands.

Saturated Needleleaf Evergreen Shrub (PSS4B, 7.16 acres) wetlands were black crowberry (*Empetrum nigrum*) dominated wetlands in riparian areas adjacent to Sadie Creek. Three Cowardin codes encompassed the range of low open shrub communities mapped within the study area: Saturated Broadleaf Evergreen Shrub (PSS3B, 20.55 acres), Saturated Broadleaf Evergreen / Broadleaf Deciduous Shrub (PSS3/1B, 205.26 acres), and Saturated Broadleaf Deciduous / Broadleaf Evergreen Shrub (PSS1/3B, 38.35 acres). The variation in Cowardin classifications is due to the variation in site-specific dominants, which typically dominated by the broadleaf deciduous shrubs dwarf birch and bog blueberry, and the broadleaf evergreen shrubs lingonberry and marsh Labrador tea (*Ledum decumbens*). Typical dominant herbaceous plants included water sedge, Bigelow’s sedge (*C. bigelowii*), tussock cottongrass (*Eriophorum vaginatum*), and cloudberry (*Rubus chamaemorus*). Low open shrub wetlands were most frequently mapped in the northern portion of the study area, along gentle slopes. Organic soils met hydric soil indicator A2 (Histic Epipedon) with a shallow active layer, and wetland hydrology indicators A2 (High Water Table) and A3 (Saturation) were observed in these communities.

Seasonally Flooded–Saturated Persistent Emergent/Broadleaf Deciduous Shrub (PEM1/SS1E, 625.95 acres) and Semi-Permanently Flooded Persistent Emergent/Broadleaf Deciduous Shrub (PEM1/SS1F, 195.92 acres) wetlands were most frequently mapped in wet drained lake basins in the southern portion of the study area. PEM1/SS1E and PEM1/SS1F wetlands comprised low-center polygon communities or wet sedge tundra with hummocks, both with subtle micro-topographic differences. Typical dominant herbaceous species included water sedge, creeping sedge, round sedge, white cottongrass, and tussock cottongrass. Typical dominant shrub species included dwarf birch, lingonberry, and bog blueberry. Wetland hydrology indicator A1 (Surface Water) was observed in low areas, and A2 (High Water Table) and A3 (Saturation) were observed in high areas. Organic soils met hydric soil indicator A2 (Histic Epipedon), often over a shallow active layer.

Saturated Shrub/Persistent Emergent complexes were the most commonly mapped wetlands in the study area. Saturated Persistent Emergent/Broadleaf Deciduous Shrub (PEM1/SS1B, 59.59 acres), Saturated Persistent Emergent/Broadleaf Evergreen Shrub (PEM1/SS3B, 67.95 acres), and

Saturated Broadleaf Deciduous Shrub/Persistent Emergent (PSS1/EM1B, 339.18 acres) wetlands were primarily low shrub tussock tundra on either non-patterned or high-center low-relief polygons. Saturated Broadleaf Evergreen Shrub/Persistent Emergent (PSS3/EM1B, 779.96 acres) wetlands were a mix of low shrub tussock tundra and mixed sedge-shrub tundra, and occurred on a variety of surface forms: non-patterned, high-center low-relief polygons, high-center high-relief polygons, mixed high- and low-center polygons, and hummocks. Typical shrub dominant species in saturated shrub/emergent wetland complexes included bog blueberry, lingonberry, dwarf birch, and black crowberry. Typical dominant herbaceous species in saturated shrub/emergent wetland complexes included tussock cottongrass, white cottongrass, Bigelow's sedge, and water sedge. Saturated Shrub/Persistent Emergent complexes typically had organic soils meeting hydric soil indicator A2 (Histic Epipedon) over a shallow active layer. Wetland hydrology indicator A1 (Surface Water) was generally present in polygonal troughs and microtopographic low points, while the majority of each of these wetlands met wetland hydrology indicator A2 (Saturation) and A3 (High Water Table).

Uplands

Both naturally occurring uplands (U, 5.19 acres) and fill or urbanized upland areas (Us, 15.66 acres) were mapped within the study area. Fill or urbanized areas (Us) comprise existing roads, the former White Alice site, and landfill within the study area, and are not included in the functional assessment or wildlife habitat discussions. Naturally occurring uplands (U) were predominantly non-wetland willow shrub communities located on steep slopes and bluffs.

Proposed Jurisdictional Status

Kotzebue Sound, surrounding the Baldwin Peninsula and entirely outside of the study area, is a navigable water of the U.S. Examination of aerial photography indicates that Permanently Flooded Subtidal Estuarine Waters (E1UBH) mapped within the study area are impounded by an active beach ridge. The mean tidal fluctuation measured at Kotzebue is 0.57 feet from mean low tide to mean high tide (NOAA 2012), thus it is unlikely that the estuary has a surface connection to Kotzebue Sound on a daily basis and salt water inputs in the lagoon area are presumably caused by seasonal storm surge events. Thus, the E1UBH within the study area is believed to be a non-navigable water of the U.S. No waters on the Baldwin Peninsula are included in the Alaska Department of Natural Resource's Navigable Waters Mapper (ADNR 2012). Sadie Creek does, however, drain directly into Kotzebue Sound and June Creek drains into a lagoon that connects to Kotzebue Sound. As both are tributaries to a navigable water, they are believed to be non-navigable waters of the U.S.

All other wetlands and waters within the study area are either tributaries to RPWs connecting to Kotzebue Sound, or directly abut tributaries through surface and/or subsurface connections. Surface connections were often readily apparent through topographic review, while subsurface connections were due to extended areas of saturated soils, connecting wetlands to remote waters. The vast majority of soil pits encountered frozen soil within 24 inches of the surface (Appendix A). This continuous shallow active layer provides a near-surface confining layer that perches water and extends adjacent saturated soils away from the water source for miles.

FUNCTIONAL ASSESSMENT

Wetlands were aggregated into 12 distinct Wetland Functional Classes (Table 2), incorporating Cowardin classification, physiography, and Viereck et al. (1992) Level IV vegetation class. A functional assessment was performed for each Wetland Functional Class (Table 3, Appendix C), evaluating the hydrologic, water quality, ecologic, and sociologic functions of each. This functional assessment was used to classify Wetland Functional Classes into Categories II–III (Table 3) for use in permitting and compensatory mitigation negotiations. Functional assessment results are generally in agreement with preliminary wetlands assessment included as an attachment to the Kotzebue to Cape Blossom Road Reconnaissance Study (ADOT&PF 2011), which identified estuarine areas as high value wetlands. No wetlands within the study area have been granted a special managerial or conservation status, and no wetlands in the study area have been documented to have rare or scarce biologic, geologic, or functional features.

No terrestrial critical habitat is present within the study area. Marine and estuarine waters surrounding the Baldwin Peninsula are designated critical feeding habitat for polar bears (*Ursus maritimus*), from mean high tide line to 300 m depth. As discussed above, no tidal survey data are available for the study area. Based on aerial photo review, we do not believe that the estuarine feature mapped within the study area is below mean high tide, and thus was not intended to be included in the designated polar bear sea-ice critical habitat. Based on this assertion, the area of Coastal Beach and Waters (0.80 acres) at the southern end of the study area was rated low for Uniqueness and Special Status and designated a Category II wetland. If, however, it was the intent of the U.S. Fish and Wildlife Service to include this estuarine feature in critical sea-ice habitat for polar bears, Coastal Beach and Waters should be rated moderate for Uniqueness and Special Status and elevated to Category I, due to the presence of critical habitat.

Yellow-billed Loons (*Gavia adamsii*), a candidate species for listing as threatened or endangered under the Endangered Species Act (ESA), were observed on a lake in the southern part of the Baldwin Peninsula during U.S. Fish & Wildlife Service (USFWS) breeding pair surveys in the mid-1990s (Earnst 2004) and are known to nest on lakes on the Seward Peninsula and in the Cape Krusenstern area (Bollinger et al. 2008). Field surveys were conducted for Yellow-billed Loons on the Baldwin Peninsula in 2012 and no birds were found. High value loon habitat, including Permanently Flooded Lake or Pond, Littoral Aquatic Bed and Lacustrine Fringe, and Permanently Flooded Sedge Marsh has high potential habitat suitability for loons but since none were observed specifically within the study area these classes remained at a Category II level.

With the exception of Seasonally Flooded Saturated Low and Tall Deciduous Shrub, the permanently to seasonally flooded Wetland Functional Classes were designated as Category II wetlands, due to their overall moderate to high levels of functional performance. Their proximity and connections to open water, in combination with vegetation structure, generally provide a higher level of functioning for Erosion Control and Shoreline Stabilization, Organic Matter Production and Export, and Fish Habitat. Their general position in depressional features with constricted to no outlets allow a higher level of performance for Flood Flow Regulation and Sediment, Nutrient, and Toxicant Removal.

The remaining Wetland Functional Classes scored lower for hydrologic and water quality functions due to lack of storage capacity or long water retention times. Many of these Wetland Functional Classes were not likely to perform Organic Matter Production & Export due to infrequent flooding. Several types did, however, score high for Educational, Scientific, Recreational, & Subsistence Use based on conversations field staff had with their cultural advisor.

The Lower Perennial River, by its very nature, cannot perform flood flow regulation, erosion control, or shoreline stabilization, nor can it contribute to native plant richness. The lack of numerous velocity breaks (e.g., beaded streams) indicated that sediment, nutrient, and toxicant removal would only be performed at a low level.

HABITAT ASSESSMENT

Threatened, Endangered, and Candidate Wildlife Species

The marine habitat within and immediately adjacent to the study area is designated as critical habitat for the polar bear, which is listed as threatened under the ESA. The critical habitat surrounding the Baldwin Peninsula is part of the designated sea ice habitat, which includes all marine waters from mean high tide to 300 m in depth. As discussed above, no tidal survey data are available for the study area and we do not believe the U.S. Fish and Wildlife Service intended to include this small estuarine feature in sea-ice critical habitat. Although the terrestrial habitat of the Baldwin Peninsula is not designated as critical habitat for the polar bear, bears may occasionally be present in the study area during the winter and early spring.

The Yellow-billed Loon is a candidate species for listing under the ESA. Although Yellow-billed Loons were not detected during 2012 aerial surveys (see YELLOW-BILLED LOON AND RAPTOR SURVEYS), this species may occur in the study area. One adult was observed on a lake in the southern part of the Baldwin Peninsula (outside of the 2012 survey area) during USFWS breeding pair surveys in the mid-1990s (Earnst 2004). Nesting Yellow-billed Loons have been recorded on the Seward Peninsula and in the Cape Krusenstern area near the study area (Bollinger et al. 2008). Yellow-billed Loons nest and raise their young exclusively on lakes in coastal and inland low-lying tundra. Nest sites are often located on the shore or on islands of large (>5 ha), deep (>2 m), permanent lakes with fish (Earnst 2004). Suitable nesting habitat is present in the study area where Littoral Aquatic Bed and Lacustrine Fringe, Sedge Marsh, Wet Sedge-Shrub Meadow, Moist Dwarf Shrub Tundra, and Moist Sedge-Shrub Meadow occur along lake shorelines. Suitable island nesting habitat occurs in Freshwater Lake or Pond. Yellow-billed Loons have been recorded nesting in these habitats on the Colville River delta and the NPRA (Johnson et. al 2012). The occurrence of Yellow-billed Loons in large lakes in the study area is likely to be determined by the availability in those lakes of fish populations adequate to support adults and young.

Wildlife Habitat Assessment

The study area provides valuable wildlife habitat for numerous species of birds and mammals. Both aquatic and terrestrial habitats in the study area are important to many birds, especially waterfowl and shorebirds, for breeding and foraging. Twelve Wildlife Habitat Types were identified in the study area, each with important wildlife habitat associations (Figure 3.1—3.12). Habitat associations were developed for a list of common species (41 birds and 8 mammals) found in the region including polar bears and Yellow-billed Loons (Table 4). Moist and Wet Sedge–Shrub Meadow were the 2 most common habitats in the study area (1,355.10 acres and 1,052.88 acres, respectively). Both habitats, along with Moist Dwarf Shrub Tundra (45.7 acres) have similar species assemblages. At least 30 species of birds and 6 species of mammals listed in Table 4 are expected to be found in these habitats. These tundra habitats are important for foraging; nesting, denning, or calving; predator protection or escape terrain; or for other important behavioral or life-history functions. Herbivores and insectivores such as shorebirds, waterbirds, moose, and caribou are common in these habitats, which combined occupy 73% of the study area.

Shrub habitats (Low and Tall Willow Scrub, Low Birch–Ericaceous Scrub, and Tall Alder Scrub) occupy 22% of the study area, a combined 748.53 acres. Seven of the 8 mammal species listed in Table 4 are expected to use these habitats, and at least 11 of the bird species. Willow, birch, and alder shrub habitats provide important browse for herbivorous mammals, such as caribou and moose, and cover for small mammals, such as hares and foxes. Eight of the 11 species of birds that use shrub habitats are passerines, for which shrub habitats provide the resources needed for nesting, foraging, roosting, and protective cover.

Freshwater habitats comprise nearly 110 acres of the study area: 94.14 acres of Freshwater Lake or Pond and 15.47 acres of Rivers and Streams. These waterbodies provide valuable foraging habitat for waterfowl and loons, and moose and river otters. Littoral Aquatic Bed and Lacustrine Fringe is closely associated with Freshwater Lakes and Ponds in the study area, and is a relatively uncommon (15.29 acres) but disproportionately important habitat. Numerous avian species use Littoral Aquatic Bed and Lacustrine Fringe, primarily for nesting, foraging, and roosting. Coastal Beach and Waters (0.80 acres) occur at the southern end of the study area within a lagoon. This inland estuary is important to wildlife, providing suitable foraging habitat for a number of waterbird species.

Gravel Fill (15.66 acres) consists of existing gravel road right-of-ways and provides little functional habitat to wildlife species. Semipalmated Plovers prefer gravel areas for nesting. Common Ravens and gulls may use this habitat as a vantage point for hunting and red foxes may use it as a travel thoroughfare. Polar bears may cross through this area during snow cover. However, the occurrence of wildlife on roads and gravel surfaces is incidental and rare.

FISHERIES

DOT&PF has provided several corridor alternatives to connect Kotzebue to Cape Blossom. Some of the proposed road corridor alternatives cross streams. The evaluation and sustainability of Essential Fish Habitat (EFH) is mandated by the Federal management plan for Pacific salmon species, as prescribed by the National Marine Fisheries Service (NMFS). Furthermore, Alaska Title 16 Fish Passage regulations stipulate maintenance of resident fish passage routes.

The most significant stream in the study area is Sadie Creek and its network of smaller tributaries would be traversed by this proposed road project. Information regarding fish assemblages and habitat in this drainage is limited to word of mouth, and no fish surveys have previously been conducted. Additionally, the Alaska Department of Fish and Game (ADFG) *Atlas to the Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes* (ADFG 2012) has not identified any anadromous fish streams in the study area. Thus, an assessment of fish assemblages in Sadie Creek and its smaller tributaries was recommended to gather information regarding passage needs for migrating resident and/or anadromous fish populations. The purpose of this survey was to assess resident and anadromous fish assemblages in streams near the alternative road corridors. Information collected in this survey will inform decisions regarding the need for and potential design of crossing structures within the study area.

METHODS

SITE SELECTION

ABR biologists selected fish sampling sites on Sadie Creek and its tributaries with the guidance of Bill Morris, regional supervisor of Division of Habitat at ADFG, and the DOT&PF report “Kotzebue to Cape Blossom Road Reconnaissance Study, State Project No. 76884, February 2011” (ADOT&PF 2011) The location of sites MS1 (main stem Sadie Creek), NF1 (north fork Sadie Creek), and SF1 (south fork Sadie Creek) were selected to be near stream crossings. Site MS1 is located directly downstream from a potential stream crossing identified as crossing #1 (Figure 4; Appendix D, Plate 1). Sites NF1 and SF1 were chosen to collect information regarding fish presence near 2 other potential stream crossings identified as crossing #2a and #2b (Figure 4;

Appendix D, Plate 2). Site NF2 was chosen to directly overlap with potential stream crossing #2a (Appendix D, Plate 3). Three fish sampling sites upstream of the main forks of Sadie Creek were chosen to investigate fish presence in headwater tributaries in the study area (TR1, TR2 and TR3) (Figure 4). The type of fishing gear used and exact gear placement was chosen based on-site assessments of water levels and flow.

SITE VISITS

Sampling was conducted near potential stream crossing in July and August 2012. In August, some of the July sampling sites were resampled and additional sites were added. All sites were accessed by R-44 helicopters operated by Pollux Aviation in July and by Bering Air in August.

WATER CHEMISTRY AND DISCHARGE

In-situ water chemistry (temperature [˚C], pH, specific conductance [µS/cm^{-1}], and dissolved oxygen [%]) were measured at 8 sites in Sadie Creek with a YSI Professional Plus Multiparameter Meter during 26–28 July and 11–13 August 2012.

Discharge was measured at 3 sites, 1 on each of the main forks (site NF3 and SF2 on 11 August), as well as on 1 of the tributaries (TR2 on 13 August). Water velocities and depths were measured at 10 points along the wetted width cross section using a Marsh McBirney 2000 Flo-Mate. Overall discharge was then calculated from the cross sectional velocities and depth data (Appendix E).

FISH SAMPLING

Sadie Creek and its tributaries were surveyed for fish using 3 different gear types: minnow traps, seine nets, and fyke nets (Table 5). Minnow traps were baited with sterilized salmon roe and deployed from the stream bank where they were attached by a length of rope. Each trap was set out for a minimum of 3 hours and a maximum of 6 hours.

Seine net hauls were conducted by pulling a 10 foot long, 5 foot high, 0.25-inch mesh seine with a lead line bottom and surface float line in a half-circle 1–3 times nearshore at a subset of sites. One individual extended the net from shore into the water while the other end was held in place. After extending the net, the individual in the water then walked the net into deeper water and arced back toward shore. The net was then pulled onto shore with care taken to keep the lead line on the bottom of the stream and in front of or even with the cork line.

Fyke nets had 1.2 m^2 frame openings and 0.25-inch mesh with 25 foot wings. Because water levels during the July sampling event were high, the nets could not be set across the entire stream. Instead, the nets were set along the stream margins and thus did not fish the entire stream width. Fyke net wings were set from 1 side of the frame opening to the vegetated stream margin on 1 bank and then from the other side of the frame out to the deepest section of wadeable stream. Two fyke nets were set per site on opposite banks, 1 facing upstream, and 1 facing downstream (Appendix D, Plate 4). During the August sampling event, water levels had dropped sufficiently to allow for 2 fyke nets to be set across the full width of the stream at each site sampled (Appendix D, Plate 5).

Fish captured were removed, anesthetized using clove oil, identified, enumerated, and measured for length. Fish were placed in a holding tub to recover from anesthesia before being returned live to the site of their trapping location. Fish caught in fyke nets were returned to the water opposite the opening of the net they were captured in. Voucher samples were preserved in formalin and returned to the laboratory for identification. All fishing effort was conducted under Alaska Department of Fish and Game Fish Resource Permit SF2012-259 and Amendment 1: Fish Resource Permit SF2012-259 (Appendix F).

RESULTS AND DISCUSSION

WATER CHEMISTRY AND DISCHARGE

Sadie Creek and its tributaries are low gradient, tundra-stained streams that flow slowly over mud and other organic substrates. The riparian vegetation along the majority of the sites was dominated by either grasses or mix of alder (*Alnus spp*) and willow (*Salix spp.*) (Appendix D, Plate 7). Most sample sites were located in stream reaches with deeply incised, near vertical channel walls with high depth to width ratios (Appendix D, Plate 6). The total discharge during August sampling was 0.1 m^3/s at NF3, 0.1 m^3/s at TR2, and 0.3 m^3/s at SF2 (Appendix E). Mean water temperatures in the Sadie Creek main fork and tributary sampling stations were 10.6–14.5 ˚C. Water temperatures were 10.6–12.1˚C in July and 14.0–16.5˚C in August (Table 6). The pH was 6.0–7.1, normal for tundra streams, which often have a low pH (Table 6) (Oswood et al. 1989). Specific conductance had high variability across sites and between sampling trips, ranging from 59.2 to 964.0 µS/cm^{-1} (Table 6). This high variation was likely due to changes in water levels between sampling events but could also be because most sites were not resampled between July and August events. Although MS1 was the only site at which water chemistry was measured during both July and August events, the variability in conductance between those events is illustrative of variability across the wider sampling area over the sampling season. Specific conductance across all sites had a range of 420.6–964 µS/cm^{-1} in July, and a much lower range of 59.2–255.7 µS/cm^{-1} in August (Table 6). The higher range in conductivity during July may have been due in part to intrusion of salt water into Sadie Creek, although we did not measure salinity directly. Additionally, the higher water levels and associated terrestrial runoff in Sadie Creek and its tributaries in July may have resulted in increased concentrations of dissolved solids and higher specific conductance, which is typical after flood events (Wetzel 2001). Site MS1, closest to the brackish water mouth of Sadie Creek, had the highest specific conductance during the August sampling, but the July values were nearly twice as high at this site (255.7 vs. 461.1 µS/cm^{-1}) (Table 6). Dissolved oxygen was 66.2–91.2% (Table 6).

FISH PRESENCE

To determine fish presence, ABR sampled 9 different sites within the Sadie Creek drainage during 2 sampling trips using fyke nets, seines, and minnows traps (Table 5, Figure 4). Fyke nets were fished for a total of 245.3 hours, minnow traps were fished for 42.8 hours, and 18 seine hauls were pulled. Fish species captured were ninespine stickleback (*Pungitius pungitius)*, threespine stickleback (*Gasterosteus aculeatus*), humpback whitefish (*Coregonus clupeaformis*), broad whitefish (*Coregonus nasus*), least cisco (*Coregonus sardinella*), northern pike (*Esox lucius),* and Alaska blackfish (*Dallia pectoralis*) (Table 7). This assemblage of species is typical for small coastal freshwater streams (see Appendix G) (Morrow 1980).

A total of 44 juvenile whitefish were caught but not identified to species in the field. Misidentification of juvenile whitefish is a common problem (Brown et al. 2012). Four voucher samples were later identified by ABR senior biologists as 1 humpback whitefish and 3 broad whitefish. Analysis of digital photographs allowed for the positive identification of an additional 10 whitefish as either humpback or broad whitefish.

Adult chum salmon (*Oncorhynchus keta*) are known to occur in Kotzebue Sound (Menard and Kent 2011). Additionally, an ADFG study of near-shore marine fish in Kotzebue Sound documented juvenile chum salmon between Lockhart Point (a coastal point on the Baldwin Peninsula northwest of Kotzebue) and Sadie Creek (Raymond et al. 1984). However, no juvenile or adult Pacific salmon were captured in Sadie Creek. The physical characteristics of Sadie Creek and its tributaries (low gradient, slow flowing, and fine organic substrates) suggest that salmon runs are unlikely to occur now or in the future (Bjornn and Reiser 1991), although occasional strays may be present.

FISH ABUNDANCE BY SAMPLING EVENT AND SITE

Different types of fishing gear catch different fish and at distinct rates (Pope et al. 1975). We used multiple combinations of sampling gear by site and between sampling events in response to on-site assessments of current water levels and flow (Table 5). For instance, fyke nets were deployed at some sites and only minnow traps were deployed at other sites. At some sampling sites, multiple gear types were deployed. We are confident that a thorough cross section of the fish community was collected in the sampling area through the use of this variety of capture methods.

Ninespine stickleback (Appendix D, Plate 8) were the most common fish caught during July and August surveys (Table 7) and were collected at all sample sites except the most inland site (TR3) (Table 8). Ninespine sticklebacks ranged in length from 16 to 72 mm, with a median of 35 mm and a mean of 37 mm (n = 475) (Figure 5, Appendix H). Most ninespine stickleback were caught in minnow traps, with a mean catch per unit effort (CPUE) of 21.22 fish/hour. Because of this high capture rate, overnight sets of minnow traps were not employed, due to concerns regarding the potential for high fish mortality. CPUE of ninespine stickleback was higher in August than in July (Figure 6).

Threespine stickleback were captured on both July and August survey trips, but in low numbers (Table 7). All threespine sticklebacks were caught with fyke nets and at the farthest downstream sites: NF1, NF3, and SF1 (Table 8).

Northern pike were captured primarily in fyke nets and, with 38 fish total, they were the second most common fish caught (Table 7; Appendix D, Plate 13). Two northern pike were caught in a minnow trap and none were caught in the seine net. Fork length ranged from 90–461 mm, with a median of 145 mm and a mean of 219 mm (Figure 5, Appendix H). Northern pike CPUE was higher in August (0.2 fish/hour) than in July (0.1 fish/hour) (Figure 6). Two different size classes of northern pike were captured: 100–200 mm and 350–500 mm (Figure 7). Although northern pike growth rates can vary widely in different waterbodies, depending on such factors as prey size, intraspecific competition, and number of warm degree days (Jacobson 1992), the size disparity within the Sadie Creek system may represent the failure of a year class within the fishery.

Three species of whitefish: broad whitefish, humpback whitefish, and least cisco (Appendix D, Plates 10, 11, and 12, respectively) were captured in the north and south forks of Sadie Creek (Table 8) and only in fyke nets. In July, only adult humpback whitefish were caught (Table 7). In August, juvenile and adult humpback whitefish, juvenile broad whitefish, and adult least cisco were caught. These capture results suggest temporal differences in the use of sampled creeks by different species and age classes of whitefish, but the capture of multiple life history stages and species in August may also have been because fyke net sets completely crossed the stream during that sampling period, whereas high water levels in July had precluded this.

Only juvenile broad whitefish were captured during sampling surveys (and only in August), suggesting that adults may have been in lakes or in the nearshore environment during the earlier sampling event. Many whitefish populations in Arctic Alaska migrate along the coast and into brackish and freshwater during summer to rear, feed, and sometimes overwinter (Brown et al. 2012). Juvenile broad whitefish may use Sadie Creek as a rearing and feeding area during the late summer period. It is possible that a June sampling trip would have yielded more adult specimens of all whitefish, as this is a period when subsistence fishers harvest whitefish at the mouth of Sadie Creek (S. Barr, personal communication, 27 July 2012).

Alaska blackfish were caught primarily in minnow traps and at only 2 sites, NF3 and TR3, during August sampling (Table 8; Appendix D, Plate 14). Most blackfish were caught at TR3, which is the farthest inland site and exhibited near slack flow. Blackfish primarily live in waters with low flow and are tolerant of low dissolved oxygen levels. For a complete list of species and lengths by site, refer to Appendix H.

SUMMARY

Harvest rates were low for most fish species captured during 2012 surveys, but the species assemblage was typical of Arctic Coastal Plain tundra streams (Morrow 1980). High water events during July sampling likely affected capture rates due to the inability to completely sample the cross sectional width of Sadie Creek at several locations. Furthermore, it is likely that several fish species migrate in and out of the Sadie Creek and its tributaries during early summer (mid to late June) and in fall (late August to early September). Indeed, juvenile humpback and broad whitefish were captured during Sadie Creek surveys, which is to be expected in smaller coastal streams as they go in search of summer food resources (Chang-Kue and Jessop 1992). In the case of adult of adult humpback whitefish, we know that they are likely not spawning/overwintering in Sadie Creek as they prefer to spawn in waters with gravel bottoms, while Sadie Creek substrate is predominately mud/organic in nature (McPhail and Lindsey 1970, Morrow 1980, Brown 2004, Brown 2009).

Further evidence for seasonal use of Sadie Creek by anadromous fish (e.g., whitefish) comes in the form of local knowledge by area residents who fish the mouth of Sadie Creek in early summer as fish out- migrate from the system, presumably from lakes but possibly from deeper pools in Sadie Creek. Thus, additional early summer sampling may have uncovered larger numbers of out-migrating fish of various life history stages, particularly from the connected lake systems in the survey area. EFH is of little concern in Sadie Creek as no federally protected fish species (i.e., Pacific salmon) have been identified in the stream to date. Furthermore, the substrate in Sadie Creek is not appropriate for the spawning needs of salmon.

Winter abundance and distribution of fish in Sadie Creek may differ from summer. This system supports ninespine and threespine stickleback, at least three species of whitefish (broad whitefish, humpback whitefish, and least cisco), as well as northern pike and Alaska blackfish. No adult or juvenile salmon were captured in the system. Sadie Creek and its tributaries are relatively slow flowing, deeply incised streams with soft mud and organic bottoms. Though a complete bathymetric survey was not completed during fishing efforts, depths at fish sampling locations indicate that Sadie Creek does not necessarily freeze to the bottom throughout the course of its drainage in winter. ABR biologists were unable to cross Sadie Creek at any of the potential road crossings in July and August due to high waters. Larger pools of appropriate depth (i.e., >6 feet) in Sadie Creek could provide overwintering habitat for some fishes, particularly juvenile fishes (Moulton and George 2000). Further investigation of stream bathymetry and ice depths are needed to assess the availability of overwintering habitat in Sadie Creek and inform decisions regarding the need for and potential design of crossing structures within the study area.

YELLOW-BILLED LOON AND RAPTOR SURVEYS

The proposed Kotzebue to Cape Blossom Road alignment and alternatives are located within the breeding range of the Yellow-billed Loon, which is a candidate for listing under the Endangered Species Act (ESA) of 1973, as amended (74 FR 12932–12968). Yellow-billed Loons nest on large (>5 ha), deep (>2 m), permanent, fish-bearing lakes in coastal tundra of northern and western Alaska (Bollinger et al. 2007, USFWS 2009, Johnson et al. 2012). Numerous waterbodies adjacent to the proposed road alignment may provide suitable nesting and brood-rearing habitat for Yellow-billed Loons. During surveys in the mid-1990s, a Yellow-billed Loon was observed on a lake in the southern part of the Baldwin Peninsula outside of the study area (Earnst 2004). Although no nests have been recorded in the study area, Yellow-billed Loon nests have been reported elsewhere on the Baldwin Peninsula (Earnst 2004) and nearby in Cape Krusenstern National Monument (Schroeder 1996, Bollinger et al. 2007), Alaska Maritime National Wildlife Refuge (USFWS 1998), Selawik National Wildlife Refuge (Earnst 2004), and Bering Land Bridge National Preserve (Bollinger et al. 2007).

Suitable raptor nesting habitat in the vicinity of the proposed road alignment is limited to coastal bluffs and cliffs on the west and south coasts of the Baldwin Peninsula, including cliff faces near Cape Blossom. These features may provide potential nesting habitat for Peregrine Falcons (*Falco peregrinus*), Gyrfalcons (*Falco rusticolus*), Golden Eagles (*Aquila chrysaetos*), Rough-legged Hawks (*Buteo lagopus*), and Common Ravens (*Corvus corax*). Each of these species is protected under the Migratory Bird Treaty Act (16 U.S.C. 703–712) and the Golden Eagle is further protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668–668d). All of these species are known to nest in the region (Schroeder 1996) and can be sensitive to disturbance during the breeding season.

Field surveys were conducted to determine the distribution and abundance of Yellow-billed Loons and cliff-nesting raptors in the study area. The following section summarizes the results of the aerial surveys for Yellow-billed Loons and raptors in association with the proposed Kotzebue to Cape Blossom Road.

METHODS

LOONS

Aerial surveys for Yellow-billed Loons were conducted on 30 June 2012. Observations of Pacific Loons (*Gavia pacifica*) and Red-throated Loons (*Gavia stellata*) were recorded incidentally during surveys. One experienced observer and a pilot completed the survey in a Robinson 44 helicopter. The survey targeted lakes 5 ha and larger in size and adjacent smaller lakes and aquatic habitats that are typical breeding habitats for Yellow-billed Loons (Sjolander and Agren 1976, North and Ryan 1989). All potential breeding habitats within 3 miles of the proposed road alignment were surveyed. The aircraft was flown at about 75 m above ground level at a speed of 60 km/h. The perimeter of each survey lake was circled while the observer searched lake surfaces and shorelines for loons and nests (Figure 8). All locations of loons and their nests were recorded on color photomosaics (~1:35,000 scale) and later digitized in a GIS database.

RAPTORS

Aerial surveys for nesting raptors were completed concurrently with the loon surveys on 30 June 2012. The survey route followed the coast from north to south, starting at Kotzebue and ending at the southern end of the Baldwin Peninsula (Figure 8). If potential nesting habitat was encountered, multiple passes were taken of the cliffs to allow the observer the opportunity to thoroughly search cliff faces. Photographs of potential nesting habitat were taken.

RESULTS AND DISCUSSION

LOONS

No Yellow-billed Loons or nests were found within the study area during the aerial survey conducted on 30 June 2012. A total of 44 lakes were surveyed for Yellow-billed Loons, ranging in size from 5 to 101 ha. Many lakes within the study area are large enough to support nesting Yellow-billed Loons. Median lake size used by Yellow-billed Loons on the North Slope for both nesting and brood-rearing was 50 ha (range 6.4–508 ha; Wildman and Johnson 2008). Yellow-billed Loons have been recorded nesting on lakes <6 ha, but broods from those lakes were moved to adjacent larger lakes for rearing.

The timing of the loon survey appeared to be appropriate because Pacific Loons were found on nests and the survey occurred during the known nesting period for Yellow-billed Loons in this part of Alaska (Earnst 2004, Bollinger et al. 2007). Suitable breeding habitat for Yellow-billed Loons is unevenly distributed in northwestern Alaska and may be limited on the Baldwin Peninsula. Shoreline and island nesting habitat similar to that which is used for nesting on the North Slope is present around lakes in the Cape Blossom study area, but we do not know whether lakes in the study area support fish populations required by breeding Yellow-billed Loons. Yellow-billed Loons feed their young fish secured almost exclusively from the brood-rearing lake (North 1994).

Pacific and Red-throated loons and their nests were recorded opportunistically within the study area. Because not all water bodies were searched, the total number of Pacific and Red-throated loons observed may under-represent their actual abundance in the study area. Pacific Loons were recorded on 48% (21 of 44) of the lakes surveyed. A total of 48 Pacific Loons were recorded, including 18 pairs and 3 active nests (Figure 9). Pacific Loons are the most common loon breeding in northwest Alaska, where they nest on shores, islands, and emergent vegetation of shallow and deep lakes ranging in size from 1 to 300 ha (ABR, unpublished data). Two individual Red-throated Loons were observed on a single lake near the south end of the survey area (Figure 9). Red-throated Loons nest on smaller (<1 ha) and shallower ponds than other loons. In northwest Alaska, Red-throated Loons are considered fairly common in coastal breeding habitat (Schroeder 1996).

RAPTORS

Potential cliff-nesting raptor habitat in the study area is limited to a mud bluff, about 30 m in height and about 1.8 km in length, at Cape Blossom on the southwestern coast of the Baldwin Peninsula. No raptors or raptor nests were found at these bluffs, but whitewash was identified at 1 location that was probably a roosting perch. At the time of the survey, the bluff was actively eroding in some places, which would make those areas unsuitable for nesting. However, other areas of the bluff contained moderate-value nesting habitat for Peregrine Falcons and Rough-legged Hawks, and low value habitat for Gyrfalcons and Golden Eagles. The bluff at Cape Blossom is similar to mud bluffs on the North Slope, which were once thought to be low-quality habitat for nesting Peregrine Falcons, but in recent years appear to be used regularly for nesting (Ritchie et al. 2004, Ritchie and Nigro 2012).

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Table 1. Area (acres) of wetlands, waters, and non-wetlands in the proposed Kotzebue to Cape Blossom Road study area, Alaska, 2012.

Wetland Type Description	NWI Code[a]	Area (acres)	% of Study Area
NON-NAVIGABLE WATERS			
Permanently Flooded Subtidal Estuarine	E1UBH	0.80	0.02
Lower Perennial River	R2UBH	14.44	0.43
Lower Perennial Unconsolidated Shore	R2USA	1.03	0.03
Permanently Flooded Lakes	L1UBH	33.67	1.01
Permanently Flooded Ponds	PUBH	60.48	1.81
NON-NAVIGABLE WATERS TOTAL		110.42	3.3
JURISDICTIONAL WETLANDS			
Lacustrine Littoral Unconsolidated Bottom	L2UB3H	1.05	0.03
Lacustrine Permanently Flooded Aquatic Bed	L2AB3H	1.35	0.04
Palustrine Permanently Flooded Aquatic Bed	PAB3H	2.97	0.09
Permanently Flooded Persistent Emergent	PEM1H	18.73	0.56
Semi-Permanently Flooded Persistent Emergent	PEM1F	129.13	3.86
Seasonally Flooded-Saturated Persistent Emergent	PEM1E	131.63	3.93
Saturated Persistent Emergent	PEM1B	0.69	0.02
Semi-Permanently Flooded Persistent Emergent/Broadleaf Deciduous Shrub	PEM1/SS1F	195.92	5.85
Seasonally Flooded Saturated Persistent Emergent/Broadleaf Deciduous Shrub	PEM1/SS1E	625.95	18.70
Saturated Persistent Emergent / Broadleaf Deciduous Shrub	PEM1/SS1B	59.59	1.78
Saturated Persistent Emergent / Broadleaf Evergreen Shrub	PEM1/SS3B	67.95	2.03
Saturated Broadleaf Deciduous Shrub / Persistent Emergent	PSS1/EM1B	339.18	10.13
Saturated Broadleaf Evergreen Shrub / Persistent Emergent	PSS3/EM1B	779.96	23.30
Seasonally Flooded-Saturated Broadleaf Deciduous Shrub	PSS1E	36.75	1.10
Seasonally Flooded Broadleaf Deciduous Shrub	PSS1C	0.05	0.00
Saturated Broadleaf Deciduous Shrub	PSS1B	554.02	16.55
Saturated Broadleaf Deciduous / Broadleaf Evergreen Shrub	PSS1/3B	38.35	1.15
Saturated Broadleaf Evergreen / Broadleaf Deciduous Shrub	PSS3/1B	205.26	6.13
Saturated Broadleaf Evergreen Shrub	PSS3B	20.55	0.61
Saturated Needleleaf Evergreen Shrub	PSS4B	7.16	0.21
WETLANDS TOTAL		3,216.24	96.07
NON-WETLANDS			
Upland	U	5.19	0.16
Gravel Fill	Us	15.66	0.47
UPLANDS TOTAL		20.85	0.63
TOTAL	-	3,347.51	100.00

[a] Cowardin et al. 1979

Table 2. Wetland Functional Class descriptions for the proposed Kotzebue to Cape Blossom Road, Alaska.

Wetland Functional Class	Description	Area (acres)
Seasonal Tidal Estuary	Located near Cape Blossom, one estuarine feature that intersected the study area five times. Mapped as Cowardin wetland type E1UBH. These are unvegetated waters formed by freshwater drainage features impounded at the outlet to Kotzebue Sound by high beach ridges. There are no emergent flooded wetlands along the fringes of these estuarine waterbodies.	0.80
Permanently Flooded Lake or Pond	Occurs in depressional features throughout the study area. Mapped as Cowardin wetland types PUBH and L1UBH, these open water features consist of shallow to deep open water in a variety of sizes. Several of the larger lakes have well-developed lacustrine fringe wetlands.	94.14
Lower Perennial River	Sadie Creek, June Creek, and their tributaries generally flow east to west through the study area. Mapped as Coward wetland types R2UBH and R2USA. Lower Perennial Rivers include both flowing waters and unconsolidated shores, and are generally low gradient, low velocity systems connecting to Kotzebue Sound.	15.47
Littoral Aquatic Bed and Lacustrine Fringe	Describes a series of lacustrine fringe wetland types at the edge of Permanently Flooded Lakes or Ponds, including those dominated by plants growing on or below the water surface. Mapped as Cowardin wetland types L2UB3H, L2AB3H, PAB3H, PEM1H, PEM1F, and PEM1E. Communities are dominated by obligate wetland emergent plants such as *Carex aquatilis, C. rotundata, and Eriophorum scheuchzeri*; floating *Sphagnum* spp. mats; and/or *Potamageton* spp. Surface water is present throughout.	17.99
Permanently Flooded Sedge Marsh	Occurs in drainages and depressions throughout the study area, frequently occupying low areas in drained lake basins. Mapped as Cowardin wetland types PEM1F and PEM1H. Communities are dominated by wetland emergent plants such as *Comarum palustre*, *Carex aquatilis*, *Caltha palustris*, *Eriophorum angustifolium*, and *Eriophorum scheuchzeri*.	9.93

Table 2. Continued.

Wetland Functional Class	Description	Area (acres)
Semi-Permanently Flooded Sedge-Shrub Meadow	Occurs in wet portions of drained lake basins. Microtopography ranges from non-patterned to low-center low relief polygons where shrubby plant community components occupy the raised micro-sites. Mapped as Cowardin wetland types PEM1/SS1F, PEM1F, and PEM1H. Dominated by obligate wetland species *Carex chordorrhiza*, *C. rotundata*, and *Eriophorum scheuchzeri* with scattered aquatic plant *Utricularia macrorhiza*. Dwarf shrubs on microtopographic high points include *Betula nana*, *Vaccinium uliginosum*, and *Chamaedaphne calyculata*.	322.07
Seasonally Flooded Saturated Sedge-Shrub Meadow	Occurs in wet portions of drained lake basins or bordering drainageways and riverine corridors, intermediate between Semi-Permanently Flooded Sedge–Shrub Meadow and Saturated Emergent Sedge–Shrub Meadow. The microtopography is most commonly patterned ranging from peat mounds to high center-low relief polygons. Mapped as Cowardin wetland types PEM1E and PEM1/SS1E. Typically dominated by emergents *Carex aquatilis*, *C. chordorrhiza*, *C. rotundata*, *Eriophorum angustifolium*, and *E. scheuchzeri*. Dwarf shrubs on micro-topographic high points include *Vaccinium uliginosum*, *Betula nana*, and *Salix fuscescens*.	756.74
Seasonally Flooded Saturated Low and Tall Deciduous Shrub	Occurs in drainageways and depressions adjacent to streams and lakes. Mapped as Cowardin wetland types PSS1C and PSS1E. Dominated by *Salix pulchra* and *Salix richardsonii* low and tall shrubs.	36.8
Saturated Emergent Sedge-Shrub Meadow	Occurs in level to gently sloping areas throughout the study area, frequently with tussocks and/or polygonal features. Mapped as Cowardin wetland types PSS1B, PEM1B, PSS3/EM1B, PSS1/EM1B, PEM1/SS1B, PEM1/SS3B. Typical dominant species include *Eriophorum vaginatum*, *Carex bigelowii*, *Rubus chamaemorus*, *Vaccinium vitis-idaea*, and *Empetrum nigrum*.	1319.54

Table 2. Continued.

Wetland Functional Class	Description	Area (acres)
Saturated Dwarf Shrub Tundra	Occurs adjacent to riparian areas and collapse ponds, and in drier portions of drained lake basins. Mapped as Cowardin wetland types PSS1B, PSS4B, PSS1/3B. Typical dominant species include the dwarf shrubs *Arctostaphylos alpina*, *Betula nana*, *Empetrum nigrum*, *Salix fuscescens*, and the emergents *Eriophorum vaginatum* and *Carex aquatilis*.	45.70
Saturated Birch-Ericaceous Scrub Tundra	Occurs on level to sloping terrain, primarily in the northern portion of the study area in non-patterned areas. Mapped as Cowardin wetland types PSS1B, PSS3B, PSS3/1B. Typical dominant species include the low shrubs *Betula nana*, *Ledum decumbens*, *Vaccinium uliginosum*, and *V. vitis-idaea* with the emergents *Carex bigelowii*, *Eriophorum vaginatum*, and *Rubus chamaemorus*.	349.33
Saturated Low and Tall Deciduous Shrub	Occurs more frequently in the northern portion of the study area along level to steeply sloping areas, and adjacent to Permanently Flooded Lakes or Ponds. Mapped as Cowardin wetland type PSS1B. Commonly dominated by low or tall *Salix pulchra* and *S. richardsonii*, or *Alnus viridis* ssp. *crispa*.	358.14

Table 3. Relative functional rankings and categorization for Wetland Functional Classes identified along the proposed Kotzebue to Cape Blossom Road, Alaska, 2012.

Wetland Functional Class	Category	Flood Flow Regulation	Sediment/ Nutrient/ Toxicant Removal	Erosion Control and Shoreline Stabilization	Organic Matter Production and Export	General Habitat Suitability	Fish Habitat	Native Plant Richness	Education/ Science/Rec/ Subsistence Use
Seasonal Tidal Estuary	II	N/A	N/A	N/A	Low	Moderate	High	N/A	High
Permanently Flooded Lake or Pond	II	High	Moderate	N/A	Low	Moderate	High	N/A	High
Lower Perennial River	III	N/A	Low	N/A	Low	Moderate	High	N/A	Moderate
Littoral Aquatic Bed and Lacustrine Fringe	II	High	Moderate	High	Moderate	Moderate	High	Moderate	Moderate
Permanently Flooded Sedge Marsh	II	High	Moderate	High	Moderate	Moderate	Moderate	Moderate	Moderate
Semi-Permanently Flooded Sedge–Shrub Meadow	II	High	Moderate	N/A	High	High	N/A	Moderate	Moderate
Seasonally Flooded Saturated Sedge–Shrub Meadow	II	High	Moderate	High	High	High	N/A	Moderate	Moderate
Seasonally Flooded Saturated Low and Tall Deciduous Shrub	III	Moderate	Moderate	High	Moderate	Moderate	N/A	Low	Moderate
Saturated Emergent Sedge–Shrub Meadow	III	Low	Low	N/A	N/A	High	N/A	Moderate	High
Saturated Dwarf Shrub Tundra	III	Low	Low	N/A	N/A	High	N/A	Moderate	High
Saturated Birch-Ericaceous Scrub Tundra	III	Low	Low	N/A	N/A	High	N/A	Moderate	High
Saturated Low and Tall Deciduous Shrub	III	Low	Moderate	High	N/A	Moderate	N/A	Low	High

Table 4. Habitat assessment for common birds and mammals likely to occur in the proposed Kotzebue to Cape Blossom Road study area, Alaska, 2012 (× indicates a wildlife habitat considered important for a species).[a]

		Wildlife Habitat (acres)										
		Coastal Beach and Waters (0.80)	Rivers and Streams (15.47)	Freshwater Lake or Pond (94.14)	Littoral Aquatic Bed and Lacustrine Fringe (15.29)	Sedge Marsh (3.94)	Wet Sedge–Shrub Meadow (1052.88)	Moist Dwarf Shrub Tundra (45.70)	Moist Sedge–Shrub Meadow (1355.10)	Low and Tall Willow Scrub (395.92)	Low Birch–Ericaceous Scrub (349.33)	Tall Alder Scrub (3.28)	Gravel Fill (15.66)
BIRDS													
Greater White-fronted Goose	*Anser albifrons*		×	×	×	×	×	×	×				
Tundra Swan	*Cygnus columbianus*	×	×	×	×	×	×	×	×				
American Wigeon	*Anas americana*	×	×	×	×	×	×	×	×				
Northern Shoveler	*Anas clypeata*		×	×	×	×	×	×	×				
Northern Pintail	*Anas acuta*	×	×	×	×	×	×	×	×				
Green-winged Teal	*Anas crecca*	×	×	×	×	×	×	×	×				
Greater Scaup	*Aythya marila*	×		×	×	×	×	×	×				
Common Eider	*Somateria mollissima*	×		×	×	×	×	×	×				
Long-tailed Duck	*Clangula hyemalis*	×		×	×	×	×	×	×				
Red-breasted Merganser	*Mergus serrator*	×	×	×	×	×	×	×	×				
Willow Ptarmigan	*Lagopus lagopus*					×	×	×	×	×	×	×	
Red-throated Loon	*Gavia stellata*	×		×	×	×	×	×					
Pacific Loon	*Gavia pacifica*	×		×	×	×	×	×					
Yellow-billed Loon[b]	*Gavia adamsii*	×		×	×	×	×	×					

Table 4. Continued.

		Wildlife Habitat (acres)											
		Coastal Beach and Waters (0.80)	Rivers and Streams (15.47)	Freshwater Lake or Pond (94.14)	Littoral Aquatic Bed and Lacustrine Fringe (15.29)	Sedge Marsh (3.94)	Wet Sedge–Shrub Meadow (1052.88)	Moist Dwarf Shrub Tundra (45.70)	Moist Sedge–Shrub Meadow (1355.10)	Low and Tall Willow Scrub (395.92)	Low Birch–Ericaceous Scrub (349.33)	Tall Alder Scrub (3.28)	Gravel Fill (15.66)
Northern Harrier	*Circus cyaneus*				×	×	×	×	×		×		
Sandhill Crane	*Grus canadensis*				×	×	×	×	×				
American Golden-Plover	*Pluvialis dominica*						×	×	×				
Semipalmated Plover	*Charadrius semipalmatus*	×	×				×	×	×				×
Whimbrel	*Numenius phaeopus*				×	×	×	×	×				
Bar-tailed Godwit	*Limosa lapponica*	×			×	×	×	×	×		×		
Black Turnstone	*Arenaria melanocephala*	×			×	×	×	×	×				
Semipalmated Sandpiper	*Calidris pusilla*	×			×	×	×	×	×				
Western Sandpiper	*Calidris mauri*	×			×	×	×	×	×				
Pectoral Sandpiper	*Calidris melanotos*	×			×	×	×	×	×				
Dunlin	*Calidris alpina*	×			×	×	×						
Long-billed Dowitcher	*Limnodromus scolopaceus*	×			×	×	×						
Wilson's Snipe	*Gallinago gallinago*	×			×	×	×						
Red-necked Phalarope	*Phalaropus lobatus*	×			×	×	×						
Mew Gull	*Larus canus*	×	×	×	×	×	×						×
Glaucous Gull	*Larus hyperboreus*	×	×	×	×	×	×						×
Arctic Tern	*Sterna paradisaea*	×	×	×	×	×	×						

Table 4. Continued.

		Wildlife Habitat (acres)											
		Coastal Beach and Waters (0.80)	Rivers and Streams (15.47)	Freshwater Lake or Pond (94.14)	Littoral Aquatic Bed and Lacustrine Fringe (15.29)	Sedge Marsh (3.94)	Wet Sedge–Shrub Meadow (1052.88)	Moist Dwarf Shrub Tundra (45.70)	Moist Sedge–Shrub Meadow (1355.10)	Low and Tall Willow Scrub (395.92)	Low Birch–Ericaceous Scrub (349.33)	Tall Alder Scrub (3.28)	Gravel Fill (15.66)
Parasitic Jaeger	*Stercorarius parasiticus*	×					×	×	×				
Long-tailed Jaeger	*Stercorarius longicaudus*	×					×	×	×				
Common Raven	*Corvus corax*	×	×				×	×	×		×		×
Eastern Yellow Wagtail	*Motacilla tschutschensis*						×	×	×		×		
Lapland Longspur	*Calcarius lapponicus*						×	×	×		×		
American Tree Sparrow	*Spizella arborea*									×	×	×	
Savannah Sparrow	*Passerculus sandwichensis*						×	×	×		×		
White-crowned Sparrow	*Zonotrichia leucophrys*							×		×	×	×	
Common Redpoll	*Carduelis flammea*									×	×	×	
Hoary Redpoll	*Carduelis hornemanni*									×	×	×	
MAMMALS													
Arctic Ground Squirrel	*Spermophilus parryii*						×	×	×	×	×	×	
Brown (grizzly) Bear	*Ursus arctos*	×			×	×	×	×	×	×	×	×	
Caribou	*Rangifer tarandus*					×	×	×	×				
Moose	*Alces alces*			×	×	×	×	×	×	×	×	×	

Table 4. Continued.

		Wildlife Habitat (acres)											
		Coastal Beach and Waters (0.80)	Rivers and Streams (15.47)	Freshwater Lake or Pond (94.14)	Littoral Aquatic Bed and Lacustrine Fringe (15.29)	Sedge Marsh (3.94)	Wet Sedge–Shrub Meadow (1052.88)	Moist Dwarf Shrub Tundra (45.70)	Moist Sedge–Shrub Meadow (1355.10)	Low and Tall Willow Scrub (395.92)	Low Birch–Ericaceous Scrub (349.33)	Tall Alder Scrub (3.28)	Gravel Fill (15.66)
Polar Bear[c]	*Ursus maritimus*	×	×	×	×	×	×	×	×	×	×	×	×
Red Fox	*Vulpes vulpes*				×	×	×	×	×	×	×	×	×
Snowshoe Hare	*Lepus americanus*						×	×	×	×	×	×	
Tundra Hare	*Lepus othus*						×	×	×	×	×	×	

[a] Species listed are likely to be common in the study area during some portion of their life history (e.g., breeding/mating, migration, staging, etc.). Uncommon or rare species that could occur sporadically are not listed. Habitat use for birds and mammals was determined from field observations in the study area in June 2012 and from available literature (Armstrong 1995, Schroeder 1996. Cook and MacDonald 2006, ADOT 2011).

[b] The Yellow-billed Loon is a candidate species for listing as threatened or endangered under the U.S. Endangered Species Act.

[c] The polar bear is a threatened species under the U.S. Endangered Species Act. The marine habitats surrounding the study area are designated critical habitat for this species. Potential use of terrestrial habitat is seasonal; limited to winter and spring.

Table 5. Site locations, sampling dates, and gear types deployed in Sadie Creek and its tributaries near Kotzebue, Alaska, 26–28 July and 11–13 August 2012. (F = fyke net, M = minnow trap, S = seine).

			Gear Type by Date					
Site	Latitude	Longitude	26 Jul	27 Jul	28 Jul	11 Aug	12 Aug	13 Aug
MS1	N66.81470	W162.51610			S			S
NF1	N66.81918	W162.48747	F	F, M	F, M	M		
NF2	N66.82193	W162.46741			M			
NF3	N66.82135	W162.48117				F	F	F
SF1	N66.81818	W162.48817	F	F, M	F, M	M		
SF2	N66.82412	W162.41506						F
TR1	N66.80969	W162.43021		M, S				
TR2	N66.86499	W162.41172				F	F	
TR3	N66.84338	W162.41017						M

Table 6. Ambient water chemistry by site in Sadie Creek and its tributaries near Kotzebue, Alaska, 26–28 July and 11–13 August 2012.

	Temperature (˚C)		pH		Dissolved Oxygen (%)		Specific Conductance (µS/cm^{-1})	
Site	July	August	July	August	July	August	July	August
MS1	12.1	16.5	7.1	6.3	98.1	84.3	461.1	255.7
NF1	11		7		82.8		420.6	
NF3		14		6.1		66.2		92.5
SF1	12		7.1		84.9		597.7	
SF2		14.3		6		91.2		68.1
TR1	10.6		6.7		66.7		964	
TR2		14.5		6.2		83.3		59.2
TR3		14.1		6		79.4		77.6

Table 7. Total catch by fish species in Sadie Creek and its tributaries near Kotzebue, Alaska, 26–28 July and 11–13 August 2012.

Species	Scientific name	July	August
Ninespine stickleback	*Pungitius pungitius*	299	888
Threespine stickleback	*Gasterosteus aculeatus*	4	4
Broad whitefish	*Coregonus nasus*		12
Humpback whitefish	*Coregonus clupeafomis*	3	10
Unidentified juvenile whitefish	*Coregonus* spp.		33
Least cisco	*Coregonus sardinella*		4
Northern pike	*Esox lucius*	1	37
Alaska blackfish	*Dallia pectoralis*		4

Table 8. Total catch by fish species and site in Sadie Creek and its tributaries near Kotzebue, Alaska, 26–28 July and 11–13 August 2012.

	MS1		NF1		NF2		NF3		SF1		SF2		TR1		TR2		TR3	
Species	July	Aug	July	Aug	July	Aug	July	Aug	July	Aug	July	Aug	July	Aug	July	Aug	July	Aug
Ninespine stickleback	27	90	230	1	1			112	12	543		20	29					122
Threespine stickleback			1					4	3									
Broad whitefish								12										
Humpback whitefish			2					10	1									
Unknown juvenile whitefish								26				7						
Least cisco								4										
Northern pike								9	1			19				7		2
Alaska blackfish								1										3

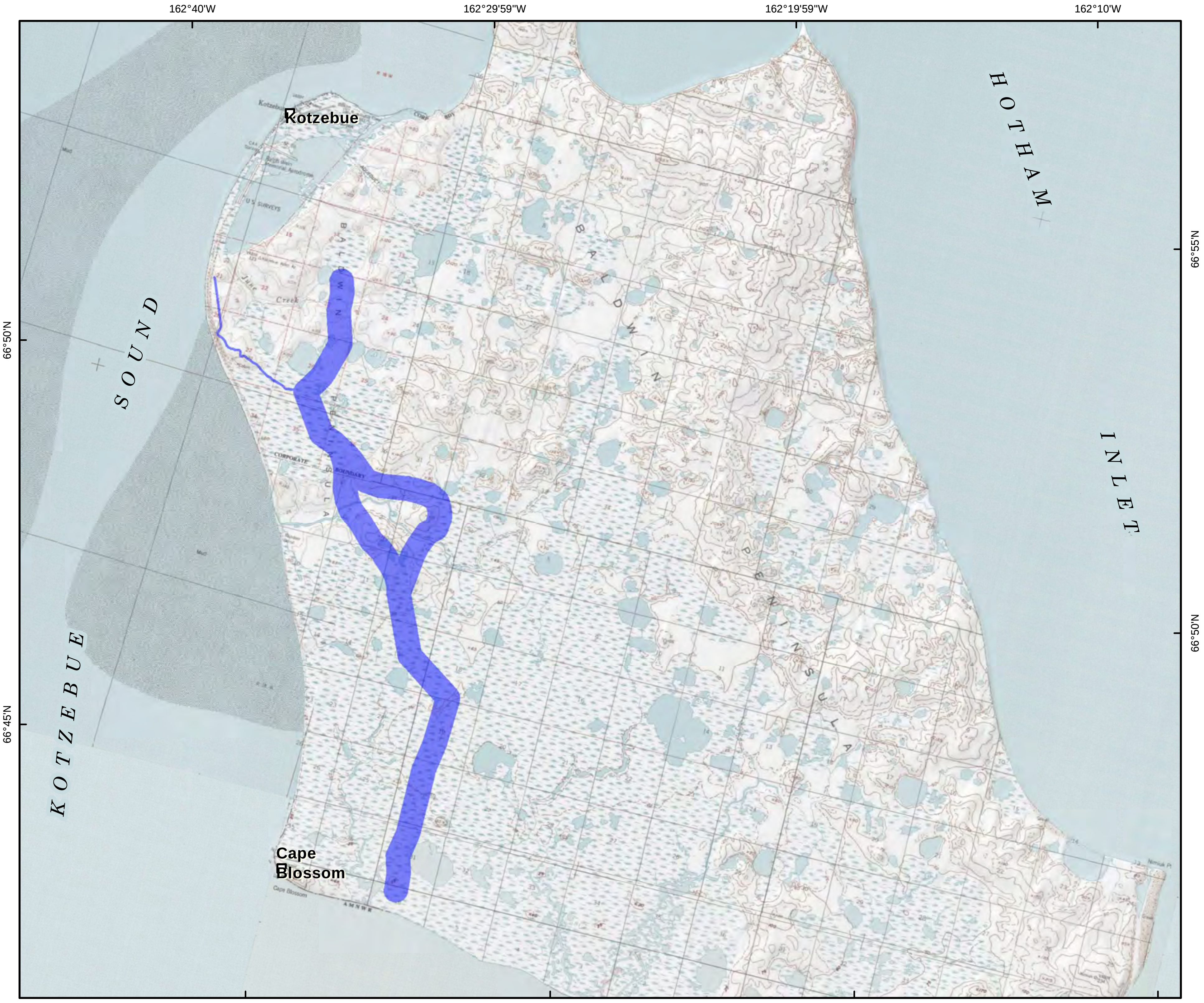

Figure 2 Map Legend

NWI Code	Description
Non-Navigable Waters	
E1UBH	Permanently Flooded Subtidal Estuarine
R2UBH	Lower Perennial River
R2USA	Lower Perennial Unconsolidated Shore
L1UBH	Permanently Flooded Lakes
PUBH	Permanently Flooded Ponds
Wetlands	
L2UB3H	Lacustrine Littoral Unconsolidated Bottom
L2AB3H	Lacustrine Permanently Flooded Aquatic Bed
PAB3H	Palustrine Permanently Flooded Aquatic Bed
PEM1H	Permanently Flooded Persistent Emergent
PEM1F	Semi-PermanentlyFlooded Persistent Emergent
PEM1E	Seasonally Flooded-Saturated Persistent Emergent
PEM1B	Saturated Persistent Emergent
PEM1/SS1F	Semi-Permanently Flooded Persistent Emergent / Broadleaf Deciduous Shrub
PEM1/SS1E	Seasonally Flooded – Saturated Persistent Emergent / Broadleaf Deciduous Shrub
PEM1/SS1B	Saturated Persistent Emergent / Broadleaf Deciduous Shrub
PEM1/SS3B	Saturated Persistent Emergent / Broadleaf Evergreen Shrub
PSS1/EM1B	Saturated Broadleaf Deciduous Shrub / Persistent Emergent
PSS3/EM1B	Saturated Broadleaf Evergreen Shrub / Persistent Emergent
PSS1E	Seasonally Flooded-Saturated Broadleaf Decidous Shrub
PSS1C	Seasonally Flooded Broadleaf Deciduous Shrub
PSS1B	Saturated Broadleaf Deciduous Shrub
PSS1/3B	Saturated Broadleaf Deciduous / Broadleaf Evergreen Shrub
PSS3/1B	Saturated Broadleaf Evergreen / Broadleaf Deciduous Shrub
PSS3B	Saturated Broadleaf Evergreen Shrub
PSS4B	Saturated Needleleaf Evergreen Shrub
Uplands	
U	Upland
Us	Upland (Fill)

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[1] Follows National Wetlands Inventory (NWI) map conventions and Cowardin et al. (1979) classification system.

🟦 Cape Blossom Study Area

0 1 2 3 4 Kilometers

0 1 2 3 Miles

Figure 1.
Kotzebue to Cape Blossom Road Project Area and Figure 2 Map Legend

Map prepared by:
ABR Inc.—Environmental Research & Services

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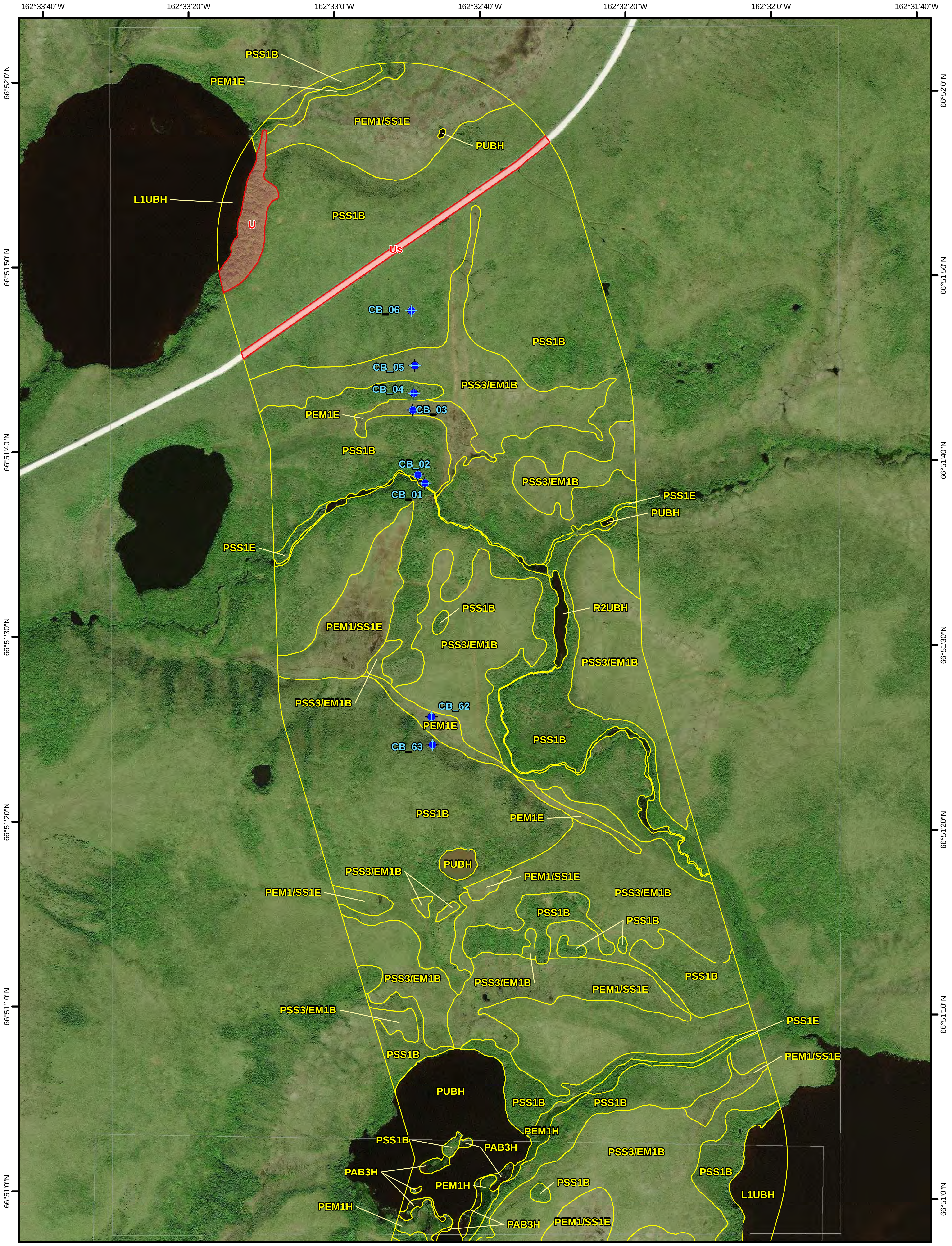
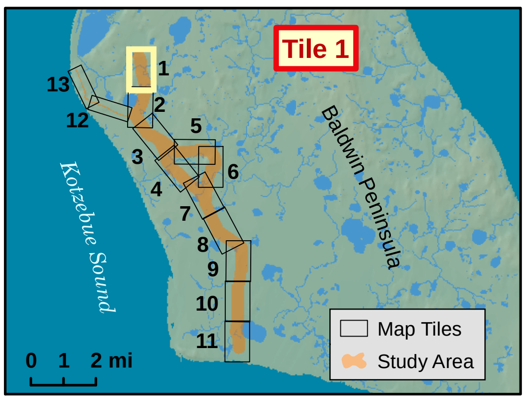




▭	Wetland
🟥	Upland
⊕	Wetland Determination Plot
⊕	Verification Plot
▭	Map Tiles

Notes: Mapping by ABR, Inc. within a 2000-ft corridor surrounding the centerline of the Proposed road alternatives. Orthophotography by DigitalGlobe, acquired August 2 and 4, 2010; pixel resolution 1.64 feet. Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. feet. Map scale when printed at 11"x17" is 1:6,000 or 1"=500'.

See Figure 1
for wetlands
legend.

250 0 250 500
Feet

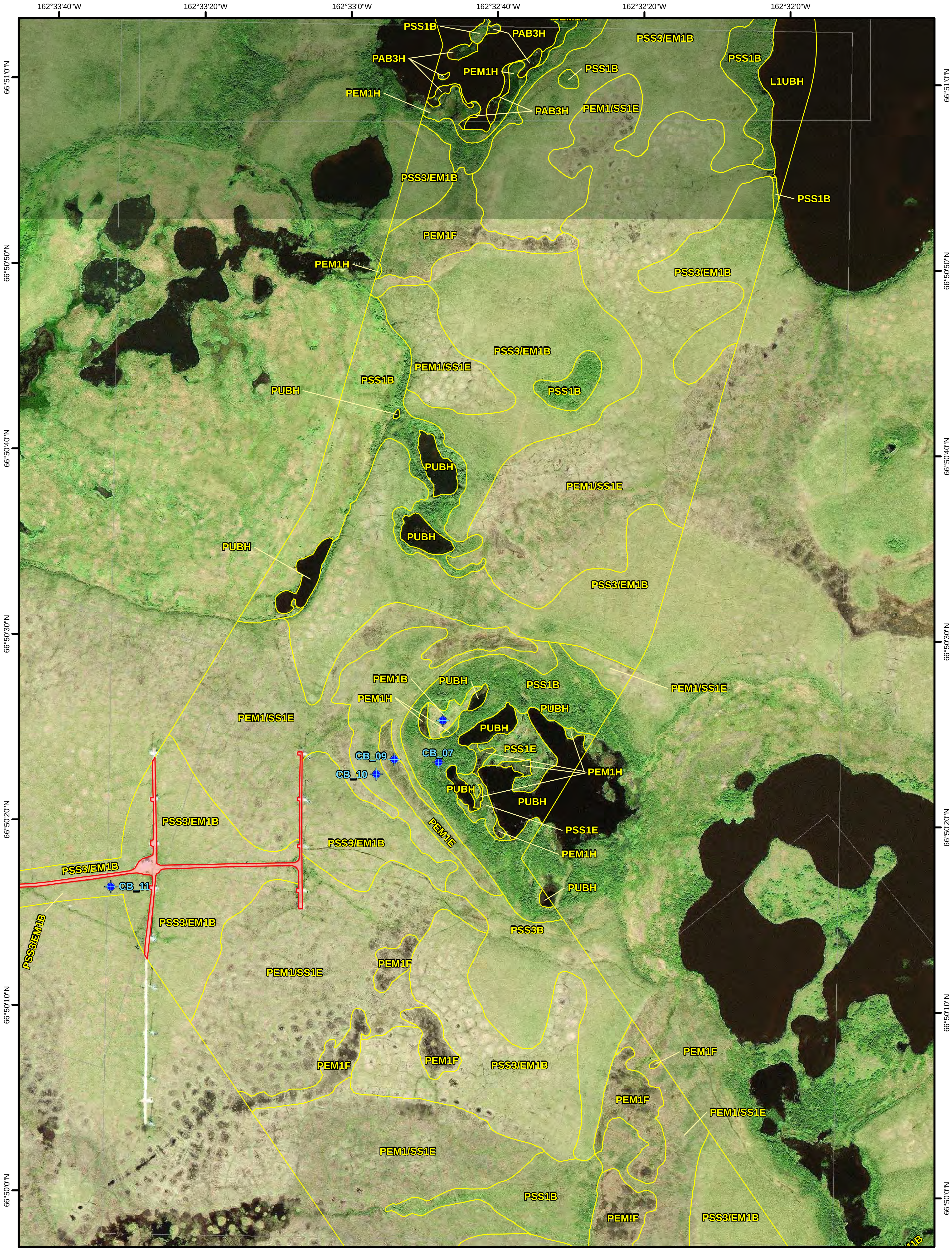
100 0 100 200
Meters

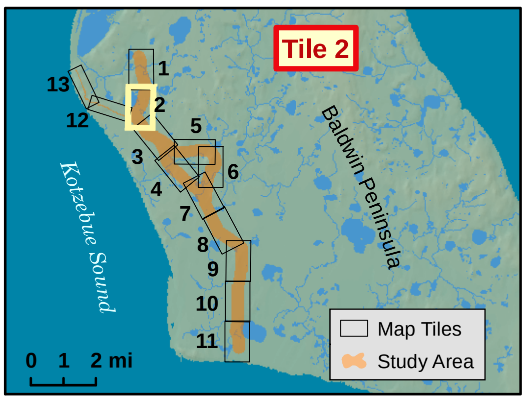
Figure 2.1.
Wetland Types for the proposed
Kotzebue to Cape Blossom Road Project
(Tile 1)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012

CapeBlossom_Wetlands_ReportMaps_12-211.mxd





▭	Wetland	●	Wetland Determination Plot
🟥	Upland	●	Verification Plot
		▭	Map Tiles

Notes: Mapping by ABR, Inc. within a 2000-ft corridor surrounding the centerline of the Proposed road alternatives. Orthophotography by DigitalGlobe, acquired August 2 and 4, 2010; pixel resolution 1.64 feet. Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. feet. Map scale when printed at 11"x17" is 1:6,000 or 1"=500'.

See Figure 1 for wetlands legend.

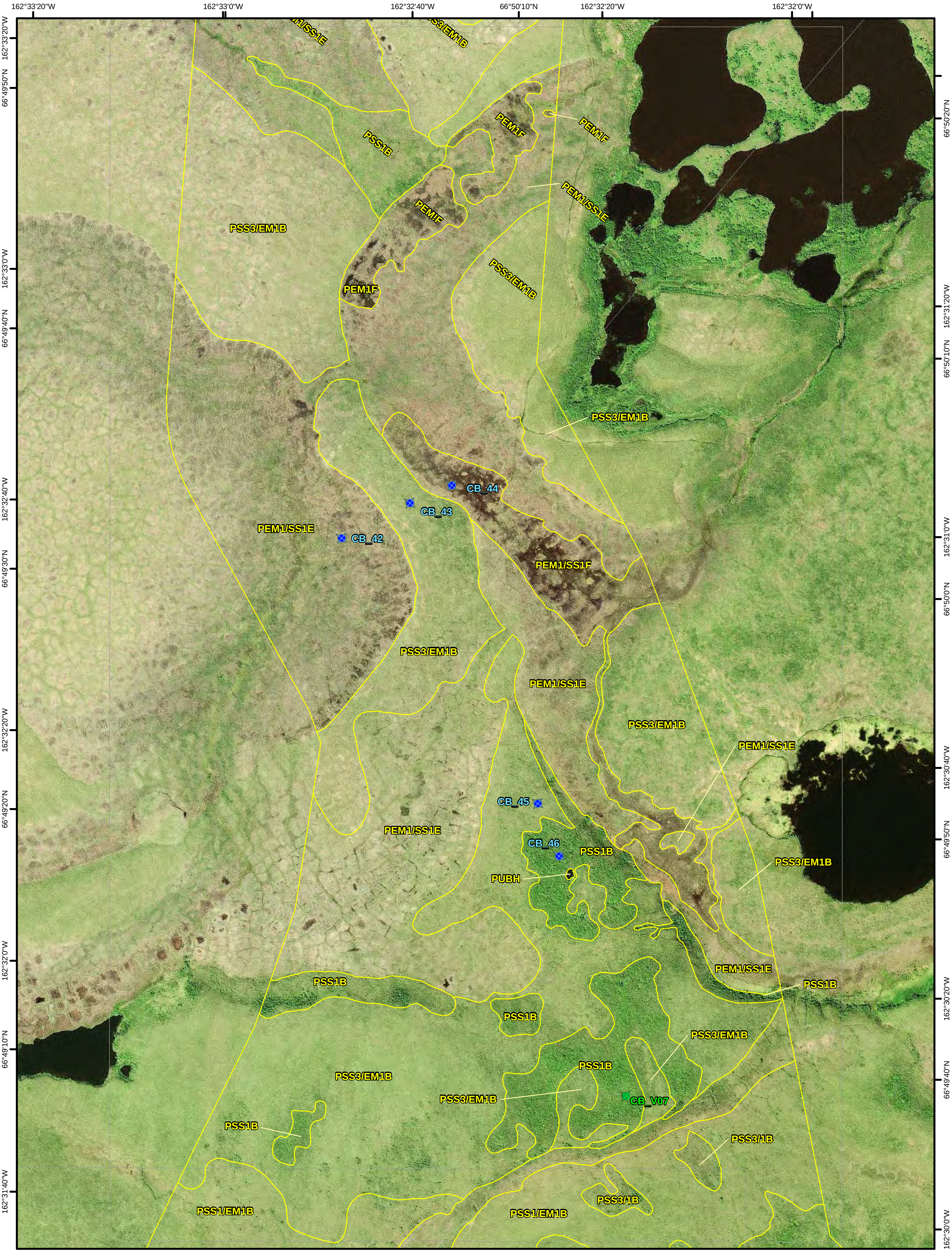
250 0 250 500 Feet

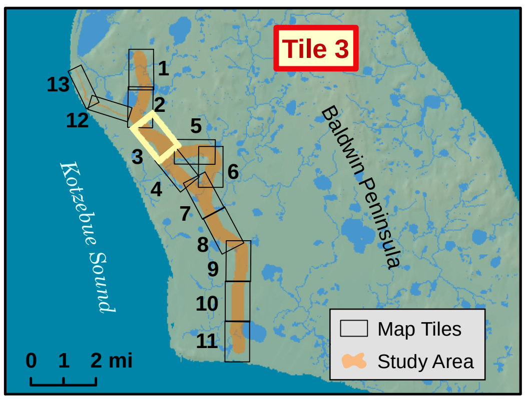
100 0 100 200 Meters

Figure 2.2. Wetland Types for the proposed Kotzebue to Cape Blossom Road Project (Tile 2)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012 | CapeBlossom_Wetlands_ReportMaps_12-211.mxd





▭	Wetland	●	Wetland Determination Plot
▭	Upland	●	Verification Plot
		▭	Map Tiles

Notes: Mapping by ABR, Inc. within a 2000-ft corridor surrounding the centerline of the Proposed road alternatives. Orthophotography by DigitalGlobe, acquired August 2 and 4, 2010; pixel resolution 1.64 feet. Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. feet. Map scale when printed at 11"x17" is 1:6,000 or 1"=500'.

See Figure 1 for wetlands legend.

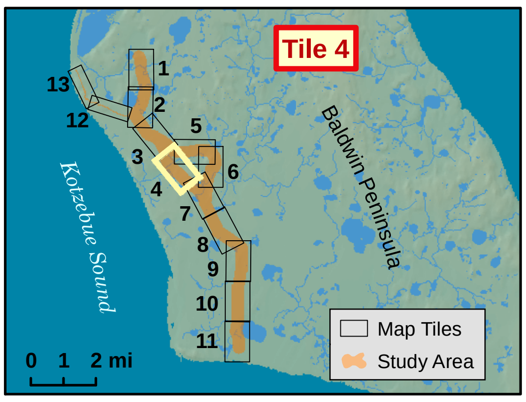
250 0 250 500 Feet

100 0 100 200 Meters

Figure 2.3.
Wetland Types for the proposed Kotzebue to Cape Blossom Road Project (Tile 3)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012 | CapeBlossom_Wetlands_ReportMaps_12-211.mxd



🟨 Wetland

🟥 Upland

● Wetland Determination Plot

● Verification Plot

▭ Map Tiles

Notes: Mapping by ABR, Inc. within a 2000-ft corridor surrounding the centerline of the Proposed road alternatives. Orthophotography by DigitalGlobe, acquired August 2 and 4, 2010; pixel resolution 1.64 feet. Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. feet. Map scale when printed at 11"x17" is 1:6,000 or 1"=500'.

See Figure 1 for wetlands legend.

250 0 250 500 Feet

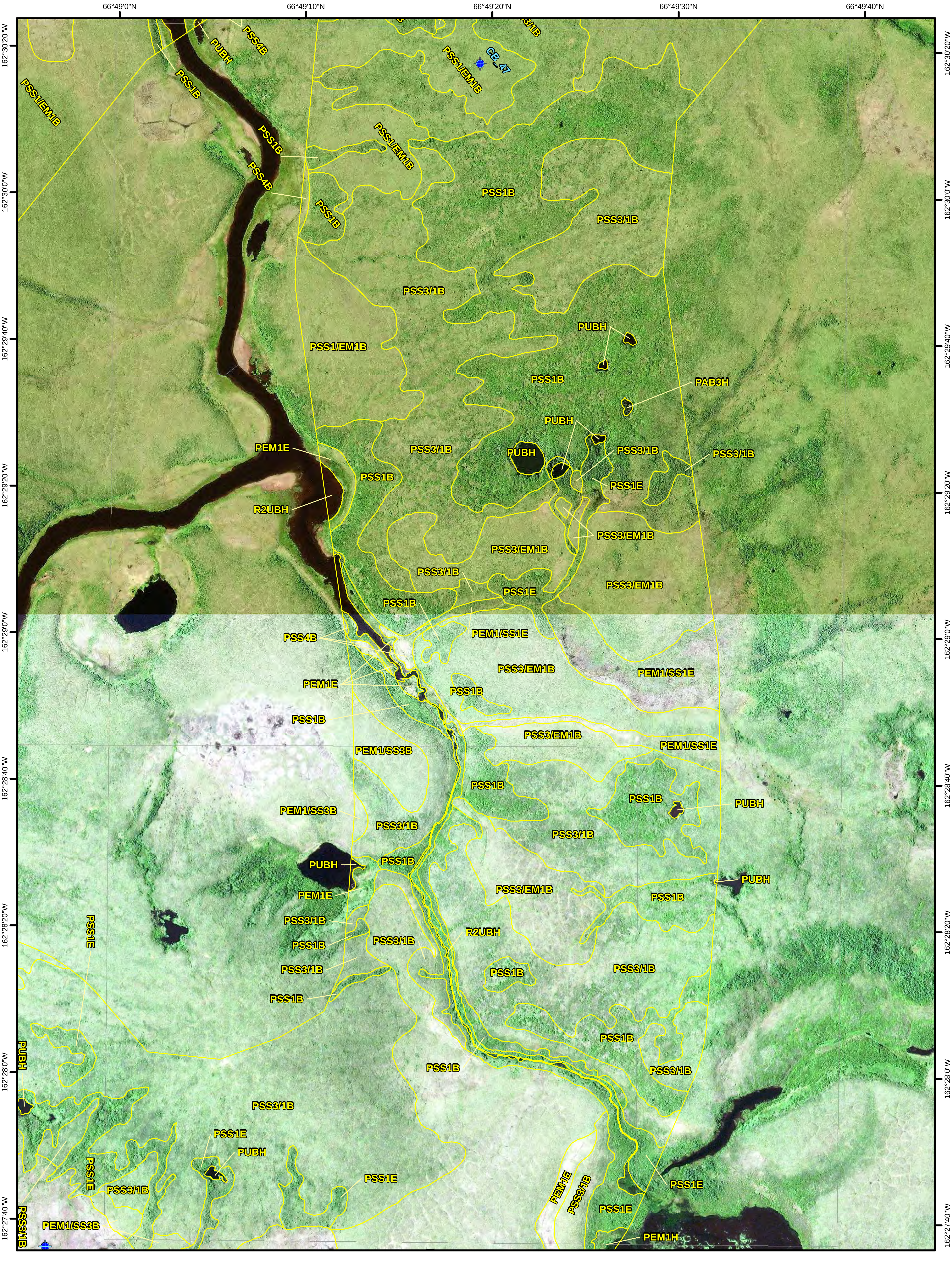
100 0 100 200 Meters

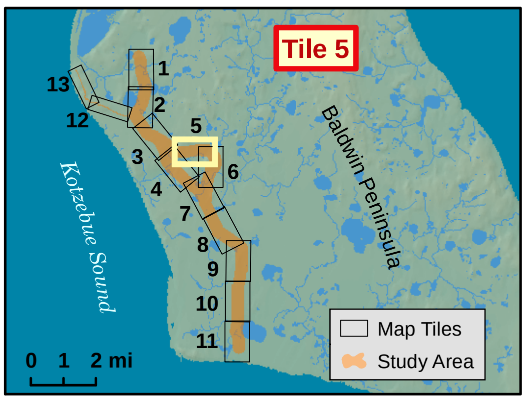
Figure 2.4.
Wetland Types for the proposed Kotzebue to Cape Blossom Road Project
(Tile 4)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012

CapeBlossom_Wetlands_ReportMaps_12-211.mxd





▢	Wetland	●	Wetland Determination Plot
▢	Upland	●	Verification Plot
		▢	Map Tiles

Notes: Mapping by ABR, Inc. within a 2000-ft corridor surrounding the centerline of the Proposed road alternatives. Orthophotography by DigitalGlobe, acquired August 2 and 4, 2010; pixel resolution 1.64 feet. Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. feet. Map scale when printed at 11"x17" is 1:6,000 or 1"=500'.

See Figure 1 for wetlands legend.

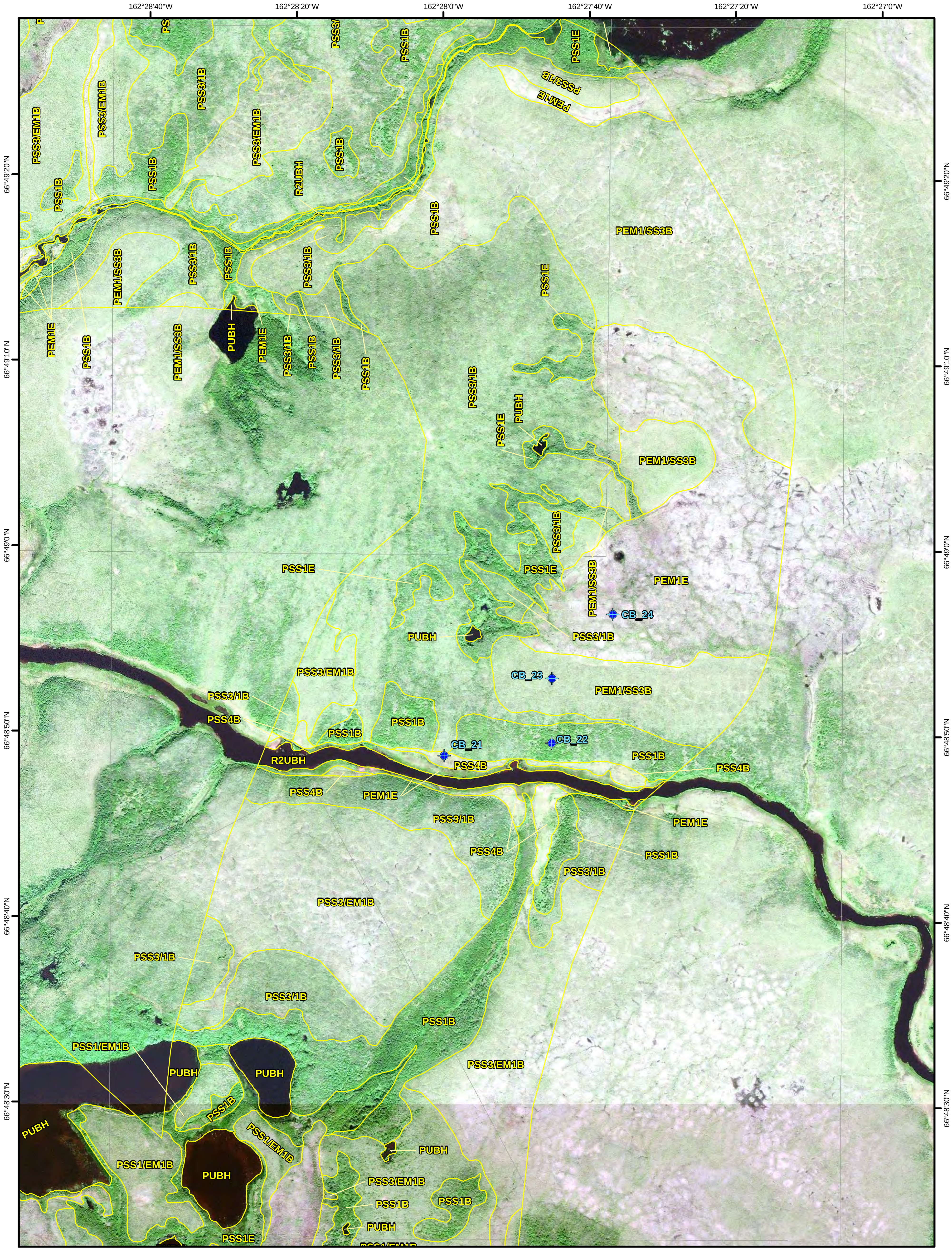
250 0 250 500 Feet

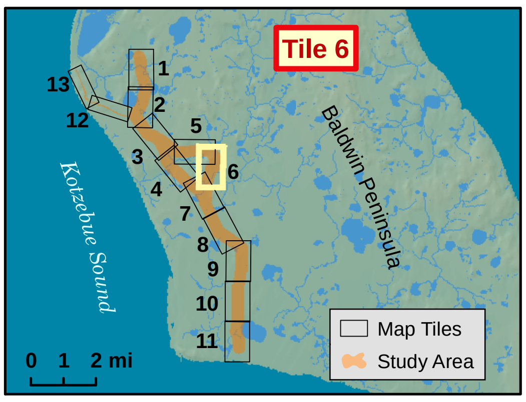
100 0 100 200 Meters

Figure 2.5.
Wetland Types for the proposed Kotzebue to Cape Blossom Road Project (Tile 5)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012 | CapeBlossom_Wetlands_ReportMaps_12-211.mxd





🟨	Wetland
🟥	Upland
●	Wetland Determination Plot
●	Verification Plot
▢	Map Tiles

Notes: Mapping by ABR, Inc. within a 2000-ft corridor surrounding the centerline of the Proposed road alternatives. Orthophotography by DigitalGlobe, acquired August 2 and 4, 2010; pixel resolution 1.64 feet. Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. feet. Map scale when printed at 11"x17" is 1:6,000 or 1"=500'.

See Figure 1
for wetlands
legend.

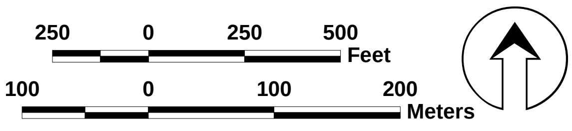
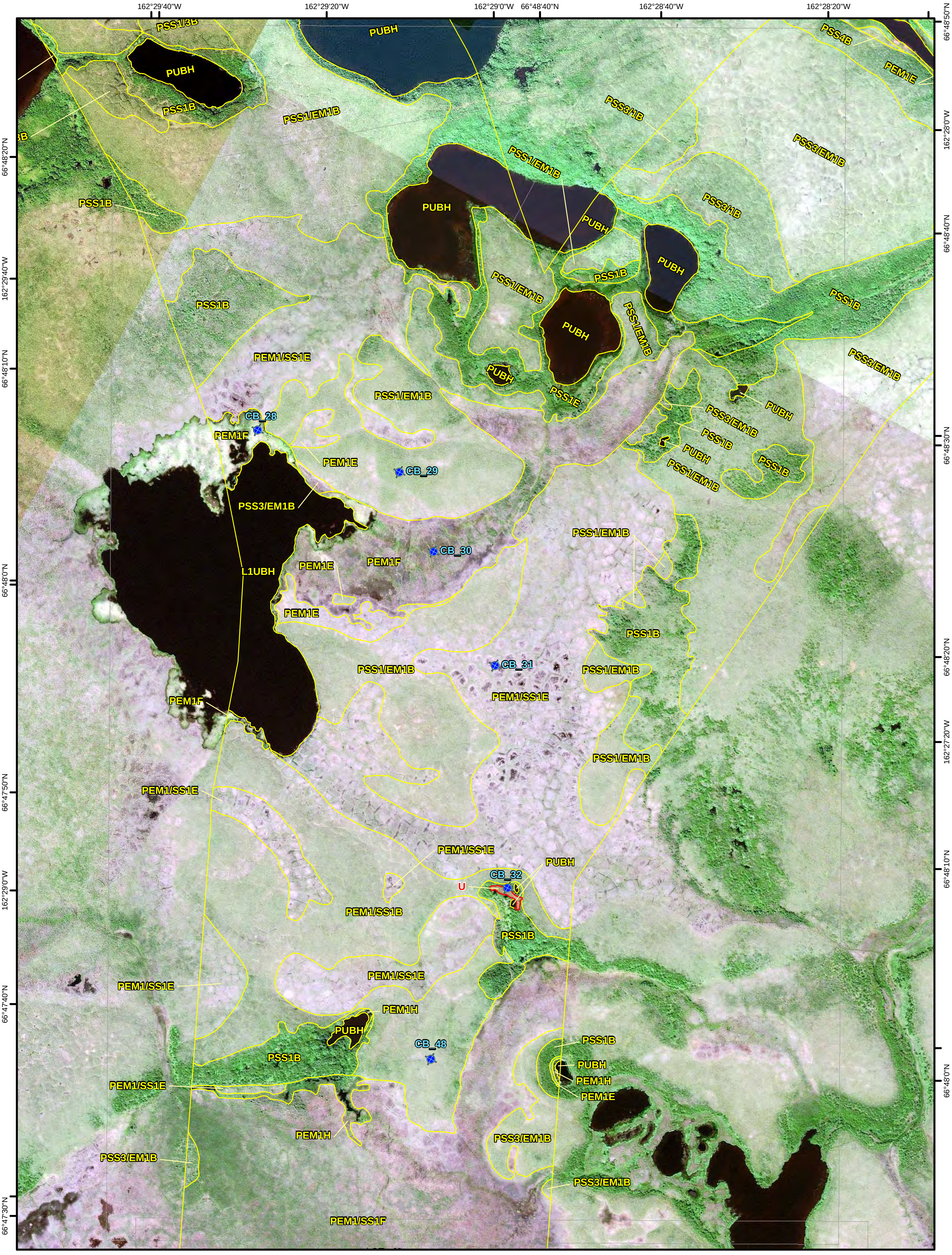
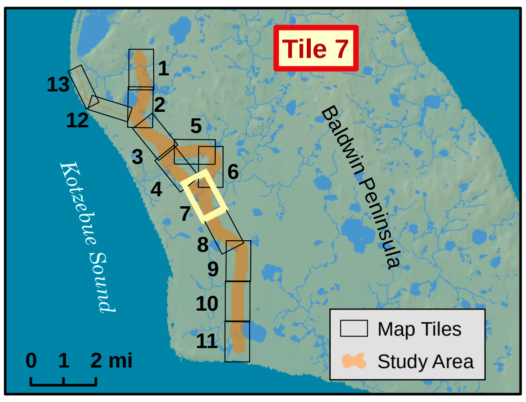


Figure 2.6.
Wetland Types for the proposed Kotzebue to Cape Blossom Road Project (Tile 6)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012
CapeBlossom_Wetlands_ReportMaps_12-211.mxd





▭	Wetland	●	Wetland Determination Plot
🟥	Upland	●	Verification Plot
		▭	Map Tiles

Notes: Mapping by ABR, Inc. within a 2000-ft corridor surrounding the centerline of the Proposed road alternatives. Orthophotography by DigitalGlobe, acquired August 2 and 4, 2010; pixel resolution 1.64 feet. Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. feet. Map scale when printed at 11"x17" is 1:6,000 or 1"=500'.

See Figure 1 for wetlands legend.

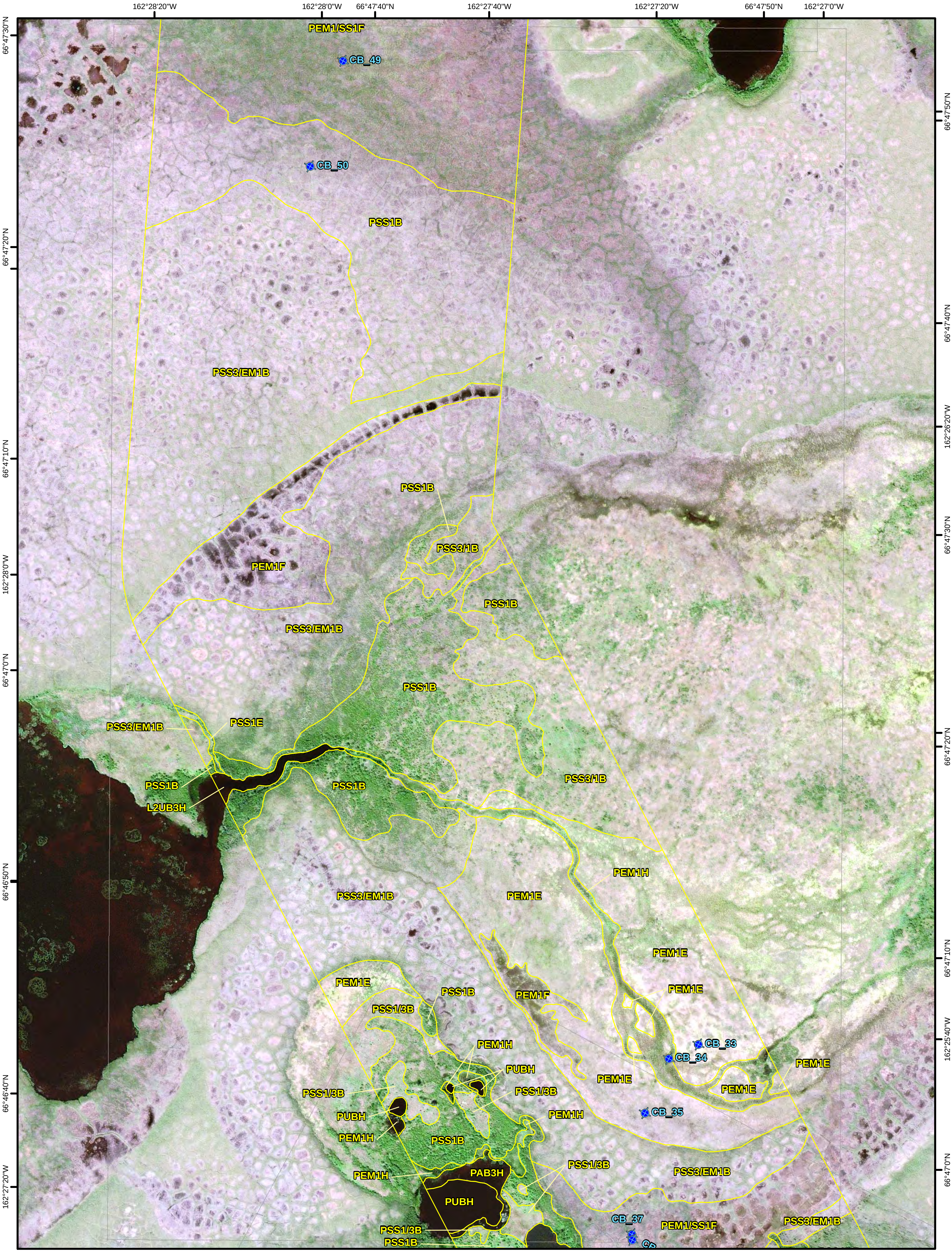
250 0 250 500 Feet

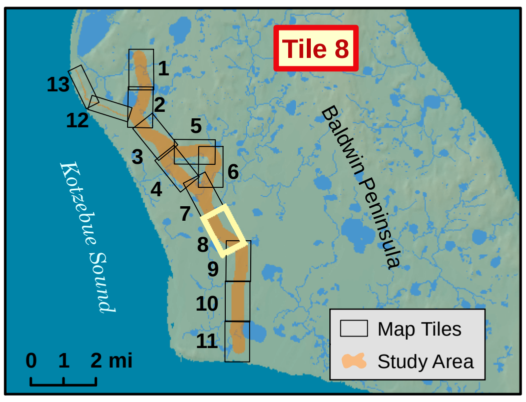
100 0 100 200 Meters

Figure 2.7.
Wetland Types for the proposed Kotzebue to Cape Blossom Road Project (Tile 7)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012 | CapeBlossom_Wetlands_ReportMaps_12-211.mxd





🟨 Wetland

🟥 Upland

⊕ Wetland Determination Plot

⊕ Verification Plot

▭ Map Tiles

Notes: Mapping by ABR, Inc. within a 2000-ft corridor surrounding the centerline of the Proposed road alternatives. Orthophotography by DigitalGlobe, acquired August 2 and 4, 2010; pixel resolution 1.64 feet. Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. feet. Map scale when printed at 11"x17" is 1:6,000 or 1"=500'.

See Figure 1 for wetlands legend.

250 0 250 500 Feet

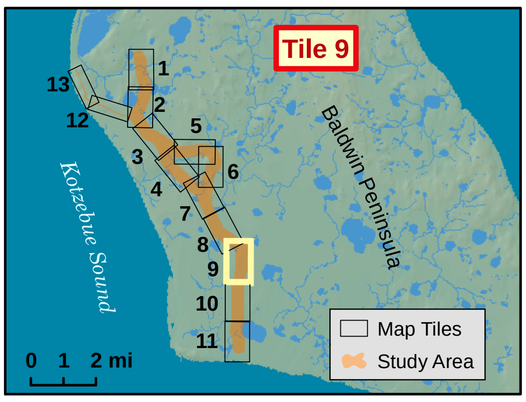
100 0 100 200 Meters

Figure 2.8.
Wetland Types for the proposed
Kotzebue to Cape Blossom Road Project
(Tile 8)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012

CapeBlossom_Wetlands_ReportMaps_12-211.mxd



▭	Wetland	⊕	Wetland Determination Plot
🟥	Upland	⊕	Verification Plot
		▭	Map Tiles

Notes: Mapping by ABR, Inc. within a 2000-ft corridor surrounding the centerline of the Proposed road alternatives. Orthophotography by DigitalGlobe, acquired August 2 and 4, 2010; pixel resolution 1.64 feet. Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. feet. Map scale when printed at 11"x17" is 1:6,000 or 1"=500'.

See Figure 1 for wetlands legend.

250 0 250 500 Feet

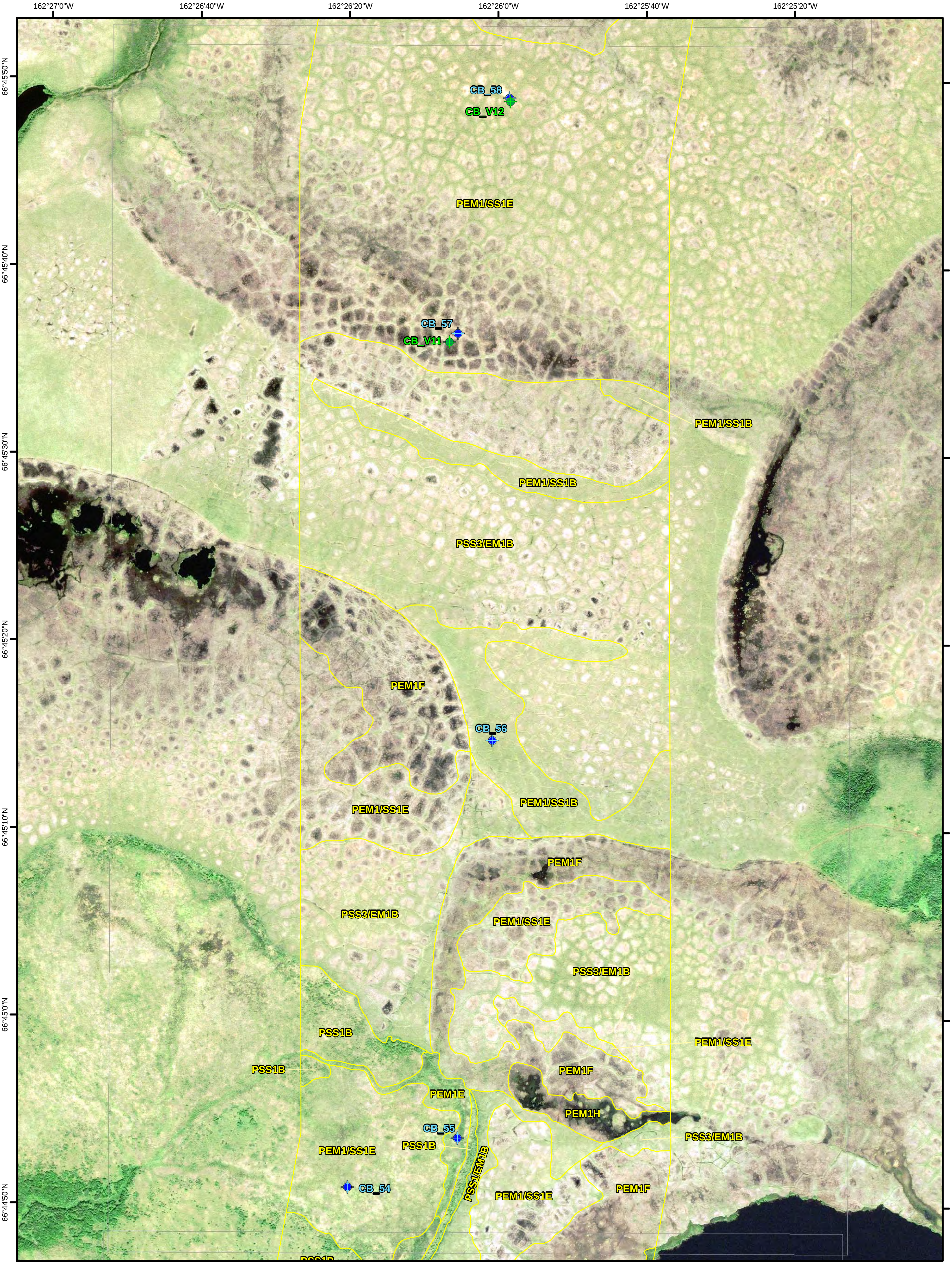
100 0 100 200 Meters

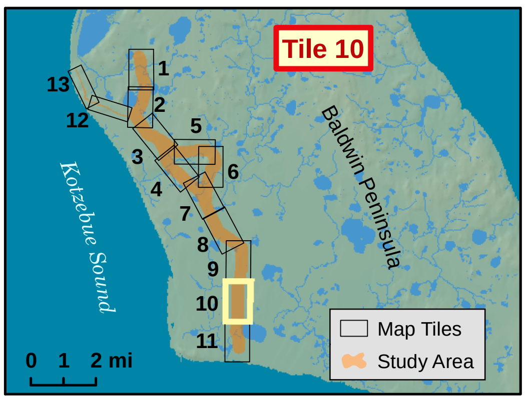
Figure 2.9.
Wetland Types for the proposed Kotzebue to Cape Blossom Road Project (Tile 9)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012

CapeBlossom_Wetlands_ReportMaps_12-211.mxd





▭ Wetland	● Wetland Determination Plot
🟥 Upland	● Verification Plot
	▭ Map Tiles

Notes: Mapping by ABR, Inc. within a 2000-ft corridor surrounding the centerline of the Proposed road alternatives. Orthophotography by DigitalGlobe, acquired August 2 and 4, 2010; pixel resolution 1.64 feet. Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. feet. Map scale when printed at 11"x17" is 1:6,000 or 1"=500'.

See Figure 1 for wetlands legend.

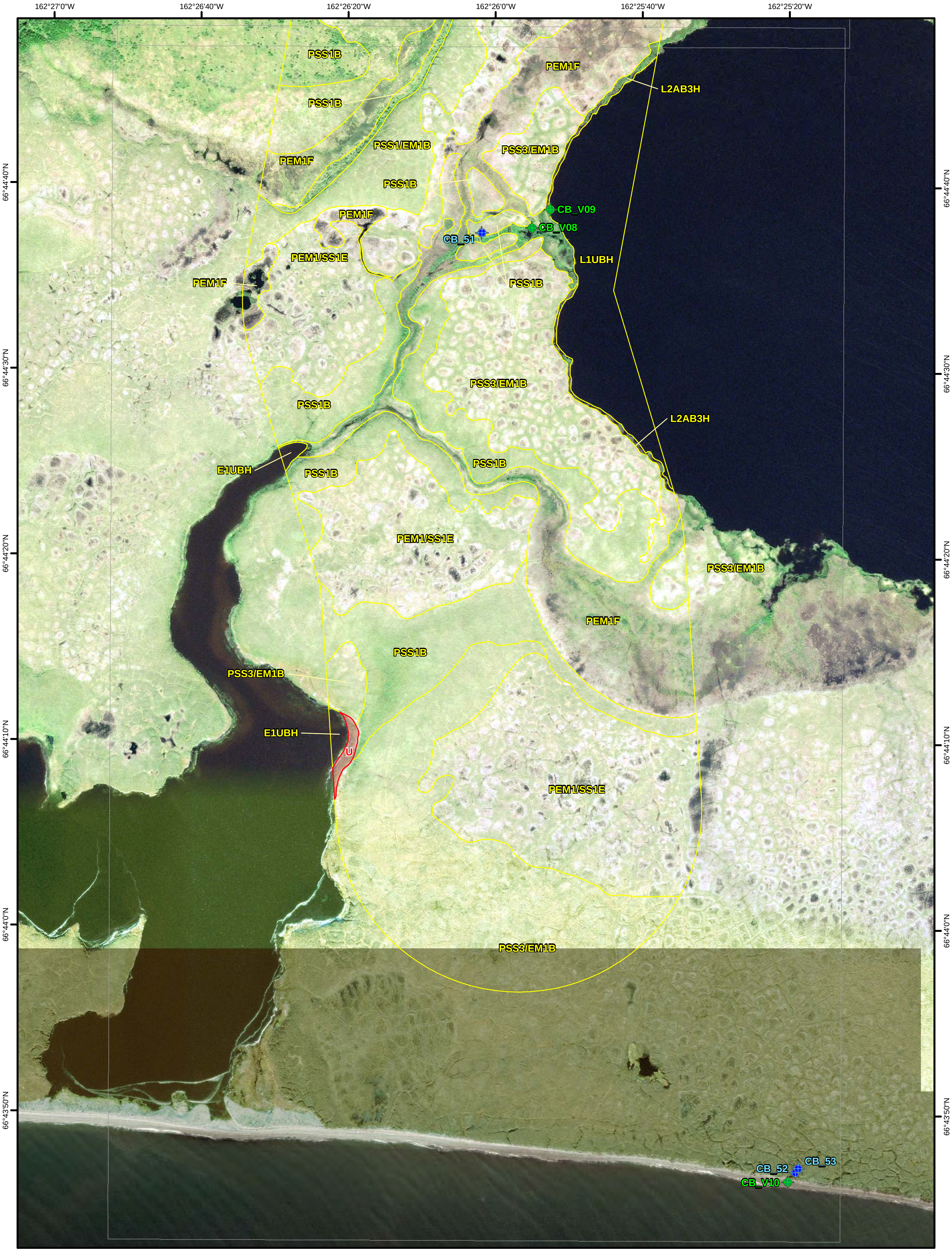
250 0 250 500 Feet

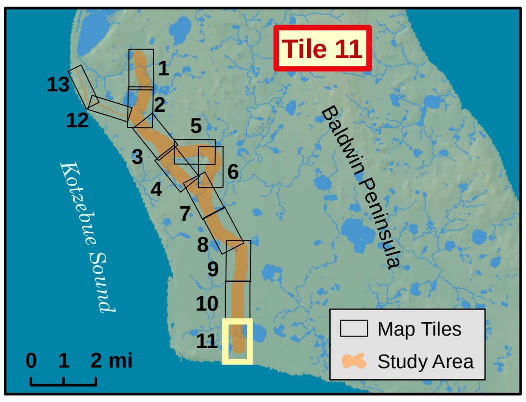
100 0 100 200 Meters

Figure 2.10. Wetland Types for the proposed Kotzebue to Cape Blossom Road Project (Tile 10)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012 | CapeBlossom_Wetlands_ReportMaps_12-211.mxd





🟨	Wetland	●	Wetland Determination Plot
🟥	Upland	●	Verification Plot
		☐	Map Tiles

Notes: Mapping by ABR, Inc. within a 2000-ft corridor surrounding the centerline of the Proposed road alternatives. Orthophotography by DigitalGlobe, acquired August 2 and 4, 2010; pixel resolution 1.64 feet. Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. feet. Map scale when printed at 11"x17" is 1:6,000 or 1"=500'.

See Figure 1 for wetlands legend.

250 0 250 500 Feet

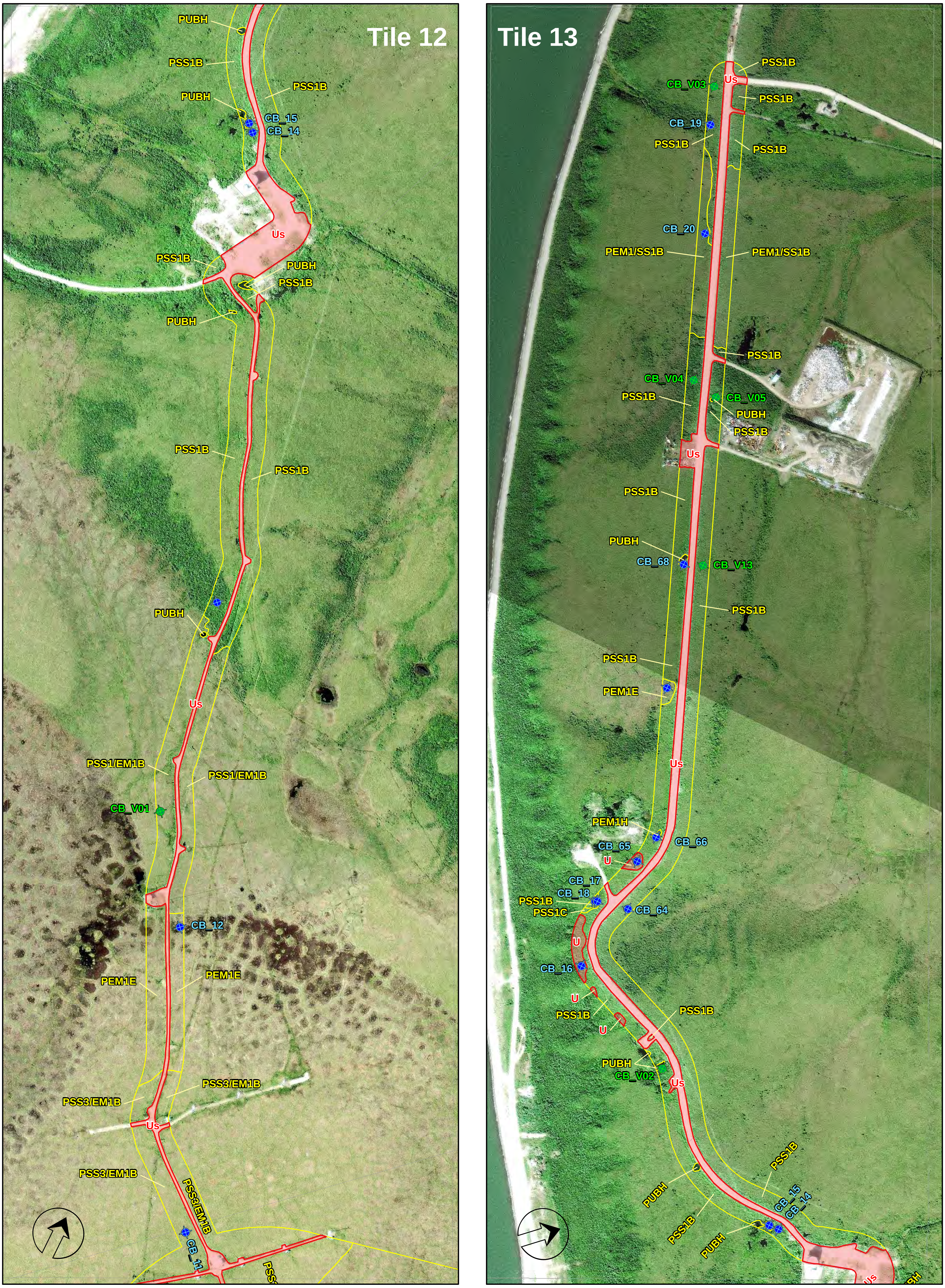
100 0 100 200 Meters

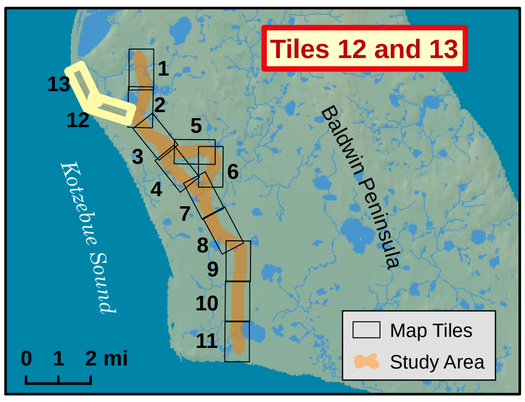
Figure 2.11.
Wetland Types for the proposed Kotzebue to Cape Blossom Road Project (Tile 11)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012

CapeBlossom_Wetlands_ReportMaps_12-211.mxd





🟨 Wetland	● Wetland Determination Plot
🟥 Upland	● Verification Plot
	▭ Map Tiles

Notes: Mapping by ABR, Inc. within a 2000-ft corridor surrounding the centerline of the Proposed road alternatives. Orthophotography by DigitalGlobe, acquired August 2 and 4, 2010; pixel resolution 1.64 feet. Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. feet. Map scale when printed at 11"x17" is 1:6,000 or 1"=500'.

See Figure 1 for wetlands legend.

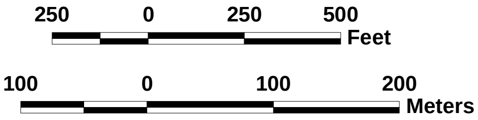
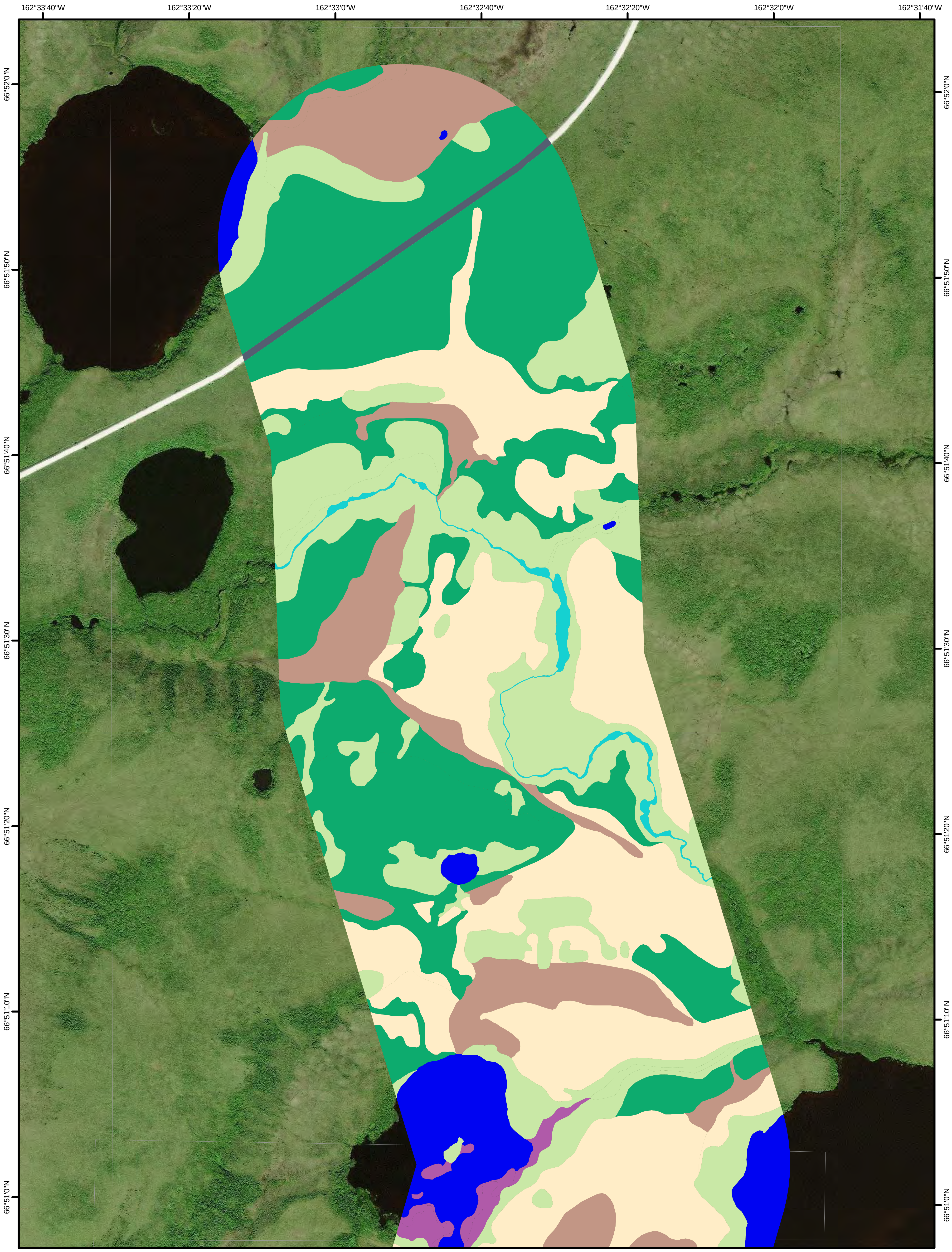


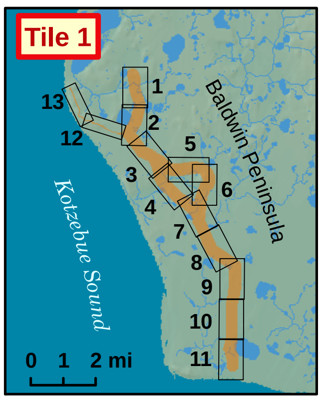
Figure 2.12.
Wetland Types for the Proposed Kotzebue to Cape Blossom Road Project (Tiles 12 and 13)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012

CapeBlossom_Wetlands_ReportMaps_Tile12-13_12-211.mxd





Wildlife Habitat Type

🟦 Coastal Beach and Waters
🟦 Rivers and Streams
🟦 Freshwater Lake or Pond
🟪 Littoral Aquatic Bed and Lacustrine Fringe
🟪 Sedge Marsh
🟫 Wet Sedge-Shrub Meadow
🟫 Moist Dwarf Shrub Tundra
🟨 Moist Sedge-Shrub Meadow
🟩 Low and Tall Willow Scrub
🟩 Low Birch-Ericaceous Scrub
🟩 Tall Alder Scrub
⬛ Gravel Fill

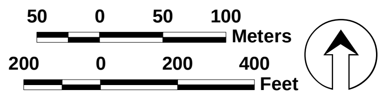
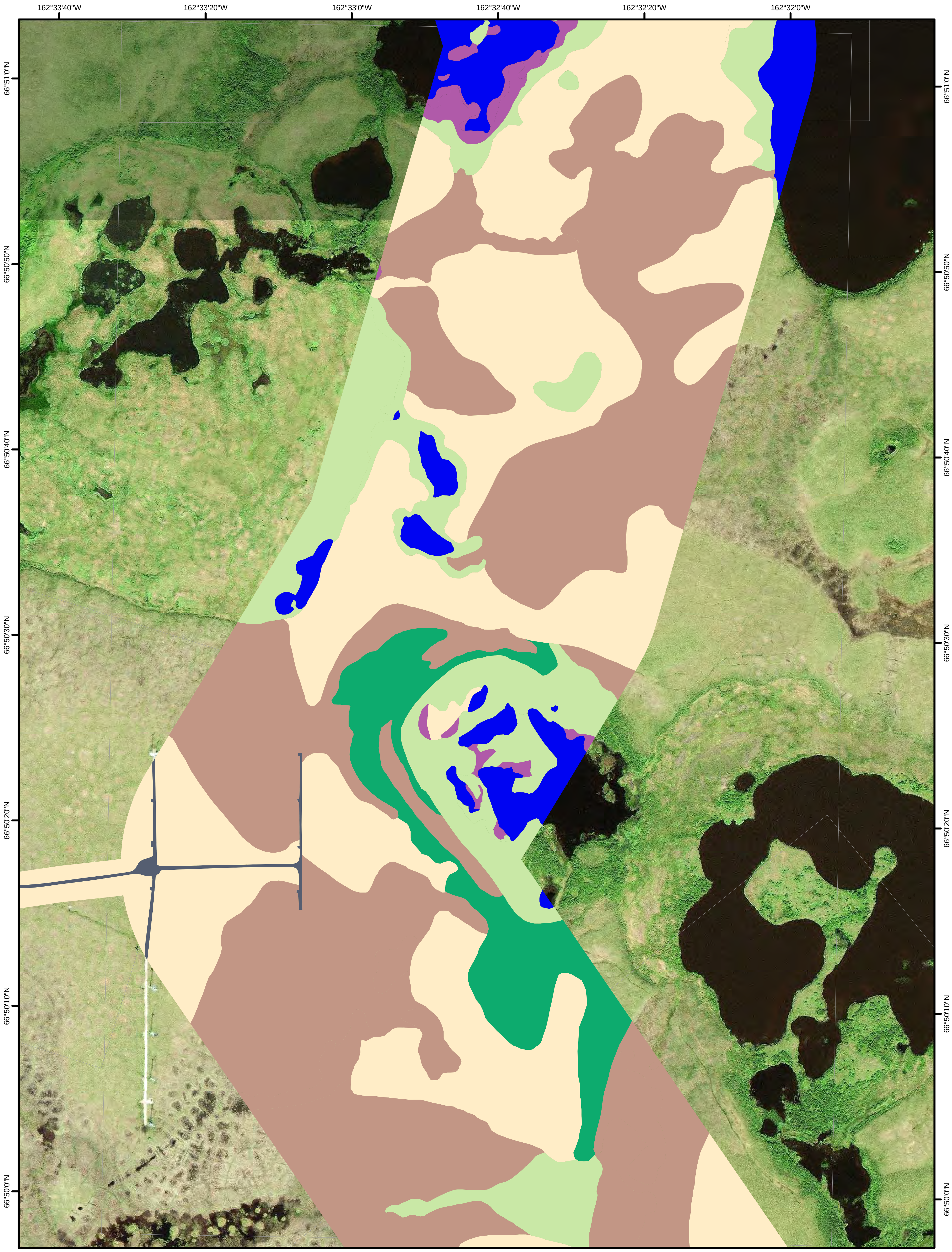
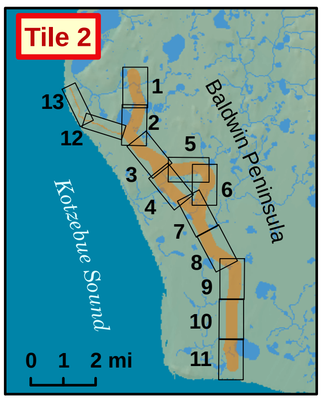


Figure 3.1.
Wildlife Habitat Types for the Proposed Kotzebue to Cape Blossom Road Project (Tile 1)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012
CapeBlossom_Habitats_ReportMaps_12-211.mxd





Wildlife Habitat Type

- 🟦 Coastal Beach and Waters
- 🟦 Rivers and Streams
- 🟦 Freshwater Lake or Pond
- 🟪 Littoral Aquatic Bed and Lacustrine Fringe
- 🟪 Sedge Marsh
- 🟫 Wet Sedge-Shrub Meadow
- 🟧 Moist Dwarf Shrub Tundra
- 🟨 Moist Sedge-Shrub Meadow
- 🟩 Low and Tall Willow Scrub
- 🟩 Low Birch-Ericaceous Scrub
- 🟩 Tall Alder Scrub
- ⬛ Gravel Fill

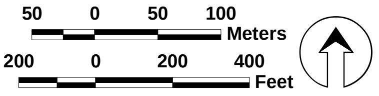
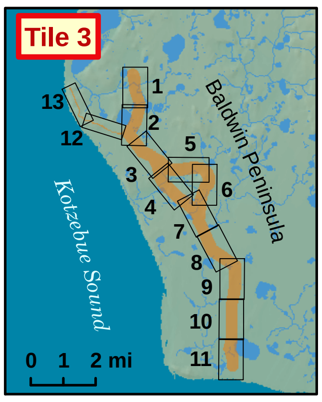


Figure 3.2.
Wildlife Habitat Types for the Proposed Kotzebue to Cape Blossom Road Project
(Tile 2)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012

CapeBlossom_Habitats_ReportMaps_12-211.mxd



Wildlife Habitat Type

🟦	Coastal Beach and Waters	⬜	Moist Sedge-Shrub Meadow
🟦	Rivers and Streams	🟩	Low and Tall Willow Scrub
🟦	Freshwater Lake or Pond	🟩	Low Birch-Ericaceous Scrub
🟪	Littoral Aquatic Bed and Lacustrine Fringe	🟩	Tall Alder Scrub
🟪	Sedge Marsh	⬛	Gravel Fill
🟫	Wet Sedge-Shrub Meadow		
🟧	Moist Dwarf Shrub Tundra		

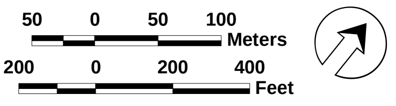
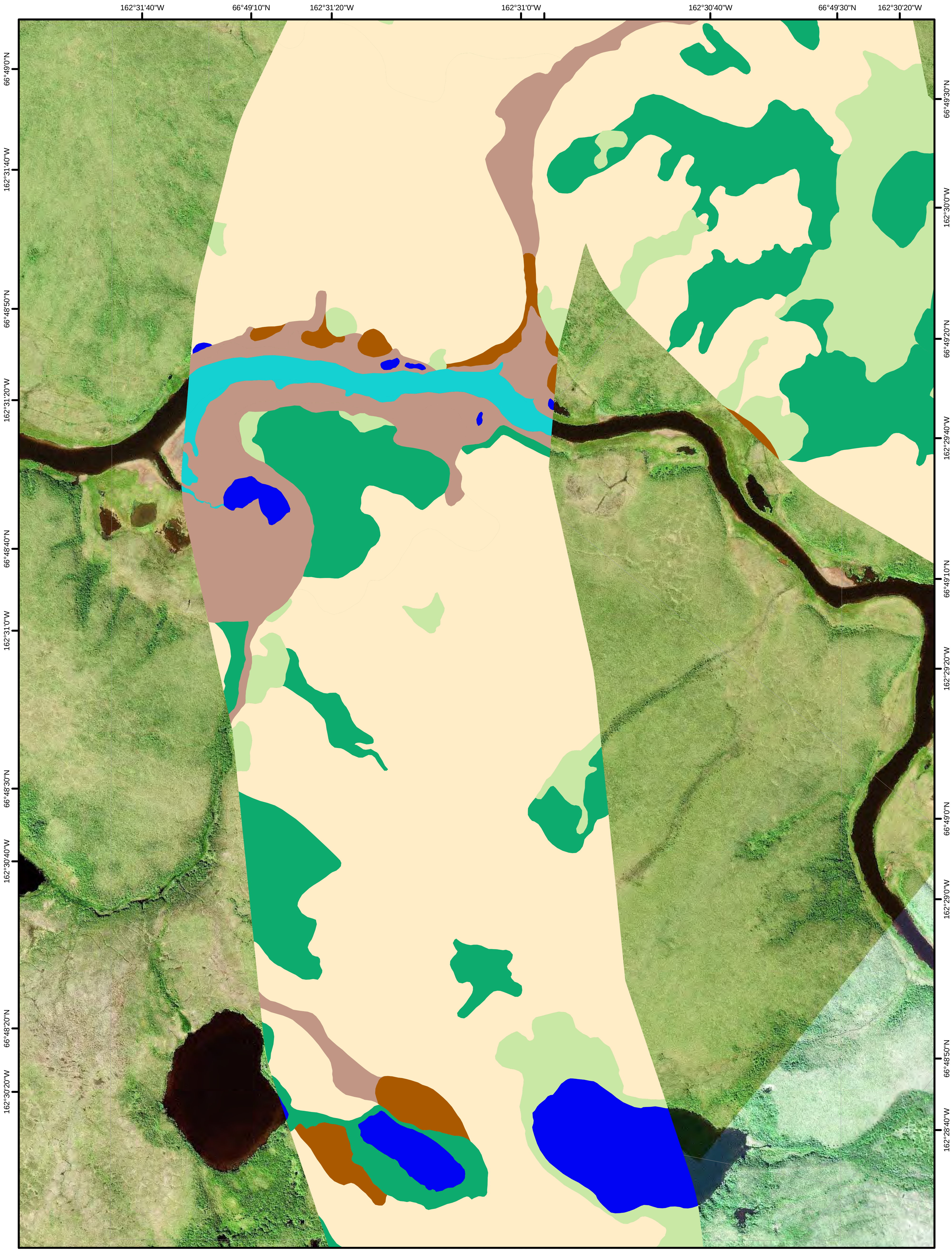


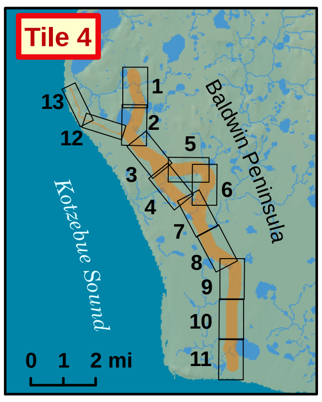
Figure 3.3.
Wildlife Habitat Types for the Proposed Kotzebue to Cape Blossom Road Project (Tile 3)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012

CapeBlossom_Habitats_ReportMaps_12-211.mxd





Wildlife Habitat Type

🟦	Coastal Beach and Waters	🟨	Moist Sedge-Shrub Meadow
🟦	Rivers and Streams	🟩	Low and Tall Willow Scrub
🟦	Freshwater Lake or Pond	🟩	Low Birch-Ericaceous Scrub
🟪	Littoral Aquatic Bed and Lacustrine Fringe	🟩	Tall Alder Scrub
🟪	Sedge Marsh	⬛	Gravel Fill
🟫	Wet Sedge-Shrub Meadow		
🟫	Moist Dwarf Shrub Tundra		

50 0 50 100 Meters
200 0 200 400 Feet

Figure 3.4.
Wildlife Habitat Types for the Proposed Kotzebue to Cape Blossom Road Project (Tile 4)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012

CapeBlossom_Habitats_ReportMaps_12-211.mxd

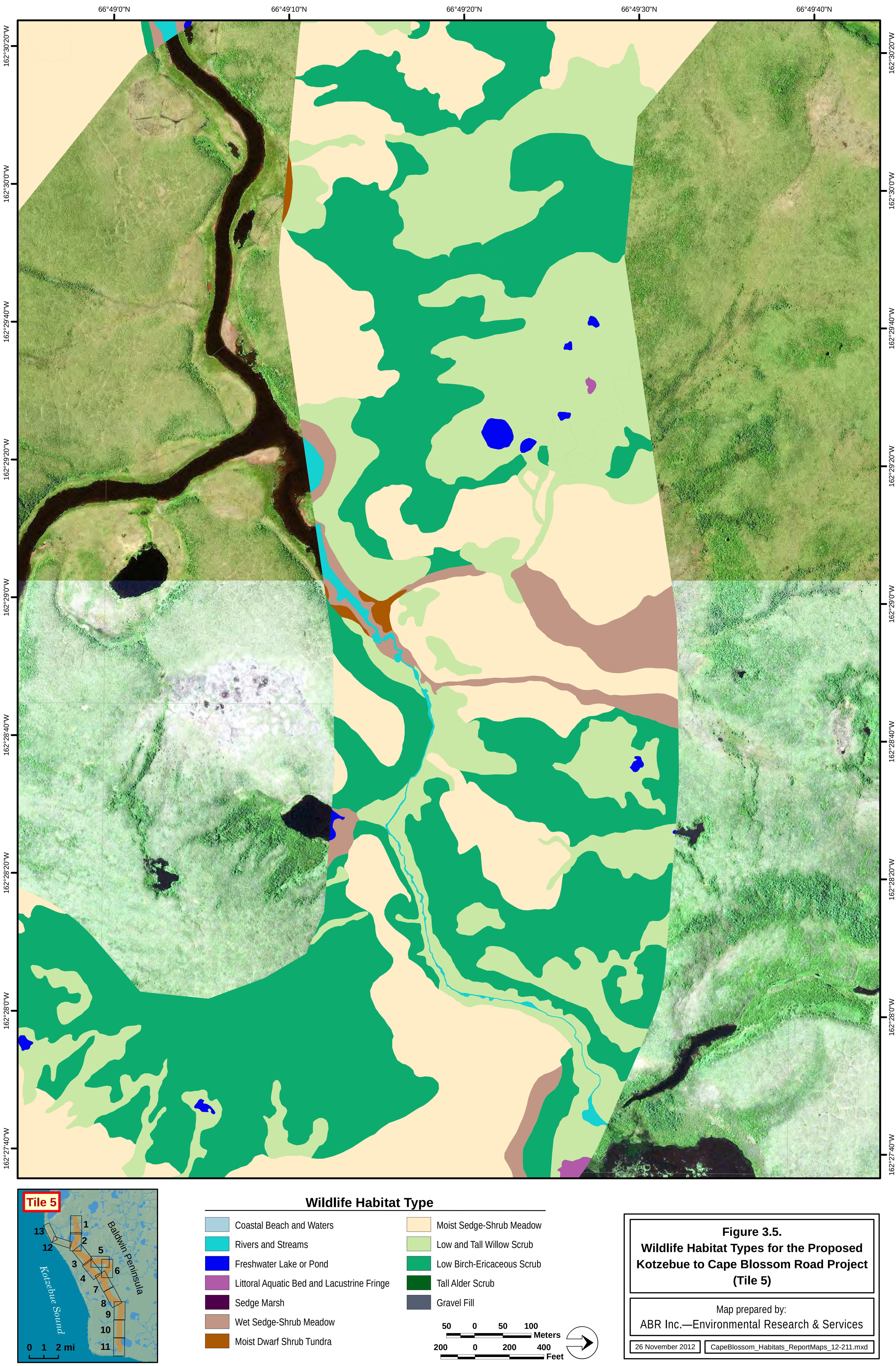
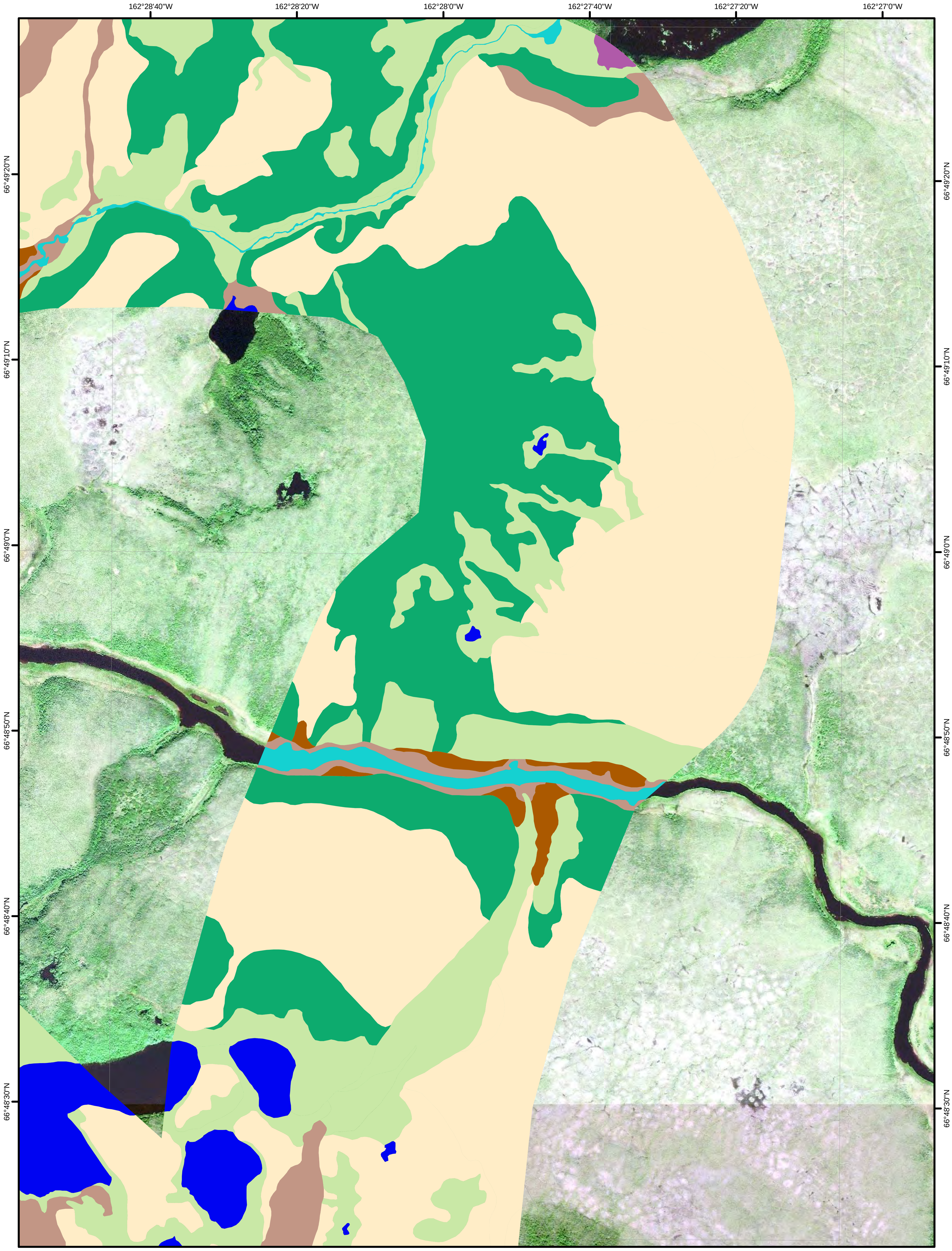
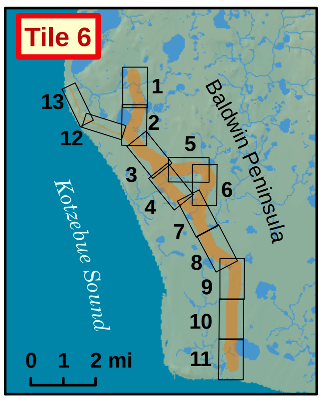


Figure 3.5.
Wildlife Habitat Types for the Proposed Kotzebue to Cape Blossom Road Project (Tile 5)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012 | CapeBlossom_Habitats_ReportMaps_12-211.mxd





Wildlife Habitat Type

- 🟦 Coastal Beach and Waters
- 🟦 Rivers and Streams
- 🟦 Freshwater Lake or Pond
- 🟪 Littoral Aquatic Bed and Lacustrine Fringe
- 🟪 Sedge Marsh
- 🟫 Wet Sedge-Shrub Meadow
- 🟫 Moist Dwarf Shrub Tundra
- ⬜ Moist Sedge-Shrub Meadow
- 🟩 Low and Tall Willow Scrub
- 🟩 Low Birch-Ericaceous Scrub
- 🟩 Tall Alder Scrub
- ⬛ Gravel Fill

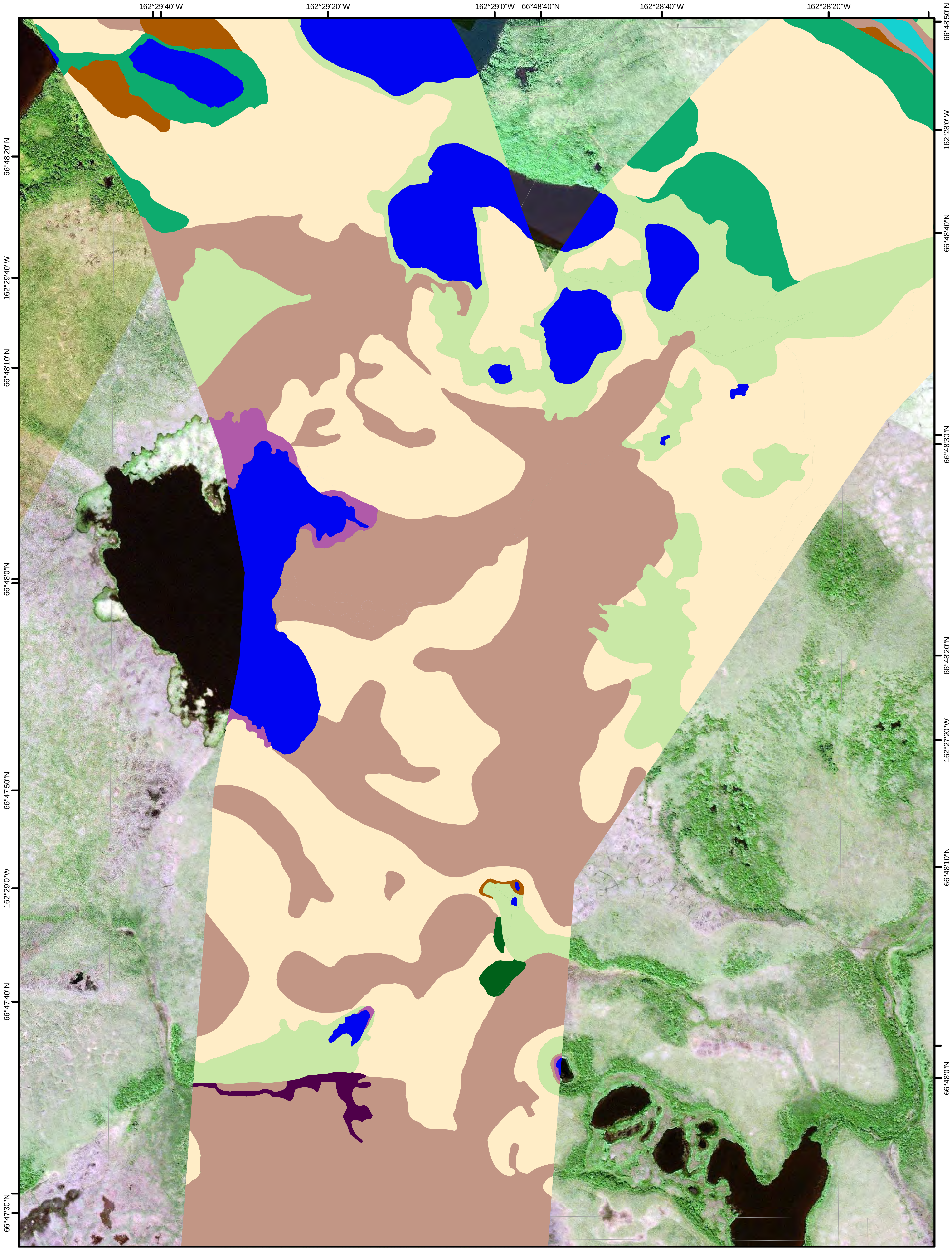
50 0 50 100 Meters

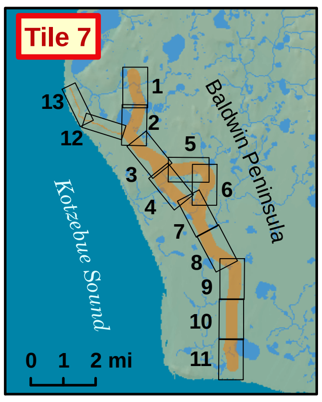
200 0 200 400 Feet

Figure 3.6.
Wildlife Habitat Types for the Proposed Kotzebue to Cape Blossom Road Project (Tile 6)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012
CapeBlossom_Habitats_ReportMaps_12-211.mxd





Wildlife Habitat Type

🟦 Coastal Beach and Waters	🟨 Moist Sedge-Shrub Meadow
🟦 Rivers and Streams	🟩 Low and Tall Willow Scrub
🟦 Freshwater Lake or Pond	🟩 Low Birch-Ericaceous Scrub
🟪 Littoral Aquatic Bed and Lacustrine Fringe	🟩 Tall Alder Scrub
🟪 Sedge Marsh	⬛ Gravel Fill
🟫 Wet Sedge-Shrub Meadow	
🟧 Moist Dwarf Shrub Tundra	

50 0 50 100 Meters

200 0 200 400 Feet

Figure 3.7.
Wildlife Habitat Types for the Proposed Kotzebue to Cape Blossom Road Project (Tile 7)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012

CapeBlossom_Habitats_ReportMaps_12-211.mxd

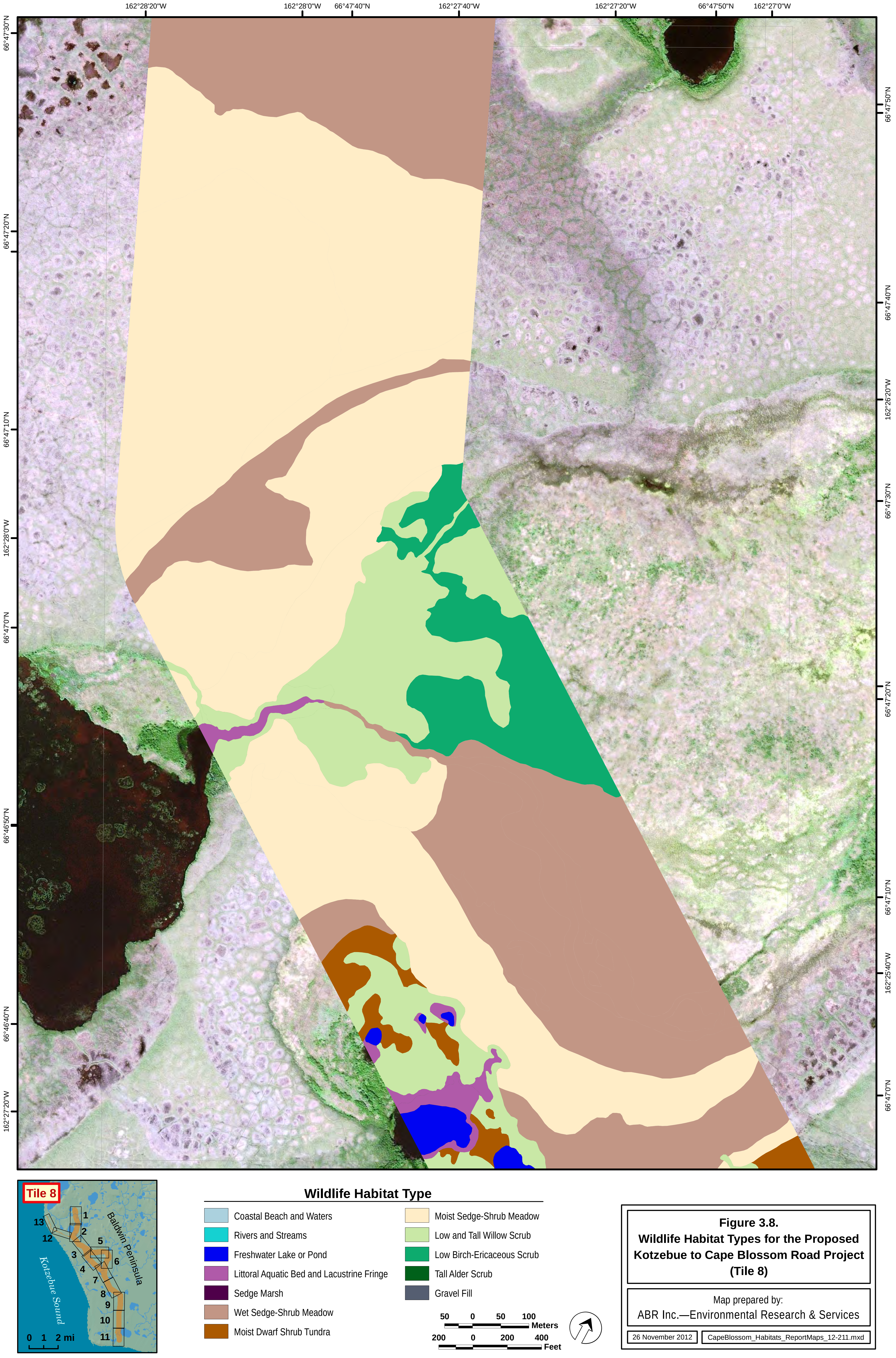
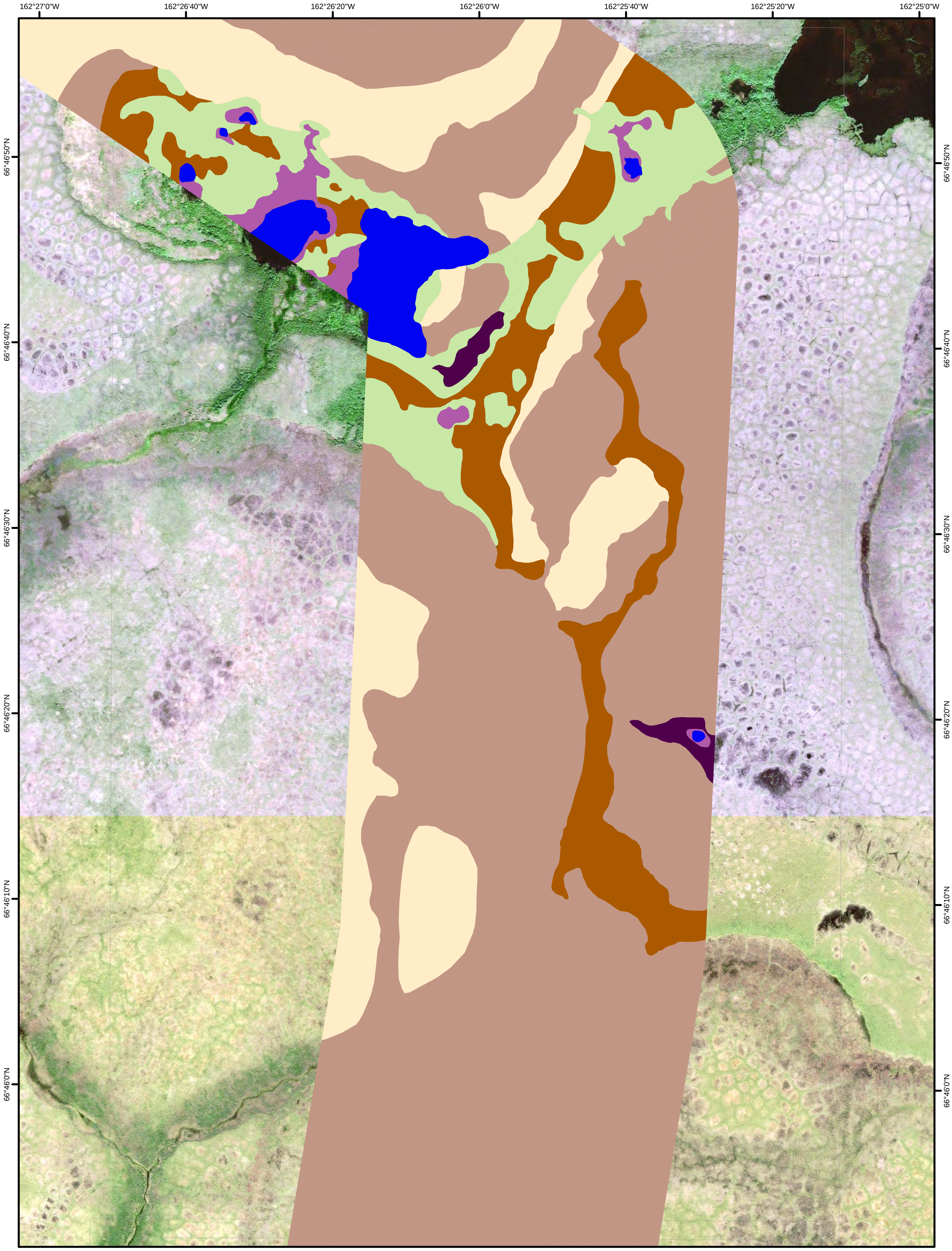
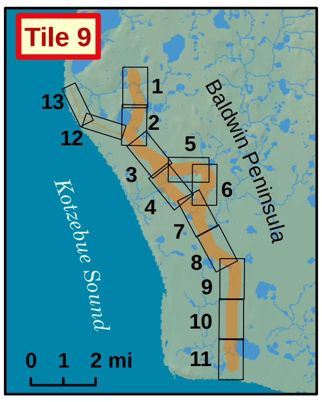


Figure 3.8.
Wildlife Habitat Types for the Proposed Kotzebue to Cape Blossom Road Project (Tile 8)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012 | CapeBlossom_Habitats_ReportMaps_12-211.mxd





Wildlife Habitat Type

- 🟦 Coastal Beach and Waters
- 🟦 Rivers and Streams
- 🟦 Freshwater Lake or Pond
- 🟪 Littoral Aquatic Bed and Lacustrine Fringe
- 🟪 Sedge Marsh
- 🟫 Wet Sedge-Shrub Meadow
- 🟫 Moist Dwarf Shrub Tundra
- 🟨 Moist Sedge-Shrub Meadow
- 🟩 Low and Tall Willow Scrub
- 🟩 Low Birch-Ericaceous Scrub
- 🟩 Tall Alder Scrub
- ⬛ Gravel Fill

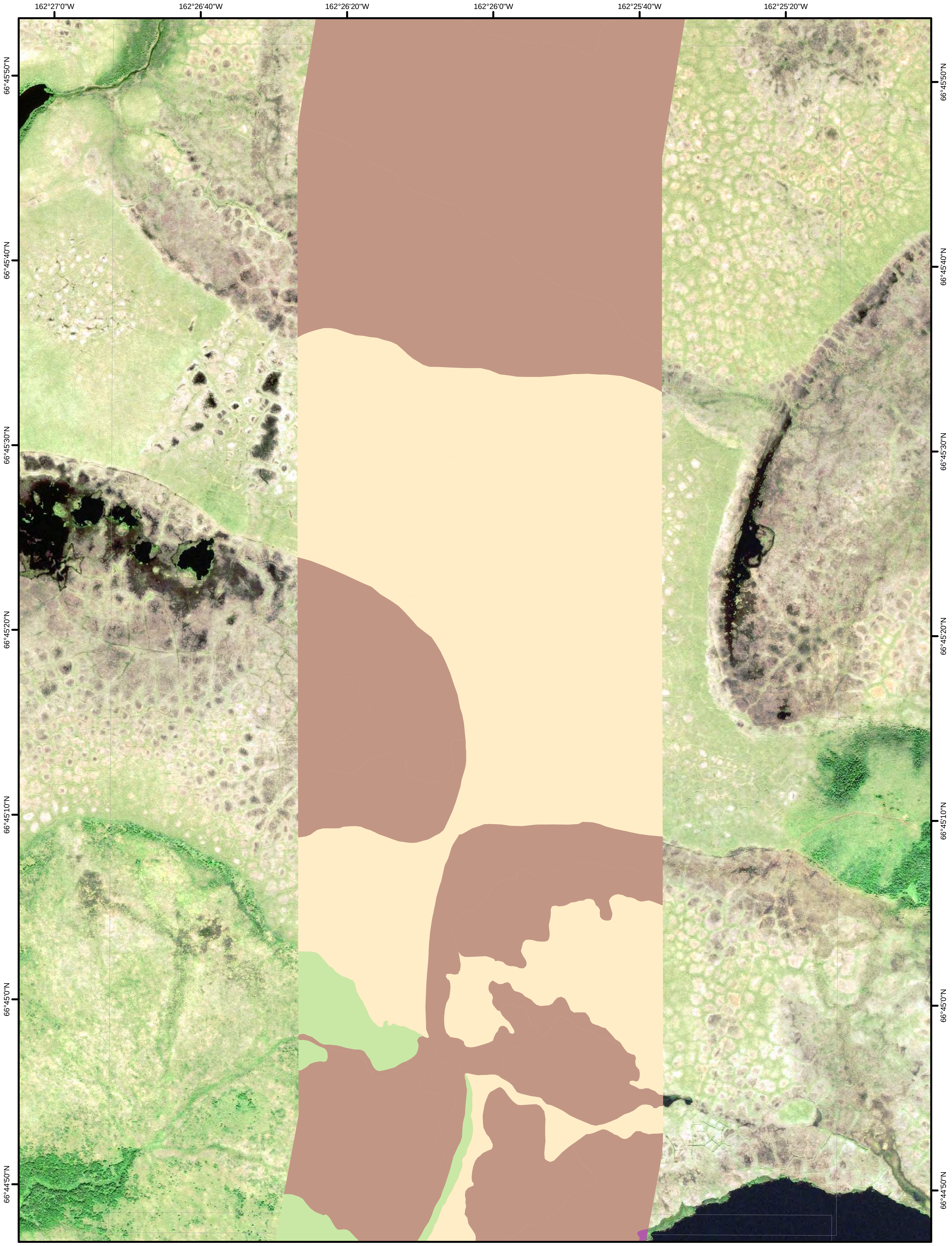
50 0 50 100 Meters

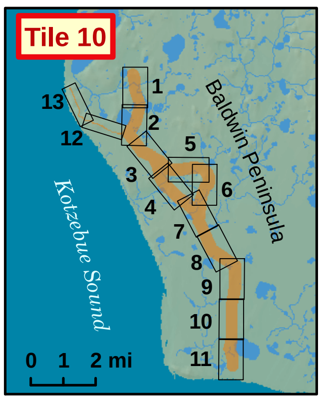
200 0 200 400 Feet

Figure 3.9.
Wildlife Habitat Types for the Proposed Kotzebue to Cape Blossom Road Project (Tile 9)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012 | CapeBlossom_Habitats_ReportMaps_12-211.mxd





Wildlife Habitat Type

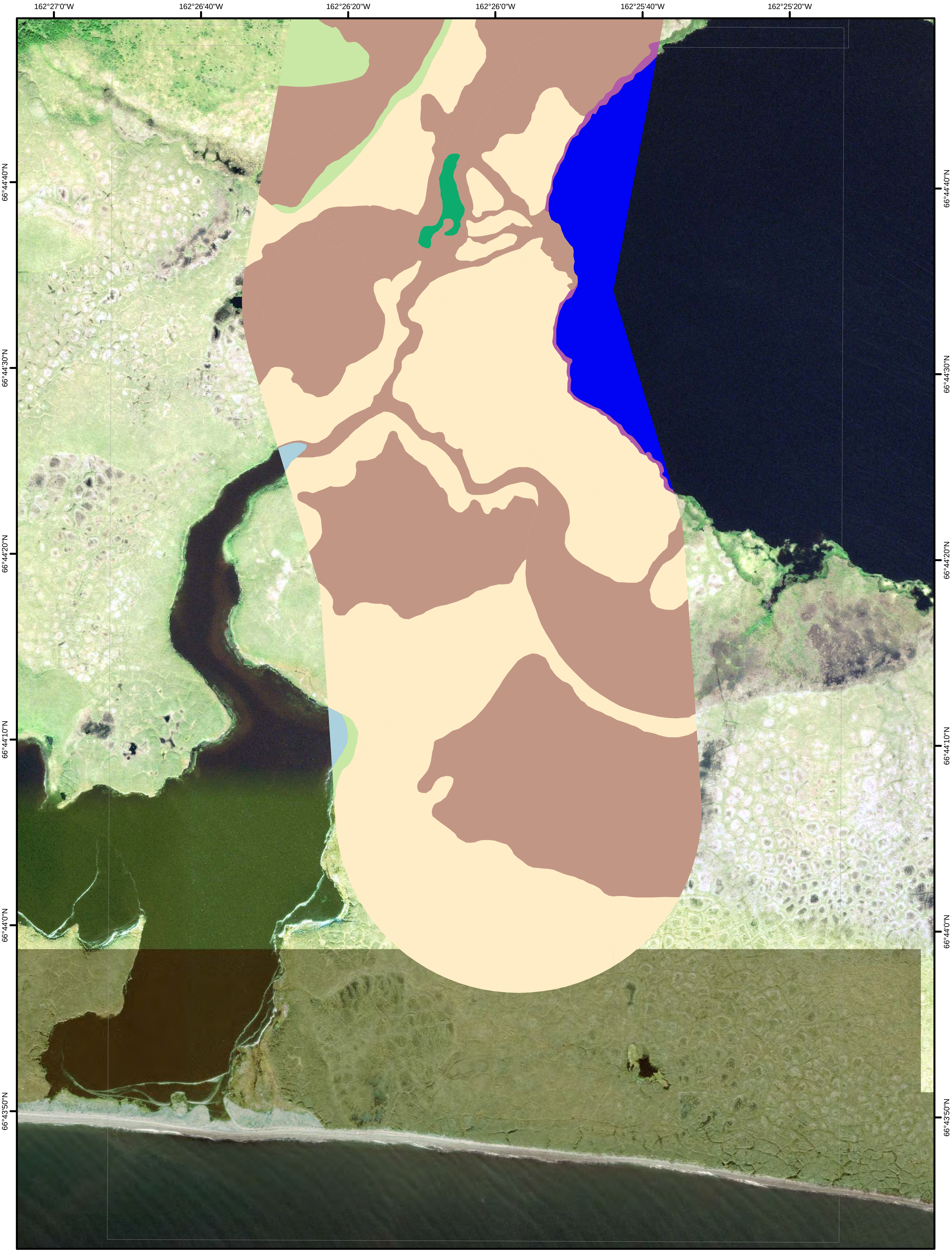
🟦	Coastal Beach and Waters	🟨	Moist Sedge-Shrub Meadow
🟦	Rivers and Streams	🟩	Low and Tall Willow Scrub
🟦	Freshwater Lake or Pond	🟩	Low Birch-Ericaceous Scrub
🟪	Littoral Aquatic Bed and Lacustrine Fringe	🟩	Tall Alder Scrub
🟪	Sedge Marsh	⬛	Gravel Fill
🟫	Wet Sedge-Shrub Meadow		
🟧	Moist Dwarf Shrub Tundra		

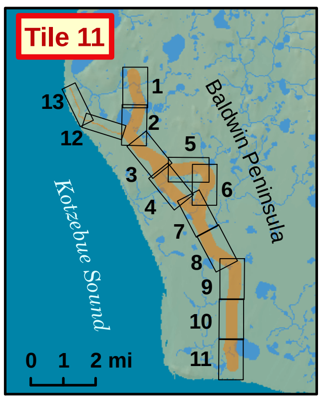
Figure 3.10. Wildlife Habitat Types for the Proposed Kotzebue to Cape Blossom Road Project (Tile 10)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012

CapeBlossom_Habitats_ReportMaps_12-211.mxd





Wildlife Habitat Type

- 🟦 Coastal Beach and Waters
- 🟦 Rivers and Streams
- 🟦 Freshwater Lake or Pond
- 🟪 Littoral Aquatic Bed and Lacustrine Fringe
- 🟪 Sedge Marsh
- 🟫 Wet Sedge-Shrub Meadow
- 🟫 Moist Dwarf Shrub Tundra
- 🟨 Moist Sedge-Shrub Meadow
- 🟩 Low and Tall Willow Scrub
- 🟩 Low Birch-Ericaceous Scrub
- 🟩 Tall Alder Scrub
- ⬛ Gravel Fill

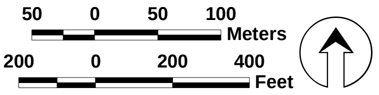
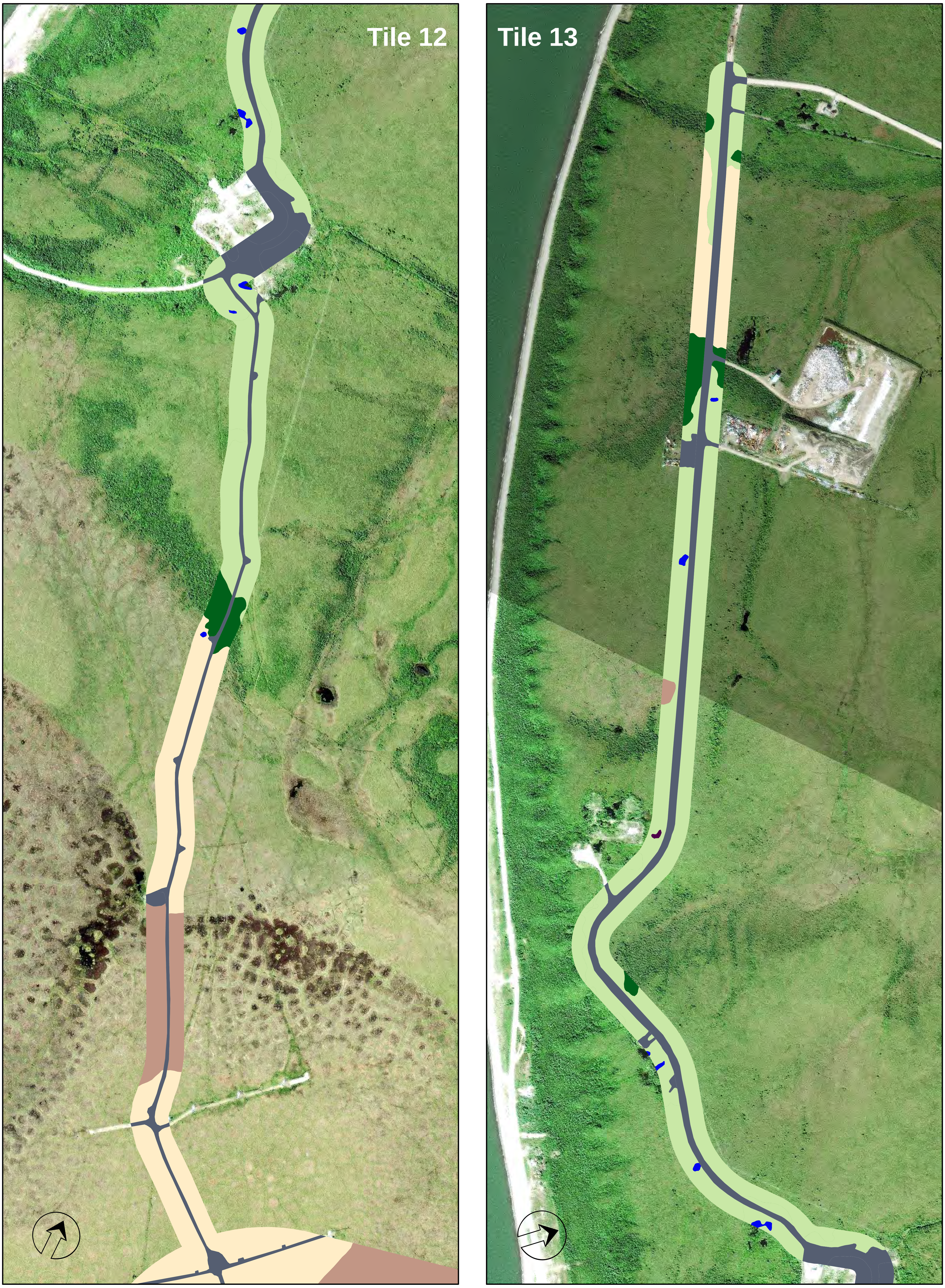
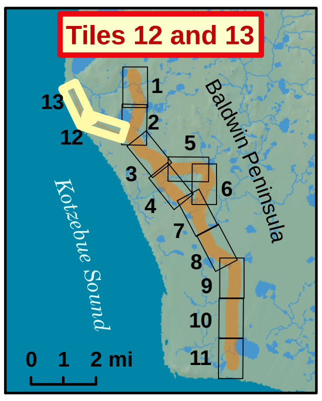


Figure 3.11.
Wildlife Habitat Types for the Proposed Kotzebue to Cape Blossom Road Project (Tile 11)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012 | CapeBlossom_Habitats_ReportMaps_12-211.mxd





Wildlife Habitat Type

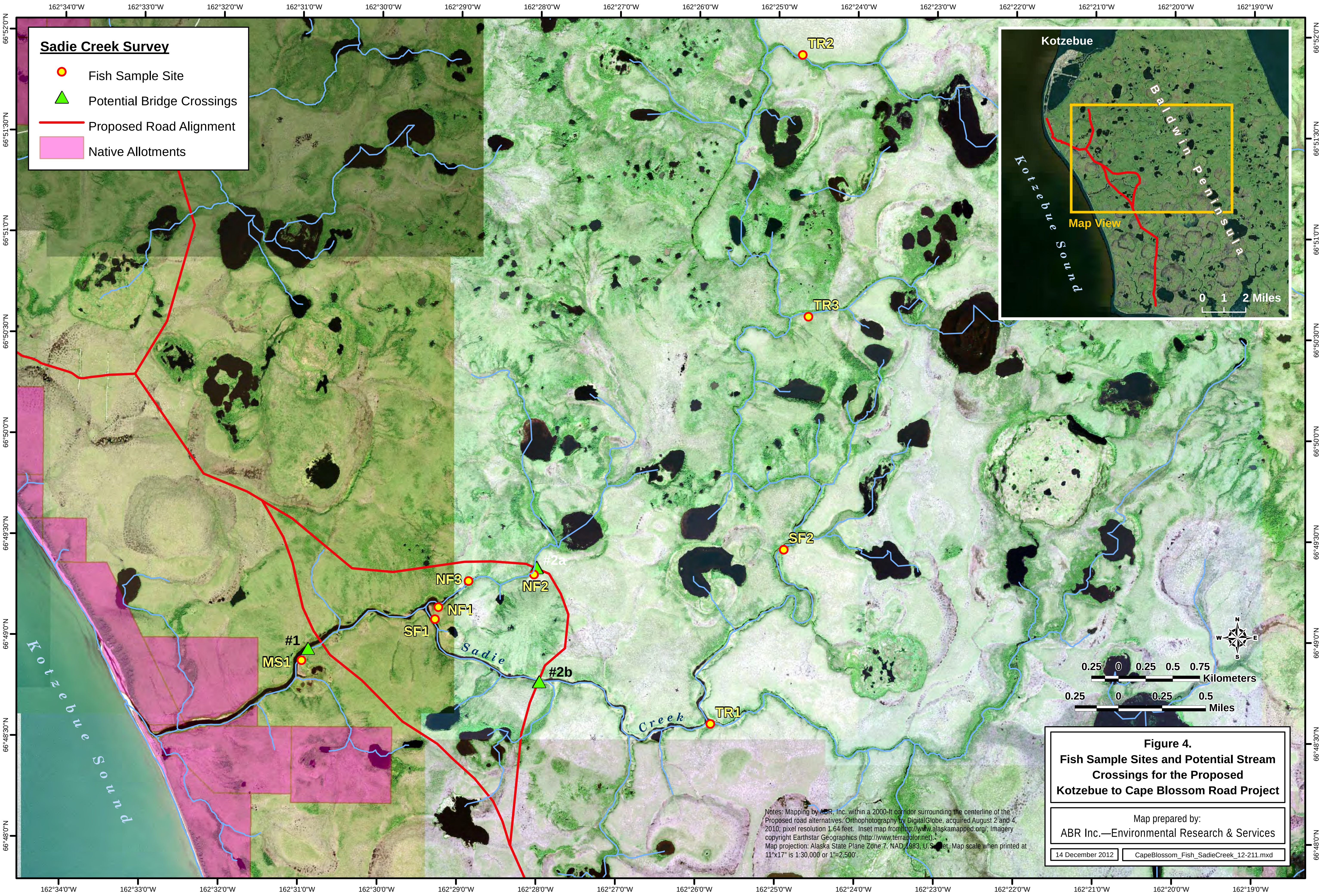
- 🟦 Coastal Beach and Waters
- 🟦 Rivers and Streams
- 🟦 Freshwater Lake or Pond
- 🟪 Littoral Aquatic Bed and Lacustrine Fringe
- 🟪 Sedge Marsh
- 🟫 Wet Sedge-Shrub Meadow
- 🟫 Moist Dwarf Shrub Tundra
- 🟨 Moist Sedge-Shrub Meadow
- 🟩 Low and Tall Willow Scrub
- 🟩 Low Birch-Ericaceous Scrub
- 🟩 Tall Alder Scrub
- ⬛ Gravel Fill

50 0 50 100 Meters
200 0 200 400 Feet

Figure 3.12.
Wildlife Habitat Types for the Proposed Kotzebue to Cape Blossom Road Project (Tiles 12 and 13)

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012
CapeBlossom_Habitats_ReportMaps_Tile12-13_12-211.mxd



Notes: Mapping by ABR, Inc. within a 2000-ft corridor surrounding the centerline of the Proposed road alternatives. Orthophotography by DigitalGlobe, acquired August 2 and 4, 2010; pixel resolution 1.64 feet. Inset map fromhttp://www.alaskamapped.org/; Imagery copyright Earthstar Geographics (http://www.terracolor.net).
Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. Feet. Map scale when printed at 11"x17" is 1:30,000 or 1"=2,500'.

Figure 4.
Fish Sample Sites and Potential Stream Crossings for the Proposed Kotzebue to Cape Blossom Road Project

Map prepared by:
ABR Inc.—Environmental Research & Services

14 December 2012

CapeBlossom_Fish_SadieCreek_12-211.mxd

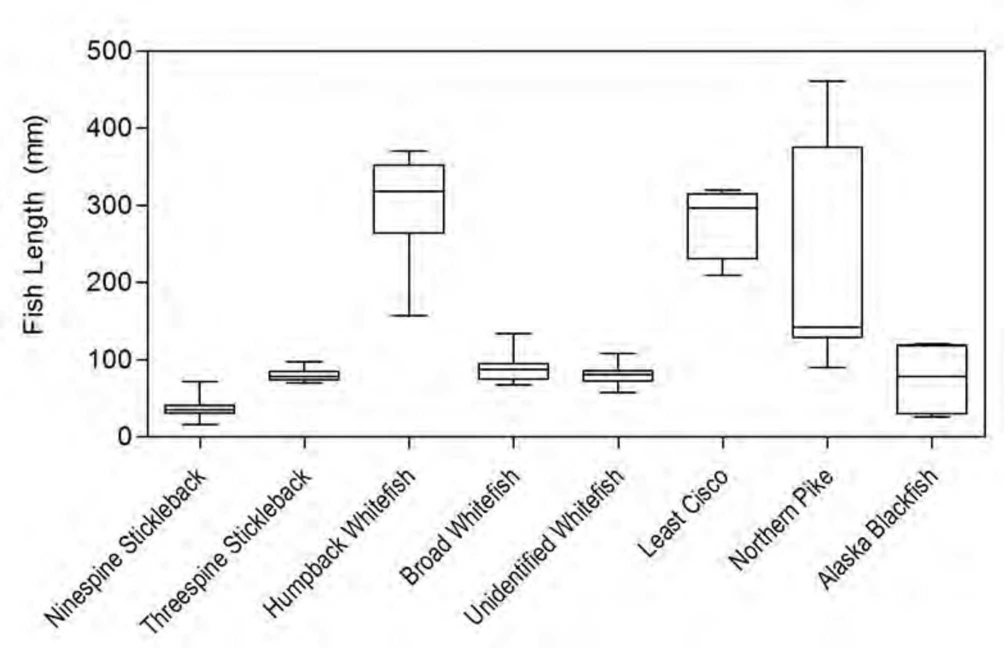


Figure 5. Fish length by species for fish caught in Sadie Creek and its tributaries near Kotzebue, Alaska, 26–28 July and 11–13 August 2012. Boxes represent the lower quartile, median, and upper quartile and whiskers represent minimum and maximum values.

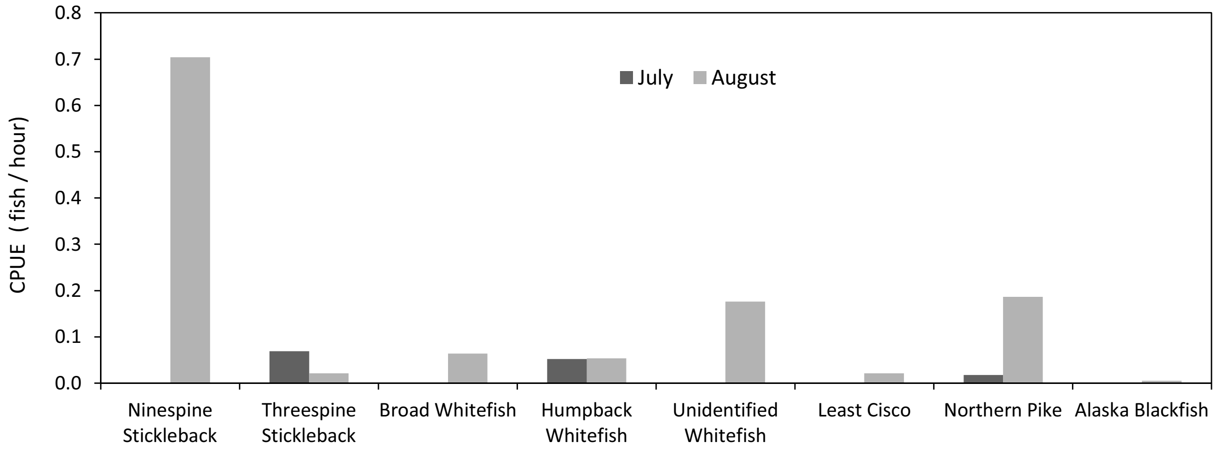


Figure 6. Catch per unit effort (CPUE) by species in fyke nets in Sadie Creek and its tributaries near Kotzebue, Alaska, 26–28 July and 11–13 August 2012.

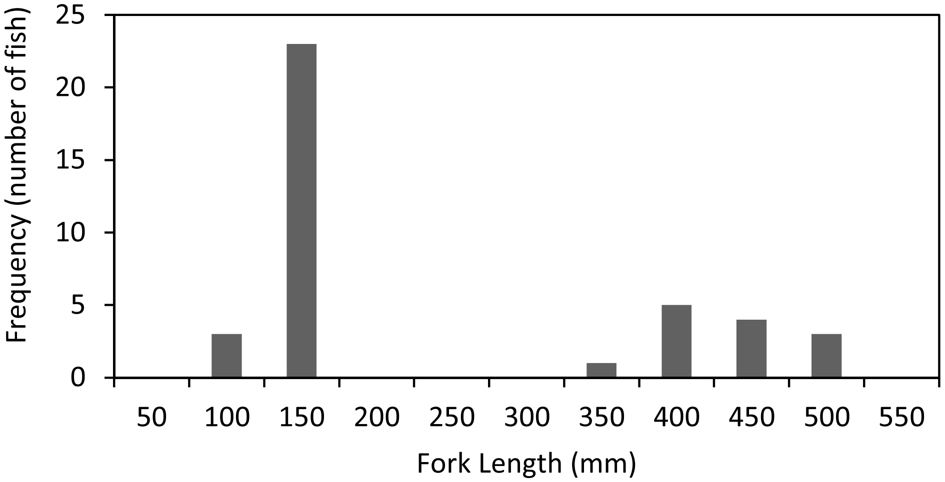
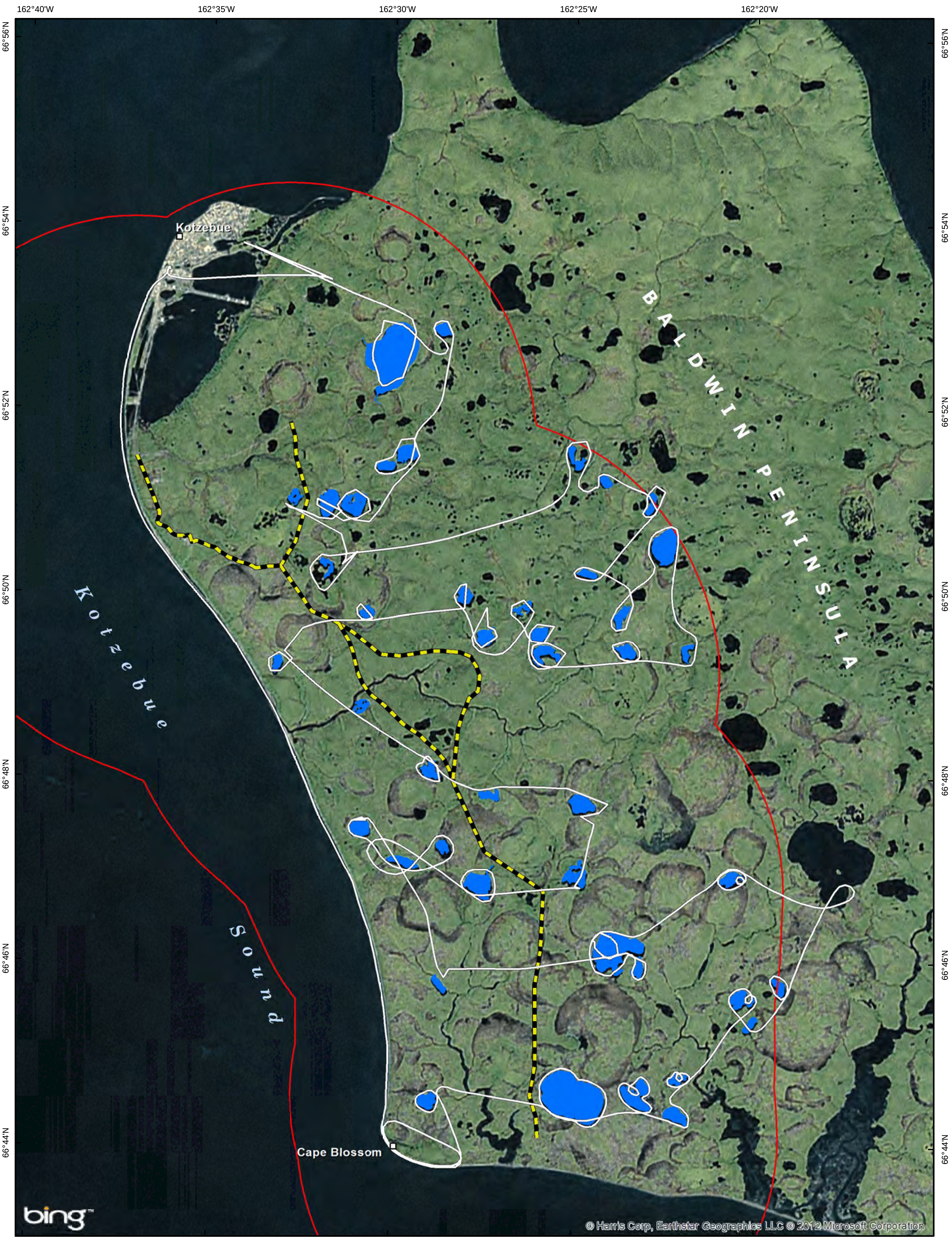
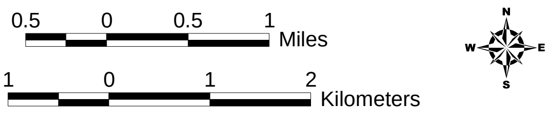


Figure 7. Distribution of values of fork length (mm) of northern pike caught in fyke nets and minnow traps in Sadie Creek and its tributaries near Kotzebue, Alaska, 26–28 July and 11–13 August 2012.



Cape Blossom Avian Surveys 2012

- 〰 Flight Routes
- 🟦 Lakes Surveyed
- ⭕ Study Area (3-mile Buffer of Proposed Road Alternatives)
- ▬ Road Alignment Alternatives



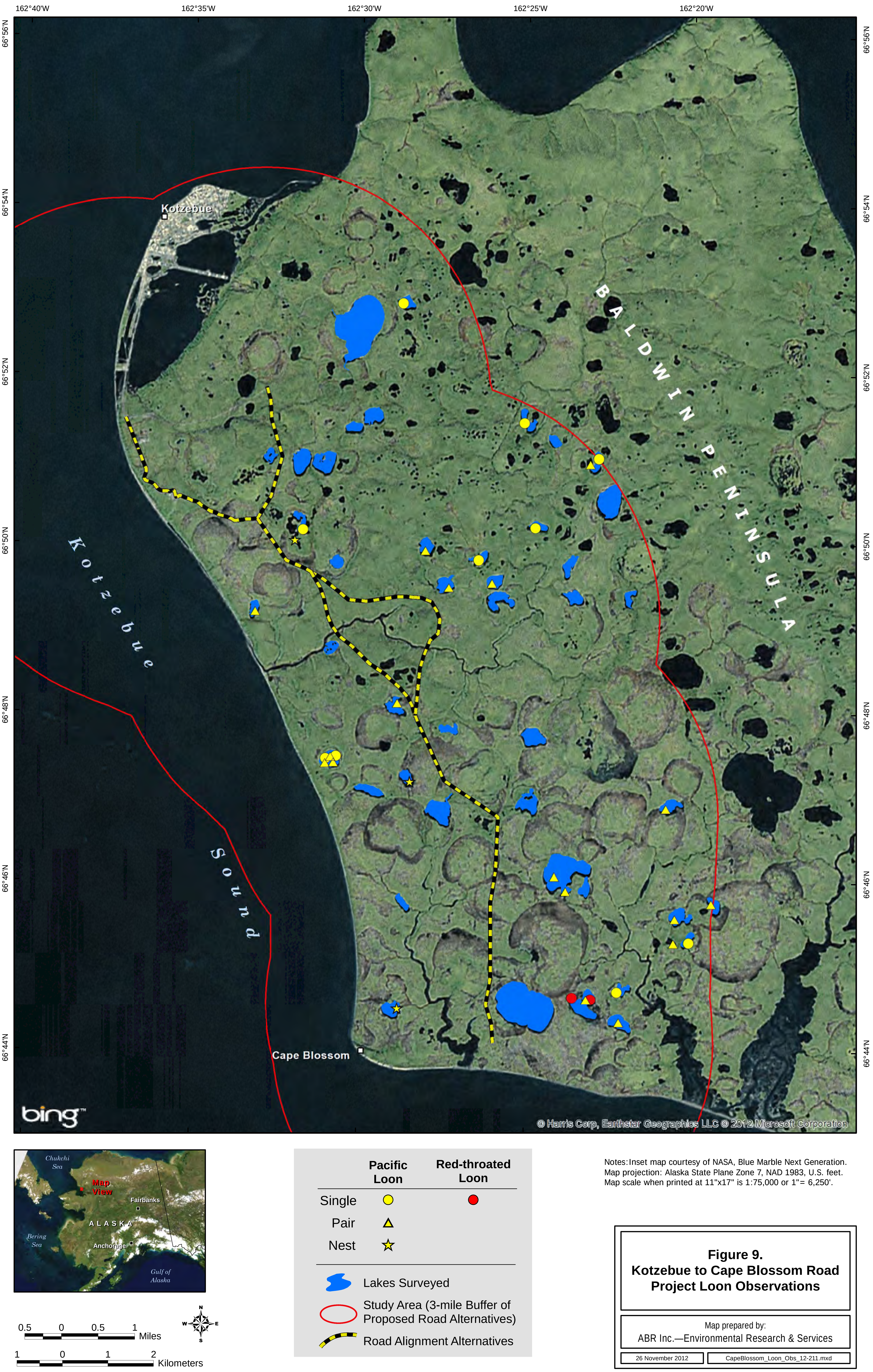
Notes: Inset map courtesy of NASA, Blue Marble Next Generation.
Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. feet.
Map scale when printed at 11"x17" is 1:75,000 or 1"= 6,250'.

Figure 8.
Kotzebue to Cape Blossom Road Project Avian Study Area and Flight Route

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012

CapeBlossom_Loons_SA_12-211.mxd



Notes: Inset map courtesy of NASA, Blue Marble Next Generation.
Map projection: Alaska State Plane Zone 7, NAD 1983, U.S. feet.
Map scale when printed at 11"x17" is 1:75,000 or 1"= 6,250'.

Figure 9.
Kotzebue to Cape Blossom Road Project Loon Observations

Map prepared by:
ABR Inc.—Environmental Research & Services

26 November 2012
CapeBlossom_Loon_Obs_12-211.mxd

Appendix A. Wetland determination forms and verification plot data, Cape Blossom to Kotzebue Road, Alaska, 2012.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_01

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Channel (active)

Local relief (concave, convex, none): flat **Slope:** 3.5 **%** / 2.0 **°** **Elevation:** 40

Subregion : Northern Alaska **Lat.:** 66 51.642 **Long.:** 162 32.782 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** R2UBH

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: Sadie Creek - low gradient tundra stream flooded at time of site visit (submerged petfri calcan salix spp). Visible banks well vegetated.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Herb Stratum			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	0	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	0	(A)	0 (B)

Prevalence Index = B/A = 0.000

Hydrophytic Vegetation Indicators:

- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☑ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Plot size (radius, or length x width) 2m x 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground

Total Cover of Bryophytes

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: characterizing active channel of Sadie Creek - no visible vegetation in this water of the U.S.

SOIL

Sampling Point: CB_01

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:
Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and flowing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 36
Water Table Present? Yes ○ No ● Depth (inches):
Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_02

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Terrace

Local relief (concave, convex, none): none **Slope:** 5.2 **%** / 3.0 **°** **Elevation:** 75

Subregion : Northern Alaska **Lat.:** 66.86086 **Long.:** -162.546573333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1B

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: STOW on small rise near creek. small microtopo variation, not quite hummocks but rolling ground. not a riverine system. salix tall-low, plot centered in tall shrubs.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Salix pulchra	60	☑	FACW
2. Vaccinium uliginosum	15	☐	FAC
3. Spiraea stevenii	20	☑	FACU
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	95		

50% of Total Cover: 47.5 20% of Total Cover: 19

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Rubus arcticus	5	☐	FAC
2. Petasites frigidus	10	☐	FACW
3. Chamerion angustifolium	2	☐	FACU
4. Equisetum pratense	40	☑	FACW
5. Calamagrostis canadensis	30	☑	FAC
6. Artemisia tilesii	5	☐	FACU
7. Aconitum delphinifolium	1	☐	FAC
8.		☐	
9.		☐	
10.		☐	
Total Cover:	93		

50% of Total Cover: 46.5 20% of Total Cover: 18.6

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	75.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	110	x 2 =	220	
FAC species	51	x 3 =	153	
FACU species	27	x 4 =	108	
UPL species	0	x 5 =	0	
Column Totals:	188	(A)	481	(B)

Prevalence Index = B/A = 2.559

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 45

Total Cover of Bryophytes 50

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_02

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type[1]	Loc²	Texture	Remarks
0-2									Hemic Organics	
2-5									Sapric Organics	
5-8	5Y	4/1	85	7.5YR	3/3	15	C	PL	Silty Clay Loam	
8-25	10Y	4/1	70	10YR	3/4	30	C	PL	Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☑ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: si cl lo

Depth (inches): 5

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 11

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 5

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

small areas a standing water from previous night's precip. Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_03

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): concave **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 50

Subregion : Northern Alaska **Lat.:** 66.8617816666667 **Long.:** -162.54697 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1E

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

Hydrophytic Vegetation Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?**	Yes ●	No ○
Hydric Soil Present?	Yes ●	No ○			
Wetland Hydrology Present?	Yes ●	No ○			

Remarks: hgwst wet sedge meadow tundra. game trail. nonpatterned.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1. Vaccinium uliginosum	3	☑	FAC
2. Ledum decumbens	1	☐	FACW
3. Empetrum nigrum	1	☐	FAC
4. Betula nana	3	☑	FAC
5. Vaccinium oxycoccos	1	☐	OBL
6. Chamaedaphne calyculata	2	☐	FACW
7. Salix fuscescens	3	☑	FACW
8. Andromeda polifolia	0.5	☐	FACW
9.		☐	
10.		☐	
Total Cover:	14.5		

50% of Total Cover: 7.25 20% of Total Cover: 2.9

Herb Stratum			
1. Carex aquatilis	20	☑	OBL
2. Eriophorum scheuchzeri	10	☑	OBL
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	30		

50% of Total Cover: 15 20% of Total Cover: 6

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	31	x 1 =	31	
FACW species	6.5	x 2 =	13	
FAC species	7	x 3 =	21	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	44.5	(A)	65	(B)

Prevalence Index = B/A = 1.461

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 0

Total Cover of Bryophytes 98

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: 1% Pedicularis sp.

SOIL

Sampling Point: CB_03

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc²		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 16

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water. probing indicates frozen at 16in bgs

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 2

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

standing water in large portions of site. Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_04

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Undulating

Local relief (concave, convex, none): convex **Slope:** 8.7 **%** / 5.0 **°** **Elevation:** 55

Subregion : Northern Alaska **Lat.:** 66.8620516666667 **Long.:** -162.546875 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: SLOW on slight slope to emergent (CB_03). nonpatterned.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Vaccinium uliginosum	10	☐	FAC
2. Betula nana	10	☐	FAC
3. Vaccinium vitis-idaea	15	☑	FAC
4. Salix pulchra	40	☑	FACW
5. Ledum decumbens	5	☐	FACW
6. Empetrum nigrum	3	☐	FAC
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	83		
50% of Total Cover: 41.5	20% of Total Cover: 16.6		
Herb Stratum			
1. Petasites frigidus	5	☑	FACW
2. Calamagrostis canadensis	10	☑	FAC
3. Chamerion angustifolium	0.5	☐	FACU
4. Aconitum delphinifolium	1	☐	FAC
5. Rubus arcticus	3	☐	FAC
6. Carex bigelowii	5	☑	FAC
7. Luzula parviflora	1	☐	FAC
8.		☐	
9.		☐	
10.		☐	
Total Cover:	25.5		
50% of Total Cover: 12.75	20% of Total Cover: 5.1		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	58	x 3 =	174
FACU species	0.5	x 4 =	2
UPL species	0	x 5 =	0
Column Totals:	108.5 (A)		276 (B)

Prevalence Index = B/A = 2.544

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 5

Total Cover of Bryophytes 70

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: 20% lichen cover. trace pyrola sp, legume, lycopodium. 1% poa sp.

SOIL

Sampling Point: CB_04

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc[2]		
0-7									Fibric Organics	
7-8	10YR	3/2	100						Silty Clay Loam	organic inclusions
8-14	5Y	4/1	75	10YR	4/4	25	C	PL	Silty Clay Loam	organic and 7.5YR3/2 inclusions

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)
Depth (inches): 14

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 11
Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 7

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_05

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Undulating

Local relief (concave, convex, none): tussocks **Slope:** 0.0 **%** **/** 0.0 **°** **Elevation:** 55

Subregion : Northern Alaska **Lat.:** 66.86249 **Long.:** -162.54682 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS3/EM1B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: SLOTT. Pattern not visible at field map scale - large level moist tussock polys w wet sedge swales.tussock polys are PSS1B sdel (tussocks not dominant), wet sedge swales are PEM1E hgwst (small pockets of standing water w rubcha, caraqu, vacvit, vaculi, sphagnum). Point in polys.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1. Vaccinium uliginosum	10	☑	FAC
2. Ledum decumbens	5	☐	FACW
3. Vaccinium vitis-idaea	20	☑	FAC
4. Empetrum nigrum	5	☐	FAC
5. Betula nana	5	☐	FAC
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	45		

50% of Total Cover: 22.5 20% of Total Cover: 9

Herb Stratum			
1. Eriophorum vaginatum	15	☑	FACW
2. Rubus chamaemorus	5	☐	FACW
3. Carex rotundata	3	☐	OBL
4. Carex bigelowii	3	☐	FAC
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	26		

50% of Total Cover: 13 20% of Total Cover: 5.2

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3	x 1 =	3
FACW species	25	x 2 =	50
FAC species	43	x 3 =	129
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	71	(A)	182 (B)

Prevalence Index = B/A = 2.563

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 3

Total Cover of Bryophytes 45

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: 45% lichen cover

SOIL

Sampling Point: CB_05

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc²	Texture	Remarks
0-5							Fibric Organic	
5-13							Hemic Organic	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)
Depth (inches): 13

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 5
Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 3

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_06

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Hillside

Local relief (concave, convex, none): tussocks **Slope:** 8.7 **%** / 5.0 **°** **Elevation:** 50

Subregion : Northern Alaska **Lat.:** 66.86331 **Long.:** -162.547005 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1B

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: SLOBE, tussocks present but not enough to classify as SLOTT

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Vaccinium uliginosum	0.5	☐	FAC
2. Betula nana	20	☑	FAC
3. Vaccinium uliginosum	5	☐	FAC
4. Vaccinium vitis-idaea	20	☑	FAC
5. Ledum decumbens	10	☐	FACW
6. Salix pulchra	10	☐	FACW
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	65.5		
50% of Total Cover: 32.75	20% of Total Cover: 13.1		

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Rubus chamaemorus	3	☐	FACW
2. Carex bigelowii	15	☑	FAC
3. Arctagrostis latifolia	5	☑	FACW
4. Petasites frigidus	3	☐	FACW
5. Eriophorum vaginatum	5	☑	FACW
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	31		
50% of Total Cover: 15.5	20% of Total Cover: 6.2		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	36	x 2 =	72	
FAC species	60	x 3 =	180	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	96	(A)	252	(B)

Prevalence Index = B/A = 2.625

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 0

Total Cover of Bryophytes 90

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: scattered lichens. carbig and erivag tussocks

SOIL

Sampling Point: CB_06

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc²		
0-4									Hemic Organics	
4-5	10YR	4/4	100						Silty Clay Loam	
5-8	10YR	4/1	100						Silty Clay Loam	
8-16	5Y	5/2	80	10YR	4/6	20	C	PL	Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 16

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 11

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 4

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_07

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): none **Slope:** 5.2 **%** / 3.0 **°** **Elevation:** 90

Subregion : Northern Alaska **Lat.:** 66.839815 **Long.:** -162.54651 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1B

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: moose scat, browse, trails. sam (cult adv) notes that they usually get a moose by these lakes every fall. STCW comprised solely of salpul.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1. Salix pulchra	80	☑	FACW
2. Vaccinium vitis-idaea	3	☐	FAC
3. Vaccinium uliginosum	7	☐	FAC
4. Empetrum nigrum	1	☐	FAC
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	91		

50% of Total Cover: 45.5 20% of Total Cover: 18.2

Herb Stratum			
1. Lycopodium clavatum	3	☐	FACU
2. Rubus chamaemorus	0.5	☐	FACW
3. Chamerion angustifolium	0.5	☐	FACU
4. Calamagrostis canadensis	10	☑	FAC
5. Equisetum pratense	20	☑	FACW
6. Petasites frigidus	10	☑	FACW
7. Aconitum delphinifolium	0.5	☐	FAC
8. Rubus arcticus	10	☑	FACU
9. Artemisia tilesii	3	☐	FACU
10.		☐	
Total Cover:	57.5		

50% of Total Cover: 28.75 20% of Total Cover: 11.5

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	80.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	110.5	x 2 =	221
FAC species	21.5	x 3 =	64.5
FACU species	16.5	x 4 =	66
UPL species	0	x 5 =	0
Column Totals:	148.5 (A)		351.5 (B)

Prevalence Index = B/A = 2.367

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 25

Total Cover of Bryophytes 70

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: trace stellaria, galium, moelat, legume, valerian.

SOIL

Sampling Point: CB_07

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc²		
0-3									Hemic Organics	
3-4									Sapric Organics	
4-33	10YR	3/2	80	7.5YR	3/3	20	C	PL	Silty Clay Loam	very high organic content

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 33

Hydric Soil Present? Yes ● No ○

Remarks:

4-33: do not believe org content is high enough to qualify as an organic soil, but there is a very high organic content throughout layer. given the landscape, hydro, and veg, believe that the organic staining masks lighter soil colors, obscuring the necessary colors for A14

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 9

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 3

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_08

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Kettle

Local relief (concave, convex, none): none **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 50

Subregion : Northern Alaska **Lat.:** 66.840435 **Long.:** -162.54633 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: HGMBS. Possible that this site is drying out? General impression is of a drying lake margin invaded by calcan. Adjacent pem pond fringe w arcful and eriang.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Salix pulchra	10	☑	FACW
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	10		

50% of Total Cover: 5 20% of Total Cover: 2

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Chamerion angustifolium	5	☐	FACU
2. Rubus arcticus	20	☑	FAC
3. Calamagrostis canadensis	20	☑	FAC
4. Rumex arcticus	3	☐	FAC
5. Petasites frigidus	30	☑	FACW
6. Artemisia tilesii	3	☐	FACU
7. Eriophorum angustifolium	1	☐	OBL
8. Comarum palustre	0.5	☐	OBL
9.		☐	
10.		☐	
Total Cover:	82.5		

50% of Total Cover: 41.25 20% of Total Cover: 16.5

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1.5	x 1 =	1.5
FACW species	40	x 2 =	80
FAC species	43	x 3 =	129
FACU species	8	x 4 =	32
UPL species	0	x 5 =	0
Column Totals:	92.5	(A)	242.5 (B)

Prevalence Index = B/A = 2.622

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 10

Total Cover of Bryophytes 85

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: trace legume, stellaria. eriang strongly tristichous lvs red-purple.

SOIL

Sampling Point: CB_08

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc²		
0-2									Fibric Organics	
2-4	10YR	3/1	65	10YR	4/6	35	C	PL	Silty Clay Loam	7% oxidized rhizospheres around living roots
4-9	2.5Y	3/1	80	10YR	3/6	20	C	PL	Silty Clay Loam	5% oxidized rhizospheres around living roots
9-20	2.5Y	3/1	95	10YR	3/6	5	C	PL	Silty Clay Loam	5% oxidized rhizospheres around living roots

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

see comments for CB_07 soils. not as high of organic content here, but still w fairly heavy organic.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 4
Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 2

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_09

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): none **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 65

Subregion : Northern Alaska **Lat.:** 66.83983 **Long.:** -162.54817 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1E

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: wet sedge meadow tundra hgwst

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

Tree Stratum		**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.			☐	
2.			☐	
3.			☐	
4.			☐	
5.			☐	
	Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum				
1.	Salix fuscescens	5	☑	FACW
2.	Betula nana	5	☑	FAC
3.	Andromeda polifolia	1	☐	FACW
4.			☐	
5.			☐	
6.			☐	
7.			☐	
8.			☐	
9.			☐	
10.			☐	
	Total Cover:	11		

50% of Total Cover: 5.5 20% of Total Cover: 2.2

Herb Stratum				
1.	Eriophorum scheuchzeri	7	☑	OBL
2.	Eriophorum angustifolium	3	☐	OBL
3.	Carex chordorrhiza	10	☑	OBL
4.	Carex crawfordii	10	☑	FAC
5.	Carex aquatilis	5	☐	OBL
6.	Carex rotundata	7	☑	OBL
7.			☐	
8.			☐	
9.			☐	
10.			☐	
	Total Cover:	42		

50% of Total Cover: 21 20% of Total Cover: 8.4

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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	32	x 1 =	32
FACW species	6	x 2 =	12
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	53 (A)		89 (B)

Prevalence Index = B/A = 1.679

Hydrophytic Vegetation Indicators:

☑ **Dominance Test is > 50%**

☑ **Prevalence Index is ≤3.0**

☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**

☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 35

Total Cover of Bryophytes 60

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: 5% unidentified small grass, no infloresence, in standing water (possibly a Puccinellia sp). 2% unidentified Pedicularis sp.

SOIL

Sampling Point: CB_09

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]
- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 4
Water Table Present? Yes ○ No ● Depth (inches):
Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_10

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): tussocks **Slope:** ____ **%** / ____ **°** **Elevation:** 55

Subregion : Northern Alaska **Lat.:** 66.83964 **Long.:** -162.548971666667 **Datum:** WGS84

Soil Map Unit Name: ____ **NWI classification:** PSS3B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: SLOBE

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1. Salix pulchra	5	☐	FACW
2. Empetrum nigrum	5	☐	FAC
3. Ledum decumbens	20	☑	FACW
4. Vaccinium uliginosum	10	☐	FAC
5. Vaccinium vitis-idaea	20	☑	FAC
6. Betula nana	10	☐	FAC
7. Arctostaphylos alpina	1	☐	FACU
8.		☐	
9.		☐	
10.		☐	
Total Cover:	71		

50% of Total Cover: 35.5 20% of Total Cover: 14.2

Herb Stratum			
1. Carex aquatilis	10	☑	OBL
2. Eriophorum angustifolium	2	☐	OBL
3. Eriophorum vaginatum	7	☑	FACW
4. Rubus chamaemorus	5	☑	FACW
5. Petasites frigidus	1	☐	FACW
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	25		

50% of Total Cover: 12.5 20% of Total Cover: 5

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	12	x 1 =	12	
FACW species	38	x 2 =	76	
FAC species	45	x 3 =	135	
FACU species	1	x 4 =	4	
UPL species	0	x 5 =	0	
Column Totals:	96	(A)	227	(B)

Prevalence Index = B/A = 2.365

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable) ____

% Bare Ground 0

Total Cover of Bryophytes 90

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: 5% lichen cover

SOIL

Sampling Point: CB_10

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type[1]	Loc²	Texture	Remarks
0-6			100						Fibric Organics	
6-14			100						Hemic Organics	
14-16	2.5Y	3/2	100						Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer
Depth (inches): 16

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 7
Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 5

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** **CB_11**

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): tussocks **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 75

Subregion : Northern Alaska **Lat.:** 66.8379116666667 **Long.:** -162.558888333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS3/EM1B

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

Hydrophytic Vegetation Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?**	Yes ●	No ○
Hydric Soil Present?	Yes ●	No ○			
Wetland Hydrology Present?	Yes ●	No ○			

Remarks: SLOTT

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1. Betula nana	15	☑	FAC
2. Vaccinium vitis-idaea	20	☑	FAC
3. Ledum decumbens	20	☑	FACW
4. Vaccinium uliginosum	7	☐	FAC
5. Empetrum nigrum	7	☐	FAC
6. Arctostaphylos alpina	1	☐	FACU
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	70		

50% of Total Cover: 35 20% of Total Cover: 14

Herb Stratum			
1. Eriophorum vaginatum	15	☑	FACW
2. Carex aquatilis	7	☑	OBL
3. Rubus chamaemorus	5	☐	FACW
4. Pedicularis langsdorfii	1	☐	FACW
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	28		

50% of Total Cover: 14 20% of Total Cover: 5.6

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	7	x 1 =	7	
FACW species	41	x 2 =	82	
FAC species	49	x 3 =	147	
FACU species	1	x 4 =	4	
UPL species	0	x 5 =	0	
Column Totals:	98	(A)	240	(B)

Prevalence Index = B/A = 2.449

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground

Total Cover of Bryophytes

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_11

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type[1]	Loc²	Texture	Remarks
0-6									Fibric Organic	
6-11									Hemic Organic	
11-16	10YR	3/2	100						Sandy Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)
Depth (inches): 16

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 9
Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 5

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_12

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): hummocky **Slope:** 0.0 % / 0.0 ° **Elevation:** 85

Subregion : Northern Alaska **Lat.:** 66.839135 **Long.:** -162.569861666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1E

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: HGWST

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Andromeda polifolia	5	☑	FACW
2. Betula nana	3	☑	FAC
3. Vaccinium uliginosum	1	☐	FAC
4. Empetrum nigrum	1	☐	FAC
5. Vaccinium oxycoccos	1	☐	OBL
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	11		
50% of Total Cover: 5.5	20% of Total Cover: 2.2		
Herb Stratum			
1. Carex rotundata	7	☑	OBL
2. Carex aquatilis	5	☑	OBL
3. Eriophorum angustifolium	7	☑	OBL
4. Eriophorum russeolum	5	☑	FACW
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	24		
50% of Total Cover: 12	20% of Total Cover: 4.8		

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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	10	x 2 =	20
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	35 (A)		55 (B)

Prevalence Index = B/A = 1.571

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 60

Total Cover of Bryophytes 35

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: erirus - no seed heads, possibly a different single-headed species. bare ground includes open water, likely biased high due to high water.
1% unid Pedicularis sp.

SOIL

Sampling Point: CB_12

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 6

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

high water, fully submerged betnan. Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_13

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Hillside

Local relief (concave, convex, none): none **Slope:** 8.7 **%** / 5.0 **°** **Elevation:** 75

Subregion : Northern Alaska **Lat.:** 66.840925 **Long.:** -162.580771666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1B

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: STCAW

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Sapling/Shrub Stratum			
1. Salix pulchra	60	☑	FACW
2. Alnus viridis ssp. crispa	20	☑	FAC
3. Vaccinium uliginosum	2	☐	FAC
4. Linnaea borealis	10	☐	FACU
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	92		
50% of Total Cover: 46	20% of Total Cover: 18.4		

Herb Stratum			
1. Chamerion angustifolium	0.5	☐	FACU
2. Equisetum pratense	25	☑	FACW
3. Petasites frigidus	1	☐	FACW
4. Aconitum delphinifolium	1	☐	FAC
5. Artemisia tilesii	2	☐	FACU
6. Rubus arcticus	35	☑	FAC
7. Saxifraga nelsoniana	1	☐	FAC
8. Calamagrostis canadensis	1	☐	FAC
9. Moehringia lateriflora	0.5	☐	FACU
10.		☐	
Total Cover:	67		
50% of Total Cover: 33.5	20% of Total Cover: 13.4		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	86	x 2 =	172
FAC species	60	x 3 =	180
FACU species	13	x 4 =	52
UPL species	0	x 5 =	0
Column Totals:	159	(A)	404 (B)

Prevalence Index = B/A = 2.541

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations**[1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation**[1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 80

Total Cover of Bryophytes 15

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: trace unid herbs

SOIL

Sampling Point: CB_13

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type[1]	Loc²	Texture	Remarks
0-1									Fibric Organics	
1-6									Hemic Organics	
6-10									Sapric Organics	10YR4/1 inclusion
10-12	10YR	3/1	100						Silty Clay Loam	pockets of 2.5Y4/1
12-15	5Y	4/2	95	10YR	3/3	5	C	PL	Silty Clay Loam	organic inclusions
15-20	10Y	5/1	85	10YR	5/8	15	C	PL	Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☑ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 20

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 10

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 2

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_14

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Bench

Local relief (concave, convex, none): convex **Slope:** 3.5 **%** / 2.0 **°** **Elevation:** 140

Subregion : Northern Alaska **Lat.:** 66.8433966666667 **Long.:** -162.59712 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1B

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: SLCW

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Salix pulchra	50	☑	FACW
2. Betula nana	2	☐	FAC
3. Salix richardsonii	30	☑	FACW
4. Arctostaphylos alpina	1	☐	FACU
5. Empetrum nigrum	1	☐	FAC
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	84		
50% of Total Cover: 42	20% of Total Cover: 16.8		
Herb Stratum			
1. Equisetum pratense	60	☑	FACW
2. Petasites frigidus	3	☐	FACW
3. Calamagrostis canadensis	1	☐	FAC
4. Pyrola asarifolia	1	☐	FACU
5. Carex bigelowii	3	☐	FAC
6. Chamerion angustifolium	0.5	☐	FACU
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	68.5		
50% of Total Cover: 34.25	20% of Total Cover: 13.7		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	143	x 2 =	286
FAC species	7	x 3 =	21
FACU species	2.5	x 4 =	10
UPL species	0	x 5 =	0
Column Totals:	152.5	(A)	317 (B)

Prevalence Index = B/A = 2.079

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 75

Total Cover of Bryophytes 20

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: Trace galium sp, legume

SOIL

Sampling Point: CB_14

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc²		
0-6									Fibric Organics	mineral incl, fugitive dust from road/white ali
6-7	2.5Y	3/2	100						Coarse Sandy Loam	likely from road or white alice fill.
7-10			100						Hemic Organics	
10-12			100						Sapric Organics	
12-23	5Y	4/1	75	10YR	4/6	25	C	PL	Silty Clay Loam	organic inclusions

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 23

Hydric Soil Present? Yes ● No ○

Remarks:

rounded-angular gravels in fibric organic layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 18
Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 12

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 24-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_15

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Kettle

Local relief (concave, convex, none): concave **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 120

Subregion : Northern Alaska **Lat.:** 66.8434733333333 **Long.:** -162.597345 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PUBH

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: Vegetated fringe. tall banks sloughing.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Herb Stratum			
1. Glyceria pulchella	10	☑	OBL
2. Petasites frigidus	0.5	☐	FACW
3. Hippuris vulgaris	3	☐	OBL
4. Equisetum palustre	1	☐	FACW
5. Eriophorum viridicarinatum	7	☑	OBL
6. Eriophorum angustifolium	10	☑	OBL
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	31.5		

50% of Total Cover: 15.75 20% of Total Cover: 6.3

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	30	x 1 =	30	
FACW species	1.5	x 2 =	3	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	31.5	(A)	33	(B)

Prevalence Index = B/A = 1.048

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width)

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 98

Total Cover of Bryophytes 0

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: possibly sparganium and utricularia in center of pond

SOIL

Sampling Point: CB_15

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 20

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

pond, 20+ inches deep. Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_16

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Bluff

Local relief (concave, convex, none): rolling **Slope:** 99.9 **%** / 45.0 **°** **Elevation:** 13

Subregion : Northern Alaska **Lat.:** 66.84572 **Long.:** -162.607905 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** U

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ○ No ●

Wetland Hydrology Present? Yes ○ No ●

Is the Sampled Area within a Wetland? Yes ○ No ●

Remarks: STCW on bluff to beach. winds gusting to ca 40knots, flooding, was told that a barge sunk this morning. All morning photos poor quality due to weather.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Salix pulchra	40	☑	FACW
2. Salix glauca	10	☐	FAC
3. Salix richardsonii	30	☑	FACW
4. Salix alaxensis	10	☐	FAC
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	90		
50% of Total Cover: 45	20% of Total Cover: 18		

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Chamerion angustifolium	5	☐	FACU
2. Equisetum pratense	60	☑	FACW
3. Calamagrostis canadensis	1	☐	FAC
4. Artemisia tilesii	2	☐	FACU
5. Aconitum delphinifolium	0.5	☐	FAC
6. Rubus arcticus	0.5	☐	FAC
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	69		
50% of Total Cover: 34.5	20% of Total Cover: 13.8		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	130	x 2 =	260	
FAC species	22	x 3 =	66	
FACU species	7	x 4 =	28	
UPL species	0	x 5 =	0	
Column Totals:	159	(A)	354	(B)

Prevalence Index = B/A = 2.226

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 98

Total Cover of Bryophytes 0

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_16

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc²		
0-3									Hemic Organics	
3-4			100						Sapric Organics	
4-11	5Y	4/1	85	7.5YR	3/4	15	C	PL	Silty Clay Loam	
11-24	10YR	4/2	95	10YR	4/3	5	C	PL	Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2]Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ●

Remarks:

no hydric soil indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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? (includes capillary fringe) Yes ● No ○ Depth (inches): 21

Wetland Hydrology Present? Yes ○ No ●

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_17

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Bench

Local relief (concave, convex, none): concave **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 120

Subregion : Northern Alaska **Lat.:** 66.8465433333333 **Long.:** -162.608803333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1C

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: SLOW. Small drainage feature

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Betula nana	10	☐	FAC
2. Salix pulchra	30	☑	FACW
3. Salix richardsonii	20	☑	FACW
4. Arctostaphylos alpina	5	☐	FACU
5. Ledum decumbens	1	☐	FACW
6. Vaccinium vitis-idaea	5	☐	FAC
7. Empetrum nigrum	5	☐	FAC
8. Vaccinium uliginosum	2	☐	FAC
9.		☐	
10.		☐	
Total Cover:	78		

50% of Total Cover: 39 20% of Total Cover: 15.6

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Carex aquatilis	10	☑	OBL
2. Equisetum palustre	1	☐	FACW
3. Petasites frigidus	1	☐	FACW
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	12		

50% of Total Cover: 6 20% of Total Cover: 2.4

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	10	x 1 =	10	
FACW species	53	x 2 =	106	
FAC species	22	x 3 =	66	
FACU species	5	x 4 =	20	
UPL species	0	x 5 =	0	
Column Totals:	90	(A)	202	(B)

Prevalence Index = B/A = 2.244

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations**[1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation**[1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 1m x 1m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 10

Total Cover of Bryophytes 88

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: bryophytes submerged.

SOIL

Sampling Point: CB_17

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 5

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

drainage feature, linear. Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_18

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Bench

Local relief (concave, convex, none): rolling **Slope:** 5.2 **%** / 3.0 **°** **Elevation:** 100

Subregion : Northern Alaska **Lat.:** 66.8464866666667 **Long.:** -162.608595 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: SLOW

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Betula nana	10	☐	FAC
2. Salix pulchra	30	☑	FACW
3. Salix richardsonii	20	☑	FACW
4. Arctostaphylos alpina	5	☐	FACU
5. Ledum decumbens	1	☐	FACW
6. Vaccinium vitis-idaea	5	☐	FAC
7. Empetrum nigrum	5	☐	FAC
8. Vaccinium uliginosum	2	☐	FAC
9.		☐	
10.		☐	
Total Cover:	78		

50% of Total Cover: 39 20% of Total Cover: 15.6

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Petasites frigidus	0.5	☐	FACW
2. Equisetum arvense	0.5	☐	FAC
3. Pyrola asarifolia	5	☑	FACU
4. Calamagrostis canadensis	2	☑	FAC
5. Rubus chamaemorus	2	☑	FACW
6. Carex bigelowii	0.5	☐	FAC
7. Parnassia palustris	1	☐	FACW
8. Luzula comosa	2	☑	FAC
9.		☐	
10.		☐	
Total Cover:	13.5		

50% of Total Cover: 6.75 20% of Total Cover: 2.7

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	83.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	54.5	x 2 =	109	
FAC species	27	x 3 =	81	
FACU species	10	x 4 =	40	
UPL species	0	x 5 =	0	
Column Totals:	91.5	(A)	230	(B)

Prevalence Index = B/A = 2.514

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 10

Total Cover of Bryophytes 85

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: trace anemone sp, 1% Pedicularis sp

SOIL

Sampling Point: CB_18

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type[1]	Loc[2]	Texture	Remarks
0-1									Fibric Organics	
1-6									Hemic Organics	
6-7	7.5YR	3/1							Silty Clay Loam	
7-15	5Y	4/1	80	10YR	4/6	20	C	PL	Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 15

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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? (includes capillary fringe) Yes ● No ○ Depth (inches): 9

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_19

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Bench

Local relief (concave, convex, none): none **Slope:** 5.2 **%** / 3.0 **°** **Elevation:** 60

Subregion : Northern Alaska **Lat.:** 66.85736 **Long.:** -162.617791666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1B

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: STCA

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1. Alnus viridis ssp. crispa	90	☑	FAC
2. Salix alaxensis	3	☐	FAC
3. Vaccinium uliginosum	1	☐	FAC
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	94		

50% of Total Cover: 47 20% of Total Cover: 18.8

Herb Stratum			
1. Artemisia tilesii	2	☐	FACU
2. Chamerion angustifolium	7	☑	FACU
3. Rubus chamaemorus	3	☐	FACW
4. Calamagrostis canadensis	7	☑	FAC
5. Moehringia lateriflora	1	☐	FACU
6. Carex bigelowii	10	☑	FAC
7. Mertensia paniculata	1	☐	FACU
8.		☐	
9.		☐	
10.		☐	
Total Cover:	31		

50% of Total Cover: 15.5 20% of Total Cover: 6.2

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	75.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	3	x 2 =	6
FAC species	111	x 3 =	333
FACU species	11	x 4 =	44
UPL species	0	x 5 =	0
Column Totals:	125 (A)		383 (B)

Prevalence Index = B/A = 3.064

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 98

Total Cover of Bryophytes 0

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: trace valerian, legume

SOIL

Sampling Point: CB_19

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc²		
0-1			100						Fibric Organics	
1-3			100						Hemic Organics	
3-14			100						Sapric Organics	fine gravels, mineral soils from road
14-17	10YR	3/1							Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 17

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 11

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 4

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_20

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Bench

Local relief (concave, convex, none): tussocks **Slope:** 5.2 **%** / 3.0 **°** **Elevation:** 80

Subregion : Northern Alaska **Lat.:** 66.855905 **Long.:** -162.616108333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1 / 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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: SLOTT (lots of salix, not quite hgmt)

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Salix richardsonii	5	☐	FACW
2. Salix glauca	10	☑	FAC
3. Salix pulchra	5	☐	FACW
4. Betula nana	10	☑	FAC
5. Vaccinium uliginosum	7	☑	FAC
6. Ledum decumbens	3	☐	FACW
7. Empetrum nigrum	1	☐	FAC
8. Arctostaphylos alpina	2	☐	FACU
9.		☐	
10.		☐	
Total Cover:	43		

50% of Total Cover: 21.5 20% of Total Cover: 8.6

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Eriophorum vaginatum	60	☑	FACW
2. Carex aquatilis	10	☐	OBL
3. Calamagrostis canadensis	1	☐	FAC
4. Rubus chamaemorus	3	☐	FACW
5. Artemisia tilesii	1	☐	FACU
6. Parnassia palustris	0.5	☐	FACW
7. Chamerion angustifolium	0.5	☐	FACU
8.		☐	
9.		☐	
10.		☐	
Total Cover:	76		

50% of Total Cover: 38 20% of Total Cover: 15.2

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	76.5	x 2 =	153
FAC species	29	x 3 =	87
FACU species	3.5	x 4 =	14
UPL species	0	x 5 =	0
Column Totals:	119 (A)		264 (B)

Prevalence Index = B/A = 2.218

Hydrophytic Vegetation Indicators:

☑ **Dominance Test is > 50%**

☑ **Prevalence Index is ≤3.0**

☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**

☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 10

Total Cover of Bryophytes 30

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: trace legume, galium

SOIL

Sampling Point: CB_20

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2			100						Fibric Organics	
2-4	10YR	2/1	100						Coarse Loamy Sand	fine gravels
4-6			100						Hemic Organics	
6-11			100						Sapric Organics	
11-16	10Y	4/1	60	10YR	4/6	40	C	PL	Silty Clay Loam	C increase w depth

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☑ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)
Depth (inches): 16

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 10
Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 4

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_21

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Floodplain

Local relief (concave, convex, none): tussocks **Slope:** 5.2 **%** **/** 3.0 **°** **Elevation:** 10

Subregion : Northern Alaska **Lat.:** 66.81355 **Long.:** -162.46647 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS4B

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: SDEE along bank of Sadie Creek. Creek flooded, wetted width ca 50 ft. much of what appears to be emergent floodplain in field map is underwater. opposite bank STCW along small steep rise.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	

Total Cover: 0

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1. Empetrum nigrum	30	☑	FAC
2. Betula nana	7	☐	FAC
3. Salix fuscescens	10	☑	FACW
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	

Total Cover: 47

50% of Total Cover: 23.5 20% of Total Cover: 9.4

Herb Stratum			
1. Eriophorum vaginatum	5	☑	FACW
2. Rubus chamaemorus	1	☐	FACW
3. Eriophorum angustifolium	1	☐	OBL
4. Eriophorum scheuchzeri	5	☑	OBL
5. Calamagrostis canadensis	1	☐	FAC
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	

Total Cover: 13

50% of Total Cover: 6.5 20% of Total Cover: 2.6

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	6	x 1 =	6	
FACW species	16	x 2 =	32	
FAC species	38	x 3 =	114	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	60	(A)	152	(B)

Prevalence Index = B/A = 2.533

Hydrophytic Vegetation Indicators:

☑ **Dominance Test is > 50%**

☑ **Prevalence Index is ≤3.0**

☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**

☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 2

Total Cover of Bryophytes 95

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_21

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type[1]	Loc²	Texture	Remarks
0-6									Fibric Organic	
6-12									Hemic Organics	
12-14	2.5Y	3/2	100						Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 14

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 6

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 2

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_22

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Terrace

Local relief (concave, convex, none): tussocks **Slope:** 5.2 % / 3.0 ° **Elevation:** 31

Subregion : Northern Alaska **Lat.:** 66.81374 **Long.:** -162.46232 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1B

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: STCW shrubs borderline low/tall. community varies from just over to just under 5ft tall.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Salix pulchra	80	☑	FACW
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	80		

50% of Total Cover: 40 20% of Total Cover: 16

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Petasites frigidus	20	☑	FACW
2. Angelica lucida	1	☐	FACU
3. Chamerion angustifolium	1	☐	FACU
4. Carex bigelowii	5	☐	FAC
5. Aconitum delphinifolium	0.5	☐	FAC
6. Carex aquatilis	3	☐	OBL
7. Lycopodium clavatum	1	☐	FACU
8. Artemisia tilesii	1	☐	FACU
9.		☐	
10.		☐	
Total Cover:	32.5		

50% of Total Cover: 16.25 20% of Total Cover: 6.5

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3	x 1 =	3
FACW species	100	x 2 =	200
FAC species	5.5	x 3 =	16.5
FACU species	4	x 4 =	16
UPL species	0	x 5 =	0
Column Totals:	112.5	(A)	235.5 (B)

Prevalence Index = B/A = 2.093

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 80

Total Cover of Bryophytes 15

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: 2% viola, trace legume, deschampsia sp. scattered carbig tusssocks.

SOIL

Sampling Point: CB_22

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc[2]		
0-4									Hemic Organics	
4-6									Sapric Organics	
6-11	10Y	4/1	60	10YR	3/4	40	C	PL	Silty Clay Loam	
11-22	2.5Y	3/1	60	10YR	3/3	40	C	PL	Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen), si cl lo

Depth (inches): 22, 6

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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? (includes capillary fringe) Yes ● No ○ Depth (inches): 3

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

water perched atop si cl lo layer and pooling in bottom of pit. Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_23

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Terrace

Local relief (concave, convex, none): tussocks **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 50

Subregion : Northern Alaska **Lat.:** 66.8147233333333 **Long.:** -162.462395 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1 / SS3B

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: SLOTT. slight polygonization visible in aerial, more distinct further NE. point characterizing tussck polygons. One faint trough in area (see photo) w fewer tussocks and more sphagnum. Sandhill cranes observed in community.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Arctostaphylos alpina	3	☐	FACU
2. Betula nana	20	☑	FAC
3. Ledum decumbens	10	☐	FACW
4. Vaccinium vitis-idaea	20	☑	FAC
5. Empetrum nigrum	3	☐	FAC
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	56		

50% of Total Cover: 28 20% of Total Cover: 11.2

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Eriophorum vaginatum	30	☑	FACW
2. Rubus chamaemorus	5	☐	FACW
3. Carex bigelowii	20	☑	FAC
4. Petasites frigidus	1	☐	FACW
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	56		

50% of Total Cover: 28 20% of Total Cover: 11.2

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	46	x 2 =	92
FAC species	63	x 3 =	189
FACU species	3	x 4 =	12
UPL species	0	x 5 =	0
Column Totals:	112	(A)	293 (B)

Prevalence Index = B/A = 2.616

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground

Total Cover of Bryophytes 30

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_23

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc[2]		
0-7									Fibric Organics	
7-9									Hemic Organics	
9-10									Sapric Organics	
10-14	10Y	4/1	97	10YR	4/4	3	C	PL	Silty Clay Loam	organic staining at top
14-20	10Y	4/1	75	10YR	4/4	25	C	PL	Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☑ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen), si cl lo

Depth (inches): 20, 10

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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? (includes capillary fringe) Yes ● No ○ Depth (inches): 7

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

water perched atop si cl lo, running into bottom of pit. Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_24

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): tussocks **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 45

Subregion : Northern Alaska **Lat.:** 66.8156983333333 **Long.:** -162.460106666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1E

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: SLOTB flat-topped polys. Characterizing polys. PEM1E hgmst troughs w 4-6in standing water, 20% caraqu, 5% erivag.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Betula nana	7	☑	FAC
2. Ledum decumbens	1	☐	FACW
3. Vaccinium uliginosum	2	☐	FAC
4. Empetrum nigrum	1	☐	FAC
5. Andromeda polifolia	0.5	☐	FACW
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	11.5		
50% of Total Cover: 5.75	20% of Total Cover: 2.3		

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Carex bigelowii	5	☑	FAC
2. Carex aquatilis	5	☑	OBL
3. Eriophorum vaginatum	10	☑	FACW
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	20		
50% of Total Cover: 10	20% of Total Cover: 4		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	5	x 1 =	5	
FACW species	11.5	x 2 =	23	
FAC species	15	x 3 =	45	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	31.5	(A)	73	(B)

Prevalence Index = B/A = 2.317

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations**[1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation**[1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 55

Total Cover of Bryophytes 45

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: abundant dead bryophytes included in bare ground. 1% unidentified pedicularis sp.

SOIL

Sampling Point: CB_24

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc²	Texture	Remarks
0-7							Fibric Organics	
7-14							Hemic Organics	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 9

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 6

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_25

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Floodplain

Local relief (concave, convex, none): flat **Slope:** 3.5 **%** / 2.0 **°** **Elevation:** 5

Subregion : Northern Alaska **Lat.:** 66.8164083333333 **Long.:** -162.514971666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS4B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: SDEE, goose scat. west of pre-selected points. Sadie Creek flooded, wetted width ca 250ft. wrack indicates water was higher very recently, and that this community was flooded.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Salix fuscescens	7	☐	FACW
2. Empetrum nigrum	30	☑	FAC
3. Betula nana	10	☑	FAC
4. Vaccinium uliginosum	3	☐	FAC
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	50		
50% of Total Cover: 25	20% of Total Cover: 10		
Herb Stratum			
1. Eriophorum angustifolium	7	☐	OBL
2. Carex aquatilis	30	☑	OBL
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	37		
50% of Total Cover: 18.5	20% of Total Cover: 7.4		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	37	x 1 =	37
FACW species	7	x 2 =	14
FAC species	43	x 3 =	129
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	87 (A)		180 (B)

Prevalence Index = B/A = 2.069

Hydrophytic Vegetation Indicators:

☑ **Dominance Test is > 50%**

☑ **Prevalence Index is ≤3.0**

☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**

☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 10

Total Cover of Bryophytes 85

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: possibly other sedges, no seed heads. eriang id based on red bases and fused leaf tips, caraqu id based on gray-green color.

SOIL

Sampling Point: CB_25

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type[1]	Loc²	Texture	Remarks
0-8									Fibric Organics	
8-13									Hemic Organics	
13-14									Sapric Organics	
14-17	10YR	3/1	100						Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen), si cl lo
Depth (inches): 17, 14

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 8
Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 1

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_26

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Swale

Local relief (concave, convex, none): flat **Slope:** 5.2 **%** / 3.0 **°** **Elevation:** 20

Subregion : Northern Alaska **Lat.:** 66.816585 **Long.:** -162.515391666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1E

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: HGWST wet sedge meadow tundra. suspect usually doesn't have flowing water, and this is because of recent heavy rains. bright green in aerial.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1. Salix fuscescens	7	☑	FACW
2. Vaccinium uliginosum	7	☑	FAC
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	14		

50% of Total Cover: 7 20% of Total Cover: 2.8

Herb Stratum			
1. Eriophorum scheuchzeri	20	☑	OBL
2. Eriophorum angustifolium	5	☐	OBL
3. Carex aquatilis	5	☐	OBL
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	30		

50% of Total Cover: 15 20% of Total Cover: 6

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	30	x 1 =	30	
FACW species	7	x 2 =	14	
FAC species	7	x 3 =	21	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	44	(A)	65	(B)

Prevalence Index = B/A = 1.477

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground

Total Cover of Bryophytes

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_26

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc²		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and flowing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 4

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_27

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Floodplain

Local relief (concave, convex, none): tussocks **Slope:** 5.2 **%** / 3.0 **°** **Elevation:** 20

Subregion : Northern Alaska **Lat.:** 66.8169266666667 **Long.:** -162.513401666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS4B

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: walking directly towards creek, wetted edge 70ft from gps point. goose scat. SDEE empetrum dwarf tundra.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Salix fuscescens	5	☐	FACW
2. Vaccinium vitis-idaea	25	☑	FAC
3. Empetrum nigrum	30	☑	FAC
4. Betula nana	10	☐	FAC
5. Vaccinium uliginosum	5	☐	FAC
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	75		

50% of Total Cover: 37.5 20% of Total Cover: 15

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Eriophorum angustifolium	5	☑	OBL
2. Eriophorum vaginatum	5	☑	FACW
3. Carex aquatilis	10	☑	OBL
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	20		

50% of Total Cover: 10 20% of Total Cover: 4

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	10	x 2 =	20
FAC species	70	x 3 =	210
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	95 (A)		245 (B)

Prevalence Index = B/A = 2.579

Hydrophytic Vegetation Indicators:

☑ **Dominance Test is > 50%**

☑ **Prevalence Index is ≤3.0**

☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**

☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 5

Total Cover of Bryophytes 90

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_27

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type[1]	Loc²		
0-7			100					Fibric Organics	
7-9			100					Hemic Organics	
9-13	10YR	3/2	100					Silt Loam	high organic content
13-14								Sapric Organics	
14-17	10YR	3/2	100					Silt Loam	high organic content

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 17

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 1

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 0

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_28

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Shoreline

Local relief (concave, convex, none): none **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 55

Subregion : Northern Alaska **Lat.:** 66.8037283333333 **Long.:** -162.483951666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1F

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: HGWLSM (Hbbw?). Lacustrine fringe floating sphagnum mat. One pair of loons flying low overhead. Sandhill cranes in distance. Vole trail/tunnel through sphagnum.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Andromeda polifolia	1	☑	FACW
2. Salix fuscescens	3	☑	FACW
3. Vaccinium oxycoccos	1	☑	OBL
4. Betula nana	1	☑	FAC
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	6		
50% of Total Cover: 3	20% of Total Cover: 1.2		
Herb Stratum			
1. Comarum palustre	5	☐	OBL
2. Carex aquatilis	10	☑	OBL
3. Eriophorum angustifolium	7	☐	OBL
4. Eriophorum scheuchzeri	10	☑	OBL
5. Anthoxanthum arcticum	2	☐	FACW
6. Carex laeviculmis	5	☐	FACW
7. Carex chordorrhiza	5	☐	OBL
8. Carex rotundata	10	☑	OBL
9.		☐	
10.		☐	
Total Cover:	54		
50% of Total Cover: 27	20% of Total Cover: 10.8		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	7	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	48	x 1 =	48
FACW species	11	x 2 =	22
FAC species	1	x 3 =	3
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	60 (A)		73 (B)

Prevalence Index = B/A = 1.217

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 0

Total Cover of Bryophytes 98

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_28

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 2

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_29

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): tussocks **Slope:** 3.5 **%** / 2.0 **°** **Elevation:** 70

Subregion : Northern Alaska **Lat.:** 66.8041216666667 **Long.:** -162.47829 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1/EM1B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: SLOTT

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0		20% of Total Cover: 0	

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Arctostaphylos alpina	20	☑	FACU
2. Betula nana	7	☐	FAC
3. Ledum decumbens	5	☐	FACW
4. Empetrum nigrum	7	☐	FAC
5. Vaccinium vitis-idaea	20	☑	FAC
6. Vaccinium uliginosum	5	☐	FAC
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	64		
50% of Total Cover: 32		20% of Total Cover: 12.8	

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Eriophorum vaginatum	20	☑	FACW
2. Carex bigelowii	7	☑	FAC
3. Rubus chamaemorus	5	☐	FACW
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	32		
50% of Total Cover: 16		20% of Total Cover: 6.4	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	75.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	30	x 2 =	60	
FAC species	46	x 3 =	138	
FACU species	20	x 4 =	80	
UPL species	0	x 5 =	0	
Column Totals:	96	(A)	278	(B)

Prevalence Index = B/A = 2.896

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 10

Total Cover of Bryophytes 60

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: erivag and carbig tussocks

SOIL

Sampling Point: CB_29

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc²	Texture	Remarks
0-8							Fibric Organics	
8-12							Hemic Organics	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 12

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 6

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 3

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_30

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): hummocky **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 80

Subregion : Northern Alaska **Lat.:** 66.803375 **Long.:** -162.475636666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1F

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: HGWST wet sedge tundra w scattered hummocks and vermiculations. larger hummocks 2ft above water level w substantial lichen cover. goose, ptarmigan scat on large hummocks.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1. Betula nana	2	☑	FAC
2. Andromeda polifolia	0.5	☐	FACW
3. Salix fuscescens	1	☑	FACW
4. Chamaedaphne calyculata	1	☑	FACW
5. Vaccinium oxycoccos	0.5	☐	OBL
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	5		

50% of Total Cover: 2.5 20% of Total Cover: 1

Herb Stratum			
1. Carex aquatilis	5	☐	OBL
2. Carex chordorrhiza	15	☑	OBL
3. Carex rariflora	1	☐	OBL
4. Carex rotundata	10	☑	OBL
5. Eriophorum angustifolium	5	☐	OBL
6. Eriophorum scheuchzeri	10	☑	OBL
7. Utricularia macrorhiza	5	☐	OBL
8. Comarum palustre	3	☐	OBL
9.		☐	
10.		☐	
Total Cover:	54		

50% of Total Cover: 27 20% of Total Cover: 10.8

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:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	54.5	x 1 =	54.5
FACW species	2.5	x 2 =	5
FAC species	2	x 3 =	6
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	59 (A)		65.5 (B)

Prevalence Index = B/A = 1.110

Hydrophytic Vegetation Indicators:

☑ **Dominance Test is > 50%**

☑ **Prevalence Index is ≤3.0**

☐ **Morphological Adaptations**[1] **(Provide supporting data in Remarks or on a separate sheet)**

☐ **Problematic Hydrophytic Vegetation**[1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 90

Total Cover of Bryophytes 5

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: trace pedicularis sp. bare ground includes open water.

SOIL

Sampling Point: CB_30

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 6

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_31

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): concave **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 90

Subregion : Northern Alaska **Lat.:** 66.8023033333334 **Long.:** -162.471563333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1/SS1E

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: low-center polys, subtle microtopo difference between centers and rims. scattered hummocks/tussocks in poly centers. High degree of interspersion between hummocks, rims, poly centers - mapping all as one community: hgwswt

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Andromeda polifolia	3	☑	FACW
2. Betula nana	1	☑	FAC
3. Empetrum nigrum	1	☑	FAC
4. Ledum decumbens	1	☑	FACW
5. Vaccinium uliginosum	1	☑	FAC
6. Vaccinium vitis-idaea	0.5	☐	FAC
7. Vaccinium oxycoccos	0.5	☐	OBL
8.		☐	
9.		☐	
10.		☐	
Total Cover:	8		
50% of Total Cover: 4	20% of Total Cover: 1.6		

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Carex aquatilis	10	☑	OBL
2. Carex rotundata	5	☐	OBL
3. Eriophorum scheuchzeri	10	☑	OBL
4. Eriophorum vaginatum	5	☐	FACW
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	30		
50% of Total Cover: 15	20% of Total Cover: 6		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25.5	x 1 =	25.5
FACW species	9	x 2 =	18
FAC species	3.5	x 3 =	10.5
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	38 (A)		54 (B)

Prevalence Index = B/A = 1.421

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 85

Total Cover of Bryophytes 10

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: bare ground includes open water. likely other sedges present, but no other inflorescences. poly rims and hummocks w erivag and shrubs, poly centers w standing water and sedges.

SOIL

Sampling Point: CB_31

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 6

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 25-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_32

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Knob

Local relief (concave, convex, none): convex **Slope:** 5.2 **%** / 3.0 **°** **Elevation:** 100

Subregion : Northern Alaska **Lat.:** 66.7994633333333 **Long.:** -162.467095 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** U

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ○ No ●
Hydric Soil Present?	Yes ○ No ●		
Wetland Hydrology Present?	Yes ○ No ●		

Remarks: sdev point at very top of pingo. South of point has collapsed into small pond. Southern aspect w upland SLCW and mass wasting. North of point w near-surface active layer (8in bgs). Communitiies change marks sub-surface change.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Vaccinium uliginosum	20	☑	FAC
2. Empetrum nigrum	20	☑	FAC
3. Vaccinium vitis-idaea	20	☑	FAC
4. Salix pulchra	7	☐	FACW
5. Betula nana	20	☑	FAC
6. Salix glauca	7	☐	FAC
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	94		
50% of Total Cover: 47	20% of Total Cover: 18.8		
Herb Stratum			
1. Petasites frigidus	1	☐	FACW
2. Equisetum arvense	10	☑	FAC
3. Arctagrostis latifolia	3	☐	FACW
4. Rubus chamaemorus	1	☐	FACW
5. Carex bigelowii	5	☑	FAC
6. Angelica lucida	0.5	☐	FACU
7. Chamerion angustifolium	2	☐	FACU
8. Artemisia tilesii	1	☐	FACU
9.		☐	
10.		☐	
Total Cover:	23.5		
50% of Total Cover: 11.75	20% of Total Cover: 4.7		

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:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	12	x 2 =	24
FAC species	102	x 3 =	306
FACU species	3.5	x 4 =	14
UPL species	0	x 5 =	0
Column Totals:	117.5 (A)		344 (B)

Prevalence Index = B/A = 2.928

Hydrophytic Vegetation Indicators:

☑ **Dominance Test is > 50%**

☑ **Prevalence Index is ≤3.0**

☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**

☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 65

Total Cover of Bryophytes 30

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: trace legume, poa.

SOIL

Sampling Point: CB_32

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc²		
0-1									Fibric Organics	
1-2			100						Hemic Organics	
2-7	10YR	3/2	100						Silty Clay Loam	
7-22	10YR	3/2	85	7.5YR	3/3	15	C	PL	Silty Clay Loam	organic inclusions

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ●

Remarks:

no hydric soil indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ○ No ●

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

no wetland hydrology indicators. Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_33

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): hummocky **Slope:** 0.0 **%** / 0.0 **°** **Elevation:**

Subregion : Northern Alaska **Lat.:** 0 **Long.:** 0 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1E

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: HGWST mosaic of level wet sedge tundra and slightly elevated features w shrubby vegetation. subtle microtopo differences. sandhill cranes and loons nearby.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1. Betula nana	5	☑	FAC
2. Vaccinium uliginosum	1	☐	FAC
3. Salix fuscescens	2	☑	FACW
4. Ledum decumbens	1	☐	FACW
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	9		

50% of Total Cover: 4.5 20% of Total Cover: 1.8

Herb Stratum			
1. Eriophorum angustifolium	5	☑	OBL
2. Carex aquatilis	3	☐	OBL
3. Calamagrostis canadensis	2	☐	FAC
4. Comarum palustre	1	☐	OBL
5. Carex chordorrhiza	5	☑	OBL
6. Carex rotundata	3	☐	OBL
7. Eriophorum scheuchzeri	5	☑	OBL
8. Luzula wahlenbergii	0.1	☐	OBL
9. Glyceria borealis	0.1	☐	OBL
10.		☐	
Total Cover:	24.2		

50% of Total Cover: 12.1 20% of Total Cover: 4.84

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	22.2	x 1 =	22.2
FACW species	3	x 2 =	6
FAC species	8	x 3 =	24
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	33.2	(A)	52.20 (B)

Prevalence Index = B/A = 1.572

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 0

Total Cover of Bryophytes 99

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_33

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc²		
0-3									Fibric Organics	
3-11									Hemic Organics	
11-12	2.5Y	3/2	100						Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 12

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 1

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 1

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

small pockets of standing water. Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_34

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): flat **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 30

Subregion : Northern Alaska **Lat.:** 66.78289 **Long.:** -162.436313333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1H

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: HGWSHT level wet sedge tundra, few scattered low hummocks.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Comarum palustre	5	☑	OBL
2. Equisetum fluviatile	3	☐	OBL
3. Eriophorum scheuchzeri	5	☑	OBL
4. Pedicularis sudetica	1	☐	FACW
5. Arctagrostis latifolia	1	☐	FACW
6. Eriophorum angustifolium	3	☐	OBL
7. Menyanthes trifoliata	1	☐	OBL
8. Anthoxanthum arcticum	5	☑	FACW
9. Luzula arcuata	1	☐	FACU
10.		☐	
Total Cover:	25		
50% of Total Cover: 12.5	20% of Total Cover: 5		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	17	x 1 =	17	
FACW species	7	x 2 =	14	
FAC species	0	x 3 =	0	
FACU species	1	x 4 =	4	
UPL species	0	x 5 =	0	
Column Totals:	25	(A)	35	(B)

Prevalence Index = B/A = 1.400

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 10

Total Cover of Bryophytes 88

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_34

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 8

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_35

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): flat **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 30

Subregion : Northern Alaska **Lat.:** 66.7820516666667 **Long.:** -162.436006666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1E

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: HGWST less wet than previous plot (where all boots were topped!). few scattered low hummocks, subtle microtopo differences. sandhill cranes, loons, ducks, geese, gulls flying over/calling in vicinity.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0		20% of Total Cover: 0	
Sapling/Shrub Stratum			
1. Betula nana	2	☑	FAC
2. Andromeda polifolia	1	☐	FACW
3. Salix fuscescens	2	☑	FACW
4. Vaccinium vitis-idaea	0.5	☐	FAC
5. Vaccinium oxycoccos	0.5	☐	OBL
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	6		
50% of Total Cover: 3		20% of Total Cover: 1.2	
Herb Stratum			
1. Luzula arcuata	1	☐	FACU
2. Comarum palustre	7	☑	OBL
3. Anthoxanthum arcticum	5	☑	FACW
4. Carex aquatilis	1	☐	OBL
5. Eriophorum angustifolium	5	☑	OBL
6. Eriophorum scheuchzeri	3	☐	OBL
7. Carex chordorrhiza	5	☑	OBL
8.		☐	
9.		☐	
10.		☐	
Total Cover:	27		
50% of Total Cover: 13.5		20% of Total Cover: 5.4	

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:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	21.5	x 1 =	21.5	
FACW species	8	x 2 =	16	
FAC species	2.5	x 3 =	7.5	
FACU species	1	x 4 =	4	
UPL species	0	x 5 =	0	
Column Totals:	33	(A)	49	(B)

Prevalence Index = B/A = 1.485

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 10

Total Cover of Bryophytes 85

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: many submerged bryophytes

SOIL

Sampling Point: CB_35

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc²		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 6
Water Table Present? Yes ○ No ● Depth (inches):
Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_36

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): concave **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 75

Subregion : Northern Alaska **Lat.:** 66.7803066666667 **Long.:** -162.434321666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1/SS1F

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: HGWSS. Weakly patterned low-centered polys, closer to LCPs than to strangmoor. This point characterizes low wet areas, see CB_37 for characterization of high areas.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Carex aquatilis	3	☐	OBL
2. Eriophorum angustifolium	3	☐	OBL
3. Carex chordorrhiza	5	☑	OBL
4. Carex rotundata	5	☑	OBL
5. Carex magellanica	1	☐	OBL
6. Carex livida	2	☐	OBL
7. Pedicularis sudetica	1	☐	FACW
8. Eriophorum scheuchzeri	5	☑	OBL
9. Utricularia intermedia	1	☐	OBL
10.		☐	
Total Cover:	26		

50% of Total Cover: 13 20% of Total Cover: 5.2

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	1	x 2 =	2
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	26	(A)	27 (B)

Prevalence Index = B/A = 1.038

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 95

Total Cover of Bryophytes 0

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_36

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc²		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 4

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_37

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): convex **Slope:** 0.0 % / 0.0 ° **Elevation:** 50

Subregion : Northern Alaska **Lat.:** 66.78033 **Long.:** -162.43438 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1/SS1F

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: HGWSS. see notes for CB_36. caribou scat, goose scat.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Betula nana	20	☑	FAC
2. Ledum decumbens	10	☐	FACW
3. Andromeda polifolia	3	☐	FACW
4. Vaccinium vitis-idaea	20	☑	FAC
5. Vaccinium uliginosum	25	☑	FAC
6. Empetrum nigrum	5	☐	FAC
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	83		
50% of Total Cover: 41.5	20% of Total Cover: 16.6		

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Carex aquatilis	5	☑	OBL
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	5		
50% of Total Cover: 2.5	20% of Total Cover: 1		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	5	x 1 =	5	
FACW species	13	x 2 =	26	
FAC species	70	x 3 =	210	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	88	(A)	241	(B)

Prevalence Index = B/A = 2.739

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 2

Total Cover of Bryophytes 30

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: 65% lichen cover

SOIL

Sampling Point: CB_37

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc²		
0-13		100					Hemic Organics	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 13

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 11

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 2

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_38

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Shoreline

Local relief (concave, convex, none): flat **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 50

Subregion : Northern Alaska **Lat.:** 66.7783816666667 **Long.:** -162.434176666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** U

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Hydric Soil Present?	Yes ○ No ●	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: HFMM meadow adjacent to collapse pond (possibly better described as herb-grass meadow?). no real microtopography. caribou scat. uplands extend to pond.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Salix pulchra	5	☑	FACW
2. Salix glauca	2	☐	FAC
3. Betula nana	2	☐	FAC
4. Empetrum nigrum	3	☑	FAC
5. Vaccinium oxycoccos	1	☐	OBL
6. Arctostaphylos alpina	1	☐	FACU
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	14		
50% of Total Cover: 7	20% of Total Cover: 2.8		
Herb Stratum			
1. Bistorta vivipara	1	☐	FAC
2. Equisetum fluviatile	2	☐	OBL
3. Eriophorum angustifolium	1	☐	OBL
4. Comarum palustre	5	☑	OBL
5. Parnassia palustris	1	☐	FACW
6. Polemonium acutiflorum	1	☐	FAC
7. Stellaria longipes	1	☐	FAC
8. Deschampsia caespitosa	7	☑	FAC
9. Saxifraga hirculus	1	☐	OBL
10. Petasites frigidus	2	☐	FACW
Total Cover:	22		
50% of Total Cover: 11	20% of Total Cover: 4.4		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	10	x 1 =	10	
FACW species	8	x 2 =	16	
FAC species	17	x 3 =	51	
FACU species	1	x 4 =	4	
UPL species	0	x 5 =	0	
Column Totals:	36	(A)	81	(B)

Prevalence Index = B/A = 2.250

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground

Total Cover of Bryophytes

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: low salix, trace salala. descae w deschampsia lvs, not cespitose, collected. trace pyrasa, luzmul, moelat. 1% luzwah. 3% rubarc, 1% poamac.

SOIL

Sampling Point: CB_38

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc²		
0-2									Fibric Organics	
2-6									Hemic Organics	
6-22	5Y	3/1	90	10YR	3/3	5	C	PL	Silty Clay Loam	
+mottle				10Y	3/1	5	D	PL		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ●

Remarks:

no hydric soil indicators, mottle value/chroma too low to meet A14

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 12

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 4

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_39

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): none **Slope:** ____ **%** / ____ **°** **Elevation:** 40

Subregion : Northern Alaska **Lat.:** 66.77823 **Long.:** -162.433905 **Datum:** WGS84

Soil Map Unit Name: ____ **NWI classification:** PEM1E

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: HGWSHT level wet sedge. Slightly lower elevation than adjacent tundra, bright green strip in aerial.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Herb Stratum			
1. Comarum palustre	5	☑	OBL
2. Deschampsia caespitosa	3	☐	FAC
3. Eriophorum angustifolium	7	☑	OBL
4. Equisetum fluviatile	5	☑	OBL
5. Carex aquatilis	7	☑	OBL
6. Caltha palustris	5	☑	OBL
7. Arctagrostis latifolia	3	☐	FACW
8. Polemonium acutiflorum	1	☐	FAC
9.		☐	
10.		☐	
Total Cover:	36		
50% of Total Cover: 18	20% of Total Cover: 7.2		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	29	x 1 =	29	
FACW species	3	x 2 =	6	
FAC species	4	x 3 =	12	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	36	(A)	47	(B)

Prevalence Index = B/A = 1.306

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable) ____

% Bare Ground ____

Total Cover of Bryophytes 98

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: deschampsia as collected for cb_38. bryophytes dominated by liverworts.

SOIL

Sampling Point: CB_39

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc²		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 3

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_40

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Toeslope

Local relief (concave, convex, none): flat **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 20

Subregion : Northern Alaska **Lat.:** 66.7775183333333 **Long.:** -162.43369 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1F

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: toeslope emergent wetland w pockets of standing water. caribou scat, trails, two caribou sheds. HFWH Willows immediately to the south w standing water. Imediately N is steep slope to willows at crest.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Salix pulchra	1	☐	FACW
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	1		
50% of Total Cover: 0.5	20% of Total Cover: 0.2		
Herb Stratum			
1. Comarum palustre	10	☑	OBL
2. Caltha palustris	5	☑	OBL
3. Arctagrostis latifolia	10	☑	FACW
4. Carex aquatilis	5	☑	OBL
5. Eriophorum angustifolium	2	☐	OBL
6. Equisetum palustre	3	☐	FACW
7. Anemone richardsonii	5	☑	FAC
8. Valeriana sitchensis	3	☐	FAC
9. Trisetum spicatum	3	☐	FAC
10. Parnassia palustris	5	☑	FACW
Total Cover:	51		
50% of Total Cover: 25.5	20% of Total Cover: 10.2		

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:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	22	x 1 =	22
FACW species	19	x 2 =	38
FAC species	11	x 3 =	33
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	52	(A)	93 (B)

Prevalence Index = B/A = 1.788

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 5

Total Cover of Bryophytes 90

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: tr petfri, polviv, stellaria. 5% caraqu. 1% polacu, saxhir. 2% rumex arcticus. Include salpul in herbs for dominance test as total shrub cover <5%.

SOIL

Sampling Point: CB_40

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc²		
0-1							Fibric Organics	
1-6							Hemic Organics	
6-22	5Y 4/1	85	10YR 4/4	15	C	PL	Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 29

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 6

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 1

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_41

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): concave **Slope:** 0.0 **%** **/** 0.0 **°** **Elevation:** 10

Subregion : Northern Alaska **Lat.:** 66.7728883333333 **Long.:** -162.431763333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1/SS1F

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: Point in HGWSS, hummocks dominated by betnan and caraqu

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Utricularia macrorhiza	1	☐	OBL
2. Carex aquatilis	10	☑	OBL
3. Eriophorum scheuchzeri	7	☑	OBL
4. Pedicularis sudetica	1	☐	FACW
5. Carex limosa	3	☐	OBL
6. Carex chordorrhiza	3	☐	OBL
7. Eriophorum angustifolium	3	☐	OBL
8. Andromeda polifolia	1	☐	FACW
9. Betula nana	2	☐	FAC
10.		☐	
Total Cover:	31		

50% of Total Cover: 15.5 20% of Total Cover: 6.2

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	27	x 1 =	27
FACW species	2	x 2 =	4
FAC species	2	x 3 =	6
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	31	(A)	37 (B)

Prevalence Index = B/A = 1.194

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 60

Total Cover of Bryophytes 35

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: Andpol and betnan included in herb layer for dominanct test, as total shrub cover <5%

SOIL

Sampling Point: CB_41

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc²	Texture	Remarks

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 6

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_42

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): hummocky **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 75

Subregion : Northern Alaska **Lat.:** 66d 49m 42.23s **Long.:** 162d 32m 2.418s **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1/SS1E

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: predominantly HGWSS. SDET hummocks common, ca 20%. Hummocks dominated by betnan vaculi leddec and lichen. HGWST w scattered shrubs not on hummocks, indicating this level of flooding is unusual (submerged betnan/salfus). Both communities captured in plot.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Betula nana	5	☑	FAC
2. Salix fuscescens	2	☐	FACW
3. Andromeda polifolia	1	☐	FACW
4. Vaccinium uliginosum	5	☑	FAC
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	13		
50% of Total Cover: 6.5	20% of Total Cover: 2.6		

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Carex aquatilis	15	☑	OBL
2. Eriophorum scheuchzeri	20	☑	OBL
3. Carex chordorrhiza	10	☐	OBL
4. Carex rotundata	7	☐	OBL
5. Pedicularis sudetica	1	☐	FACW
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	53		
50% of Total Cover: 26.5	20% of Total Cover: 10.6		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	52	x 1 =	52	
FACW species	4	x 2 =	8	
FAC species	10	x 3 =	30	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	66	(A)	90	(B)

Prevalence Index = B/A = 1.364

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 85

Total Cover of Bryophytes 5

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: ca 5% lichen (on hummocks)

SOIL

Sampling Point: CB_42

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc²		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 6
Water Table Present? Yes ○ No ● Depth (inches):
Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_43

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): tussocks **Slope:** 5.2 **%** / 3.0 **°** **Elevation:** 55

Subregion : Northern Alaska **Lat.:** 66.8294016666667 **Long.:** -162.53292 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS3/EM1B

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: SLOTT

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0		20% of Total Cover: 0	
Sapling/Shrub Stratum			
1. Betula nana	10	☑	FAC
2. Ledum decumbens	7	☐	FACW
3. Vaccinium vitis-idaea	20	☑	FAC
4. Vaccinium uliginosum	10	☑	FAC
5. Empetrum nigrum	5	☐	FAC
6. Arctostaphylos alpina	1	☐	FACU
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	53		
50% of Total Cover: 26.5		20% of Total Cover: 10.6	
Herb Stratum			
1. Eriophorum vaginatum	20	☑	FACW
2. Rubus chamaemorus	7	☑	FACW
3. Arctagrostis latifolia	2	☐	FACW
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	29		
50% of Total Cover: 14.5		20% of Total Cover: 5.8	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	36	x 2 =	72
FAC species	45	x 3 =	135
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	82	(A)	211 (B)

Prevalence Index = B/A = 2.573

Hydrophytic Vegetation Indicators:

☑ **Dominance Test is > 50%**

☑ **Prevalence Index is ≤3.0**

☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**

☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 0

Total Cover of Bryophytes 40

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: 40% lichen cover

SOIL

Sampling Point: CB_43

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc²	Texture	Remarks
0-8							Hemic Organics	varying degrees of decomposition
8-15	10YR 3/2	100					Silty Clay Loam	high organic content

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)
Depth (inches): 15

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 12
Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches): 3

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_44

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): hummocky **Slope:** 0.0 **%** **/** 0.0 **°** **Elevation:** 75

Subregion : Northern Alaska **Lat.:** 66.8300966666667 **Long.:** -162.531805 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1/SS1F

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: scattered hummocks w empnig betnan and lichens. hummocks included in plot. HGWSS

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Sapling/Shrub Stratum			
1. Andromeda polifolia	1	☐	FACW
2. Salix fuscescens	1	☐	FACW
3. Betula nana	3	☑	FAC
4. Empetrum nigrum	1	☐	FAC
5. Vaccinium uliginosum	3	☑	FAC
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	9		
50% of Total Cover: 4.5	20% of Total Cover: 1.8		

Herb Stratum			
1. Utricularia intermedia	3	☐	OBL
2. Pedicularis sudetica	1	☐	FACW
3. Carex chordorrhiza	10	☑	OBL
4. Carex rotundata	5	☐	OBL
5. Eriophorum scheuchzeri	15	☑	OBL
6. Eriophorum angustifolium	1	☐	OBL
7. Carex aquatilis	3	☐	OBL
8. Trichophorum caespitosum	0.5	☐	OBL
9. Tofieldia pusilla	0.5	☐	FAC
10.		☐	
Total Cover:	39		
50% of Total Cover: 19.5	20% of Total Cover: 7.8		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	37.5	x 1 =	37.5
FACW species	3	x 2 =	6
FAC species	7.5	x 3 =	22.5
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	48	(A)	66 (B)

Prevalence Index = B/A = 1.375

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 90

Total Cover of Bryophytes 5

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: 3% lichen cover

SOIL

Sampling Point: CB_44

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 6
Water Table Present? Yes ○ No ● Depth (inches):
Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_45

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Hillside

Local relief (concave, convex, none): tussocks **Slope:** 8.7 **%** / 5.0 **°** **Elevation:** 95

Subregion : Northern Alaska **Lat.:** 66.8272583333333 **Long.:** -162.521895 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS3/EM1B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: SLOTT atop rounded rise. one caribou grazing in community to the south.

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

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Betula nana	10	☑	FAC
2. Ledum decumbens	5	☐	FACW
3. Vaccinium uliginosum	7	☐	FAC
4. Vaccinium vitis-idaea	20	☑	FAC
5. Empetrum nigrum	10	☑	FAC
6. Salix pulchra	7	☐	FACW
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	59		
50% of Total Cover: 29.5	20% of Total Cover: 11.8		

Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Eriophorum vaginatum	15	☑	FACW
2. Carex bigelowii	5	☐	FAC
3. Arctagrostis latifolia	1	☐	FACW
4. Rubus chamaemorus	7	☑	FACW
5. Petasites frigidus	1	☐	FACW
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	29		
50% of Total Cover: 14.5	20% of Total Cover: 5.8		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	36	x 2 =	72
FAC species	52	x 3 =	156
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	88	(A)	228 (B)

Prevalence Index = B/A = 2.591

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 5

Total Cover of Bryophytes 40

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: 40% lichen

SOIL

Sampling Point: CB_45

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc²		
0-3							Fibric Organics	
3-10							Hemic Organics	varying degrees of decomposition
10-11							Sapric Organics	
11-14	10YR 3/2						Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen), si cl lo

Depth (inches): 14, 11

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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? (includes capillary fringe) Yes ● No ○ Depth (inches): 8

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_46

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Hillside

Local relief (concave, convex, none): tussocks **Slope:** 5.2 **%** / 3.0 **°** **Elevation:** 90

Subregion : Northern Alaska **Lat.:** 66.8267666666667 **Long.:** -162.52006 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1B

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: SLOW atop rounded rise.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Salix pulchra	40	☑	FACW
2. Spiraea stevenii	3	☐	FACU
3. Salix glauca	15	☑	FAC
4. Betula nana	10	☐	FAC
5. Empetrum nigrum	15	☑	FAC
6. Vaccinium uliginosum	15	☑	FAC
7. Vaccinium vitis-idaea	5	☐	FAC
8. Ledum decumbens	3	☐	FACW
9.		☐	
10.		☐	
Total Cover:	106		
50% of Total Cover: 53	20% of Total Cover: 21.2		
Herb Stratum			
1. Petasites frigidus	5	☑	FACW
2. Rubus chamaemorus	3	☐	FACW
3. Chamerion angustifolium	1	☐	FACU
4. Carex bigelowii	5	☑	FAC
5. Lycopodium clavatum	1	☐	FACU
6. Arctagrostis latifolia	5	☑	FACW
7. Deschampsia caespitosa	3	☐	FAC
8. Polemonium acutiflorum	0.5	☐	FAC
9.		☐	
10.		☐	
Total Cover:	23.5		
50% of Total Cover: 11.75	20% of Total Cover: 4.7		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	56	x 2 =	112
FAC species	68.5	x 3 =	205.5
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	129.5	(A)	337.5 (B)

Prevalence Index = B/A = 2.606

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground

Total Cover of Bryophytes

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_46

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc²		
0-2									Fibric Organics	
2-4									Hemic Organics	
4-16	10Y	5/1	85	10YR	4/6	15	C	PL	Silty Clay Loam	
16-23	10Y	4/1	60	10YR	4/6	40	C	PL	Silty Clay Loam	w linear streaks of 10Y4/1 along root channe

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)
Depth (inches): 23

Hydric Soil Present? Yes ● No ○

Remarks:

16-23: inclusions of 7.5YR2.5/2, thin organic layer at 20in bgs

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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? (includes capillary fringe) Yes ● No ○ Depth (inches): 7

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_47

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Hillside

Local relief (concave, convex, none): tussocks **Slope:** 12.2 **%** / 7.0 **°** **Elevation:** 80

Subregion : Northern Alaska **Lat.:** 66.8221183333333 **Long.:** -162.505238333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1/EM1B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: SLOTT, but w scattered salix and fewer tussocks

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1. Salix pulchra	7	☐	FACW
2. Betula nana	20	☑	FAC
3. Vaccinium vitis-idaea	30	☑	FAC
4. Vaccinium uliginosum	7	☐	FAC
5. Ledum decumbens	7	☐	FACW
6. Empetrum nigrum	5	☐	FAC
7. Arctostaphylos alpina	1	☐	FACU
8. Salix glauca	0.5	☐	FAC
9.		☐	
10.		☐	
Total Cover:	77.5		

50% of Total Cover: 38.75 20% of Total Cover: 15.5

Herb Stratum			
1. Petasites frigidus	5	☐	FACW
2. Rubus chamaemorus	5	☐	FACW
3. Carex bigelowii	15	☑	FAC
4. Eriophorum vaginatum	15	☑	FACW
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	40		

50% of Total Cover: 20 20% of Total Cover: 8

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	39	x 2 =	78	
FAC species	77.5	x 3 =	232.5	
FACU species	1	x 4 =	4	
UPL species	0	x 5 =	0	
Column Totals:	117.5	(A)	314.5	(B)

Prevalence Index = B/A = 2.677

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations**[1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation**[1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 5

Total Cover of Bryophytes 40

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: 40% lichen cover, erivag and carbig tussocks.

SOIL

Sampling Point: CB_47

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc²		
0-3									Fibric Organics	
3-6									Hemic Organics	
6-8	7.5YR	3/2	100						Silty Clay Loam	
8-11	10YR	3/2							Silty Clay Loam	
11-16	5Y	4/1	60	2.5Y	4/4	40	C	PL	Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen), si cl lo
Depth (inches): 16, 6

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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? (includes capillary fringe) Yes ● No ○ Depth (inches): 7

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:
Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_48

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Hillside

Local relief (concave, convex, none): tussocks **Slope:** 8.7 **%** **/** 5.0 **°** **Elevation:** 75

Subregion : Northern Alaska **Lat.:** 66.7966616666667 **Long.:** -162.466501666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1/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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: SLOTT on gentle hillside

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Betula nana	15	☑	FAC
2. Arctostaphylos alpina	7	☐	FACU
3. Vaccinium vitis-idaea	15	☑	FAC
4. Vaccinium uliginosum	5	☐	FAC
5. Ledum decumbens	5	☐	FACW
6. Empetrum nigrum	7	☐	FAC
7. Vaccinium oxycoccos	1	☐	OBL
8.		☐	
9.		☐	
10.		☐	
Total Cover:	55		
50% of Total Cover: 27.5	20% of Total Cover: 11		
Herb Stratum			
1. Rubus chamaemorus	5	☐	FACW
2. Carex bigelowii	10	☑	FAC
3. Eriophorum vaginatum	25	☑	FACW
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	40		
50% of Total Cover: 20	20% of Total Cover: 8		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	35	x 2 =	70
FAC species	52	x 3 =	156
FACU species	7	x 4 =	28
UPL species	0	x 5 =	0
Column Totals:	95 (A)		255 (B)

Prevalence Index = B/A = 2.684

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground

Total Cover of Bryophytes

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_48

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	**Matrix**		**Redox Features**				**Texture**	**Remarks**
	Color (moist)	**%**	**Color (moist)**	**%**	**Type**[1]	**Loc**[2]		
0-5							Fibric Organics	
5-11							Hemic Organics	
11-14							Sapric Organics	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 14

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 11

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 7

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_49

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): hummocky **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 50

Subregion : Northern Alaska **Lat.:** 66.7935583333333 **Long.:** -162.465163333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1/SS1F

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: mosaic of HGWSS and sphagnum hummocks w SLOBE. High degree of interspersion, 65% wet sedge 35% sphagnum hummocks. Hummocks 1-2 ft above water surface. One caribou in community, goose scat.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Betula nana	7	☑	FAC
2. Vaccinium uliginosum	7	☑	FAC
3. Andromeda polifolia	2	☐	FACW
4. Chamaedaphne calyculata	3	☐	FACW
5. Salix fuscescens	1	☐	FACW
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	20		
50% of Total Cover: 10	20% of Total Cover: 4		
Herb Stratum			
1. Pinguicula villosa	0.5	☐	OBL
2. Eriophorum scheuchzeri	7	☐	OBL
3. Carex aquatilis	10	☑	OBL
4. Carex limosa	3	☐	OBL
5. Carex rotundata	7	☐	OBL
6. Eriophorum angustifolium	10	☑	OBL
7. Spiranthes romanzoffiana	0.5	☐	OBL
8. Tofieldia pusilla	0.5	☐	FAC
9.		☐	
10.		☐	
Total Cover:	38.5		
50% of Total Cover: 19.25	20% of Total Cover: 7.7		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	38	x 1 =	38
FACW species	6	x 2 =	12
FAC species	14.5	x 3 =	43.5
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	58.5	(A)	93.5 (B)

Prevalence Index = B/A = 1.598

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground

Total Cover of Bryophytes

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: caraqu as collected earlier - yellow-green

SOIL

Sampling Point: CB_49

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc²	Texture	Remarks

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 6

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 26-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_50

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): hummocky **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 35

Subregion : Northern Alaska **Lat.:** 66.7921116666667 **Long.:** -162.464566666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: HGMSS. Predominantly sphagnum hummocks w small pockets of wet sedge. Overall, estimate 20% HGWST and 80% SDEV on sphagnum hummocks. Consider water modifier B - majority of community wouldn't flood, and we're seeing high water during site visit.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Betula nana	10	☑	FAC
2. Empetrum nigrum	7	☑	FAC
3. Ledum decumbens	7	☑	FACW
4. Vaccinium uliginosum	10	☑	FAC
5. Chamaedaphne calyculata	5	☐	FACW
6. Salix fuscescens	3	☐	FACW
7. Vaccinium oxycoccos	1	☐	OBL
8. Andromeda polifolia	2	☐	FACW
9.		☐	
10.		☐	
Total Cover:	45		

50% of Total Cover: 22.5 20% of Total Cover: 9

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Carex aquatilis	7	☑	OBL
2. Carex limosa	1	☐	OBL
3. Eriophorum scheuchzeri	10	☑	OBL
4. Eriophorum vaginatum	3	☐	FACW
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	21		

50% of Total Cover: 10.5 20% of Total Cover: 4.2

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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	19	x 1 =	19
FACW species	20	x 2 =	40
FAC species	27	x 3 =	81
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	66 (A)		140 (B)

Prevalence Index = B/A = 2.121

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 10

Total Cover of Bryophytes 85

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: bar ground includes open water. 1% Pedicularis sp.

SOIL

Sampling Point: CB_50

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc²	Texture	Remarks
0-2							Fibric Organics	
2-12							Hemic Organics	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):
Type: active layer (frozen)
Depth (inches): 12

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 4
Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 1

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:
Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:
Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_51

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): tussocks **Slope:** 0.0 % / 0.0 ° **Elevation:** 20

Subregion : Northern Alaska **Lat.:** 66.7437433333333 **Long.:** -162.433846666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: HGMSS no obvious patterning. Tussock microtopo and gentle gradations from wetter to drier.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Betula nana	20	☑	FAC
2. Ledum decumbens	7	☐	FACW
3. Vaccinium vitis-idaea	7	☐	FAC
4. Empetrum nigrum	7	☐	FAC
5. Vaccinium uliginosum	15	☑	FAC
6. Andromeda polifolia	5	☐	FACW
7. Salix fuscescens	2	☐	FACW
8. Vaccinium oxycoccos	1	☐	OBL
9.		☐	
10.		☐	
Total Cover:	64		
50% of Total Cover: 32	20% of Total Cover: 12.8		
Herb Stratum			
1. Rubus chamaemorus	1	☐	FACW
2. Carex aquatilis	10	☑	OBL
3. Eriophorum vaginatum	7	☑	FACW
4. Carex bigelowii	10	☑	FAC
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	28		
50% of Total Cover: 14	20% of Total Cover: 5.6		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	11	x 1 =	11
FACW species	22	x 2 =	44
FAC species	59	x 3 =	177
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	92 (A)		232 (B)

Prevalence Index = B/A = 2.522

Hydrophytic Vegetation Indicators:

☑ **Dominance Test is > 50%**

☑ **Prevalence Index is ≤3.0**

☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**

☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 5

Total Cover of Bryophytes 70

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: 20% lichen cover

SOIL

Sampling Point: CB_51

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type[1]	Loc[2]		
0-6			100					Fibric Organics	
6-11			100					Hemic Organics	
11-16	2.5Y	3/1	100					Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen), si cl lo

Depth (inches): 16, 11

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 10

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 4

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_52

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): concave **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 30

Subregion : Northern Alaska **Lat.:** 66.7297133333333 **Long.:** -162.421763333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1/EM1B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: HGMSS. High center polys at coast. Characterizing poly centers, soil pit ca 30ft from bluff. Looks like heavy ATV use and likely ice/wind scour, all poly tops damaged. Standing water in poly troughs (see CB_53).

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

Sapling/Shrub Stratum			
50% of Total Cover: 0	20% of Total Cover: 0		
1. Betula nana	10	☑	FAC
2. Vaccinium uliginosum	10	☑	FAC
3. Empetrum nigrum	20	☑	FAC
4. Ledum decumbens	10	☑	FACW
5. Vaccinium vitis-idaea	5	☐	FAC
6. Arctostaphylos alpina	1	☐	FACU
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	56		

Herb Stratum			
50% of Total Cover: 28	20% of Total Cover: 11.2		
1. Rubus chamaemorus	2	☑	FACW
2. Arctagrostis latifolia	1	☑	FACW
3. Eriophorum vaginatum	2	☑	FACW
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	5		
50% of Total Cover: 2.5	20% of Total Cover: 1		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	7	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	15	x 2 =	30	
FAC species	45	x 3 =	135	
FACU species	1	x 4 =	4	
UPL species	0	x 5 =	0	
Column Totals:	61	(A)	169	(B)

Prevalence Index = B/A = 2.770

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 60

Total Cover of Bryophytes 0

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: crushed tusdocks from ATV traffic, stressed vegetation. beer cans and bottle caps. ca 35% lichen cover

SOIL

Sampling Point: CB_52

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc²	Texture	Remarks
0-18							Hemic Organics	varying degrees of decomposition

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 18

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

no saturation, but site does have two secondary hydrology indicators. Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_53

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): concave **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 15

Subregion : Northern Alaska **Lat.:** 66.7297983333333 **Long.:** -162.421735 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1/EM1B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: poly trough, HGMSS

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Sapling/Shrub Stratum			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Herb Stratum			
1. Carex aquatilis	5	☑	OBL
2. Eriophorum scheuchzeri	2	☑	OBL
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	7		
50% of Total Cover: 3.5	20% of Total Cover: 1.4		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	7	x 1 =	7	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	7	(A)	7	(B)

Prevalence Index = B/A = 1.000

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations**[1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation**[1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 2m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 98

Total Cover of Bryophytes 0

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_53

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc²		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 8

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_54

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): hummocky **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 15

Subregion : Northern Alaska **Lat.:** 66.7474233333333 **Long.:** -162.438848333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1/SS1E

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: generally level. common low, subtle sphagnum hummocks with shrubby vegetation. soil pit on hummock, low areas w standing water. HGWSWT

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Betula nana	10	☑	FAC
2. Salix fuscescens	1	☐	FACW
3. Salix pulchra	5	☑	FACW
4. Andromeda polifolia	1	☐	FACW
5. Chamaedaphne calyculata	3	☐	FACW
6. Vaccinium oxycoccos	1	☐	OBL
7. Ledum decumbens	2	☐	FACW
8. Empetrum nigrum	2	☐	FAC
9.		☐	
10.		☐	
Total Cover:	25		
50% of Total Cover: 12.5	20% of Total Cover: 5		
Herb Stratum			
1. Carex limosa	5	☐	OBL
2. Calamagrostis canadensis	10	☑	FAC
3. Eriophorum scheuchzeri	10	☑	OBL
4. Comarum palustre	1	☐	OBL
5. Pedicularis sudetica	1	☐	FACW
6. Petasites frigidus	0.5	☐	FACW
7. Eriophorum angustifolium	5	☐	OBL
8.		☐	
9.		☐	
10.		☐	
Total Cover:	32.5		
50% of Total Cover: 16.25	20% of Total Cover: 6.5		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	22	x 1 =	22	
FACW species	13.5	x 2 =	27	
FAC species	22	x 3 =	66	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	57.5	(A)	115	(B)

Prevalence Index = B/A = 2.000

Hydrophytic Vegetation Indicators:

☑ **Dominance Test is > 50%**

☑ **Prevalence Index is ≤3.0**

☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**

☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 7

Total Cover of Bryophytes 90

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: Sphagnum

SOIL

Sampling Point: CB_54

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc²		
0-10							Fibric Organics	
10-12							Hemic Organics	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 12

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 4

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 2

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_55

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Swale

Local relief (concave, convex, none): concave **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 25

Subregion : Northern Alaska **Lat.:** 66.748195 **Long.:** -162.434628333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1E

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: hgwst

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0		20% of Total Cover: 0	

Sapling/Shrub Stratum			
1. Andromeda polifolia	1	☐	FACW
2. Salix pulchra	3	☑	FACW
3. Salix fuscescens	2	☑	FACW
4. Betula nana	3	☑	FAC
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	9		
50% of Total Cover: 4.5		20% of Total Cover: 1.8	

Herb Stratum			
1. Eriophorum angustifolium	15	☑	OBL
2. Comarum palustre	10	☐	OBL
3. Carex aquatilis	15	☑	OBL
4. Calamagrostis canadensis	7	☐	FAC
5. Eriophorum scheuchzeri	5	☐	OBL
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	52		
50% of Total Cover: 26		20% of Total Cover: 10.4	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	45	x 1 =	45
FACW species	6	x 2 =	12
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	61	(A)	87 (B)

Prevalence Index = B/A = 1.426

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 55

Total Cover of Bryophytes 40

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: shrub cover decreases toward bank. submerged sphagnum, likely underestimate bryophyte cover.

SOIL

Sampling Point: CB_55

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 8

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_56

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): tussocks **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 40

Subregion : Northern Alaska **Lat.:** 66.7540816666667 **Long.:** -162.433398333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1/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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: SLOTT

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

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Betula nana	5	☑	FAC
2. Vaccinium vitis-idaea	10	☑	FAC
3. Vaccinium uliginosum	5	☑	FAC
4. Ledum decumbens	3	☐	FACW
5. Arctostaphylos alpina	3	☐	FACU
6. Empetrum nigrum	5	☑	FAC
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	31		
50% of Total Cover: 15.5	20% of Total Cover: 6.2		
Herb Stratum			
1. Eriophorum vaginatum	70	☑	FACW
2. Calamagrostis canadensis	5	☐	FAC
3. Carex bigelowii	5	☐	FAC
4. Carex aquatilis	0.5	☐	OBL
5. Rubus chamaemorus	2	☐	FACW
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	82.5		
50% of Total Cover: 41.25	20% of Total Cover: 16.5		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.5	x 1 =	0.5
FACW species	75	x 2 =	150
FAC species	35	x 3 =	105
FACU species	3	x 4 =	12
UPL species	0	x 5 =	0
Column Totals:	113.5 (A)		267.5 (B)

Prevalence Index = B/A = 2.357

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 1

Total Cover of Bryophytes 15

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: ca 15% lichen cover

SOIL

Sampling Point: CB_56

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Color (moist)		Redox %	Type[1]	Loc²	Texture	Remarks
0-5			100						Fibric Organics	
5-11			100						Hemic Organics	varying degrees of decomposition
11-18	10YR	2/2	100						Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)
Depth (inches): 18

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 12
Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 7

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_57

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): concave **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 40

Subregion : Northern Alaska **Lat.:** 66.76014 **Long.:** -162.434803333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1/SS1E

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: HGWSWT low-center polys, characterizing poly centers. See CB_V11 for poly rims. Sandhill cranes in community. Distict polygonization, rims ca 2ft above centers.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1. Andromeda polifolia	5	☑	FACW
2. Betula nana	1	☐	FAC
3. Vaccinium oxycoccos	0.5	☐	OBL
4. Chamaedaphne calyculata	1	☐	FACW
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	7.5		

50% of Total Cover: 3.75 20% of Total Cover: 1.5

Herb Stratum			
1. Carex rotundata	10	☑	OBL
2. Carex limosa	1	☐	OBL
3. Carex aquatilis	3	☐	OBL
4. Eriophorum angustifolium	3	☐	OBL
5. Eriophorum scheuchzeri	10	☑	OBL
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	27		

50% of Total Cover: 13.5 20% of Total Cover: 5.4

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	27.5	**x 1 =**	27.5
FACW species	6	**x 2 =**	12
FAC species	1	**x 3 =**	3
FACU species	0	**x 4 =**	0
UPL species	0	**x 5 =**	0
Column Totals:	34.5	**(A)**	42.5 **(B)**

Prevalence Index = B/A = 1.232

Hydrophytic Vegetation Indicators:

☑ **Dominance Test is > 50%**

☑ **Prevalence Index is ≤3.0**

☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**

☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 88

Total Cover of Bryophytes 10

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: bare ground includes open water.

SOIL

Sampling Point: CB_57

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 4
Water Table Present? Yes ○ No ● Depth (inches):
Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_58

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): concave **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 20

Subregion : Northern Alaska **Lat.:** 66.7636216666667 **Long.:** -162.43291 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1/SS1E

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: high reflectance low-center polys are sphagnum/sedge wet tundra. HGWSWT

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Sapling/Shrub Stratum			
1. Ledum decumbens	0.5	☐	FACW
2. Vaccinium vitis-idaea	0.5	☐	FAC
3. Andromeda polifolia	2	☑	FACW
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	3		
50% of Total Cover: 1.5	20% of Total Cover: 0.6		

Herb Stratum			
1. Carex aquatilis	15	☑	OBL
2. Rubus chamaemorus	2	☐	FACW
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	17		
50% of Total Cover: 8.5	20% of Total Cover: 3.4		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	4.5	x 2 =	9
FAC species	0.5	x 3 =	1.5
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	20	(A)	25.5 (B)

Prevalence Index = B/A = 1.275

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 0

Total Cover of Bryophytes 98

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_58

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-13							Fibric Organics	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)
Depth (inches): 13

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 11
Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 7

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_59

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Hillside

Local relief (concave, convex, none): tussocks **Slope:** 8.7 **%** **/** 5.0 **°** **Elevation:** 10

Subregion : Northern Alaska **Lat.:** 66.7691083333333 **Long.:** -162.426288333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1/3B

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

Hydrophytic Vegetation Present? Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○	
Hydric Soil Present? Yes ● No ○		
Wetland Hydrology Present? Yes ● No ○		

Remarks: SDET with small carbig tussocks on gentle hillslope

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Betula nana	20	☑	FAC
2. Ledum decumbens	5	☐	FACW
3. Vaccinium vitis-idaea	15	☑	FAC
4. Vaccinium uliginosum	3	☐	FAC
5. Empetrum nigrum	10	☐	FAC
6. Arctostaphylos alpina	20	☑	FACU
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	73		

50% of Total Cover: 36.5 20% of Total Cover: 14.6

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Carex bigelowii	20	☑	FAC
2. Arctagrostis latifolia	10	☑	FACW
3. Petasites frigidus	2	☐	FACW
4. Rubus chamaemorus	2	☐	FACW
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	34		

50% of Total Cover: 17 20% of Total Cover: 6.8

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	19	x 2 =	38	
FAC species	68	x 3 =	204	
FACU species	20	x 4 =	80	
UPL species	0	x 5 =	0	
Column Totals:	107	(A)	322	(B)

Prevalence Index = B/A = 3.009

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations**[1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation**[1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground

Total Cover of Bryophytes

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_59

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc²		
0-2			100						Fibric Organics	
2-9									Hemic Organics	
9-12	10YR	3/2	100						Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)
Depth (inches): 12

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 11
Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 9

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_60

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): concave **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 40

Subregion : Northern Alaska **Lat.:** 66.769495 **Long.:** -162.434413333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS3/EM1B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: HGMSS. Community a mosaic of HGWST lows, as characterized by this point, and SDET sphagnum hummocks, as characterized by CB_61.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0		20% of Total Cover: 0	
Sapling/Shrub Stratum			
1. Andromeda polifolia	5	☑	FACW
2. Betula nana	2	☑	FAC
3. Ledum decumbens	1	☐	FACW
4. Empetrum nigrum	1	☐	FAC
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	9		
50% of Total Cover: 4.5		20% of Total Cover: 1.8	
Herb Stratum			
1. Eriophorum scheuchzeri	15	☑	OBL
2. Carex aquatilis	15	☑	OBL
3. Rubus chamaemorus	2	☐	FACW
4. Carex limosa	2	☐	OBL
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	34		
50% of Total Cover: 17		20% of Total Cover: 6.8	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	32	x 1 =	32	
FACW species	8	x 2 =	16	
FAC species	3	x 3 =	9	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	43	(A)	57	(B)

Prevalence Index = B/A = 1.326

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 18

Total Cover of Bryophytes 80

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: submerged betnan and rubcha, high water, likely underestimate bryophyte cover

SOIL

Sampling Point: CB_60

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc²	Texture	Remarks

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 4

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_61

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): hummocky **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 40

Subregion : Northern Alaska **Lat.:** 66.7696 **Long.:** -162.434353333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS3/EM1B

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: HGMSS. characterizing SDEV Sphagnum hummocks in mosaic w HGWST lows (see CB_60). Hummocks ca 1ft above lows, high degree of interspersion between two veg types, ca 60% SDEV 40% HGWST.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1. Betula nana	3	☐	FAC
2. Vaccinium vitis-idaea	35	☑	FAC
3. Vaccinium uliginosum	5	☐	FAC
4. Ledum decumbens	5	☐	FACW
5. Empetrum nigrum	2	☐	FAC
6. Arctostaphylos alpina	1	☐	FACU
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	51		

50% of Total Cover: 25.5 20% of Total Cover: 10.2

Herb Stratum			
1. Carex bigelowii	3	☑	FAC
2. Rubus chamaemorus	5	☑	FACW
3. Carex aquatilis	1	☐	OBL
4. Eriophorum angustifolium	0.5	☐	OBL
5. Eriophorum vaginatum	1	☐	FACW
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	10.5		

50% of Total Cover: 5.25 20% of Total Cover: 2.1

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	1.5	x 1 =	1.5	
FACW species	11	x 2 =	22	
FAC species	48	x 3 =	144	
FACU species	1	x 4 =	4	
UPL species	0	x 5 =	0	
Column Totals:	61.5	(A)	171.5	(B)

Prevalence Index = B/A = 2.789

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations**[1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation**[1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 5m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground

Total Cover of Bryophytes

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: CB_61

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc²		
0-2							Fibric Organics	
2-10							Hemic Organics	
10-15	10YR 3/1	100					Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen), si cl lo

Depth (inches): 15, 10

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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? (includes capillary fringe) Yes ● No ○ Depth (inches): 6

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_62

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Toeslope

Local relief (concave, convex, none): hummocky **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 65

Subregion : Northern Alaska **Lat.:** 66.8572033333333 **Long.:** -162.546073333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1E

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: HGWST toeslope wetland with few, scattered hummocks. game trails

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Betula nana	2	☑	FAC
2. Andromeda polifolia	2	☑	FACW
3. Vaccinium uliginosum	1	☐	FAC
4. Empetrum nigrum	1	☐	FAC
5. Ledum decumbens	2	☑	FACW
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	8		

50% of Total Cover: 4 20% of Total Cover: 1.6

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Carex aquatilis	15	☑	OBL
2. Eriophorum scheuchzeri	5	☐	OBL
3. Carex rotundata	15	☑	OBL
4. Trichophorum caespitosum	1	☐	OBL
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	36		

50% of Total Cover: 18 20% of Total Cover: 7.2

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	36	x 1 =	36	
FACW species	4	x 2 =	8	
FAC species	4	x 3 =	12	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	44	(A)	56	(B)

Prevalence Index = B/A = 1.273

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 10

Total Cover of Bryophytes 65

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: 20% lichen cover. Sphagnum mosses.

SOIL

Sampling Point: CB_62

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type[1]	Loc²	Texture	Remarks
0-1									Fibric Organics	
1-10									Hemic Organics	
10-15	10YR	3/1	100						Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)
Depth (inches): 15

Hydric Soil Present? Yes ● No ○

Remarks:

soil pit in largest hummock within plot.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 13
Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 8

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_63

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Hillside

Local relief (concave, convex, none): tussocks **Slope:** 17.6 **%** / 10.0 **°** **Elevation:** 90

Subregion : Northern Alaska **Lat.:** 66.8567666666667 **Long.:** -162.546018333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1B

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: SLOBE on N aspect hillside w carbig tussocks and hummocks.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Alnus viridis ssp. crispa	10	☑	FAC
2. Betula nana	15	☑	FAC
3. Empetrum nigrum	5	☐	FAC
4. Ledum decumbens	5	☐	FACW
5. Vaccinium vitis-idaea	5	☐	FAC
6. Vaccinium uliginosum	2	☐	FAC
7. Salix pulchra	1	☐	FACW
8.		☐	
9.		☐	
10.		☐	
Total Cover:	43		
50% of Total Cover: 21.5	20% of Total Cover: 8.6		
Herb Stratum			
1. Carex bigelowii	20	☑	FAC
2. Eriophorum vaginatum	1	☐	FACW
3. Rubus chamaemorus	5	☐	FACW
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	26		
50% of Total Cover: 13	20% of Total Cover: 5.2		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	12	x 2 =	24
FAC species	57	x 3 =	171
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	69 (A)		195 (B)

Prevalence Index = B/A = 2.826

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 0

Total Cover of Bryophytes 60

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: ca 20% lichen cover

SOIL

Sampling Point: CB_63

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	**Matrix**			**Redox Features**					**Texture**	**Remarks**
	Color (moist)		**%**	**Color (moist)**		**%**	**Type**[1]	**Loc**[2]		
0-4									Fibric Organics	
4-8									Hemic Organics	
8-11	2.5Y	4/1	100						Silty Clay Loam	platey

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)
Depth (inches): 11

Hydric Soil Present? Yes ● No ○

Remarks:

soil pit ca halfway down slope. probing confirms this is representative of hillside.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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? (includes capillary fringe) Yes ● No ○ Depth (inches): 5

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

water perched atop silty clay loam, pooling in bottom of pit. Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_64

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Hillside

Local relief (concave, convex, none): none **Slope:** 12.2 **%** / 7.0 **°** **Elevation:** 105

Subregion : Northern Alaska **Lat.:** 66.8466166666667 **Long.:** -162.607448333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PSS1B

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: SLOW? Salpul <20cm tall. Roadside disturbance.

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

Tree Stratum		**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.			☐	
2.			☐	
3.			☐	
4.			☐	
5.			☐	
	Total Cover:	0		
	50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum				
1.	Salix pulchra	30	☑	FACW
2.	Salix glauca	7	☐	FAC
3.	Vaccinium uliginosum	5	☐	FAC
4.	Betula nana	7	☐	FAC
5.	Empetrum nigrum	3	☐	FAC
6.	Arctostaphylos alpina	1	☐	FACU
7.	Vaccinium vitis-idaea	1	☐	FAC
8.			☐	
9.			☐	
10.			☐	
	Total Cover:	54		
	50% of Total Cover: 27	20% of Total Cover: 10.8		
Herb Stratum				
1.	Carex bigelowii	20	☑	FAC
2.	Petasites frigidus	2	☐	FACW
3.	Dupontia fischeri	3	☐	FACW
4.	Luzula multiflora	2	☐	FACU
5.	Pyrola asarifolia	2	☐	FACU
6.	Polemonium acutiflorum	0.5	☐	FAC
7.	Saxifraga nelsoniana	0.5	☐	FAC
8.	Rubus chamaemorus	0.5	☐	FACW
9.	Poa macrocalyx	3	☐	FAC
10.			☐	
	Total Cover:	33.5		
	50% of Total Cover: 16.75	20% of Total Cover: 6.7		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	35.5	x 2 =	71
FAC species	47	x 3 =	141
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	87.5	(A)	232 (B)

Prevalence Index = B/A = 2.651

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 65

Total Cover of Bryophytes 30

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: large patches of bare ground - gravels from roadway.

SOIL

Sampling Point: CB_64

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type[1]	Loc²		
0-4									Hemic Organics	
4-10	10Y	5/1	90	7.5YR	4/6	10	C	PL	Silty Clay Loam	some organic staining at 4-5in
10-22	2.5Y	3/2	80	10YR	3/2	20	C	PL	Silty Clay Loam	

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type: active layer (frozen)

Depth (inches): 22

Hydric Soil Present? Yes ● No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 16

Saturation Present? (includes capillary fringe) Yes ● No ○ Depth (inches): 7

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_65

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Hillside

Local relief (concave, convex, none): none **Slope:** 17.6 **%** / 10.0 **°** **Elevation:** 110

Subregion : Northern Alaska **Lat.:** 66.8472366666667 **Long.:** -162.607943333333 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** U

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ○ No ●

Wetland Hydrology Present? Yes ○ No ●

Is the Sampled Area within a Wetland? Yes ○ No ●

Remarks: SLOW on gravel fill (old pad?) at decomissioned white alice site.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		
Sapling/Shrub Stratum			
1. Salix richardsonii	30	☑	FACW
2. Salix alaxensis	7	☐	FAC
3. Salix glauca	10	☐	FAC
4. Salix pulchra	10	☐	FACW
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	57		
50% of Total Cover: 28.5	20% of Total Cover: 11.4		
Herb Stratum			
1. Artemisia tilesii	1	☑	FACU
2. Chamerion angustifolium	1	☑	FACU
3. Parnassia palustris	1	☑	FACW
4. Equisetum scirpoides	2	☑	FACU
5. Festuca rubra	1	☑	FAC
6. Carex scirpoidea	1	☑	FACU
7. Dupontia fischeri	0.1	☐	FACW
8. Elymus alaskanus	0.1	☐	FAC
9.		☐	
10.		☐	
Total Cover:	7.2		
50% of Total Cover: 3.6	20% of Total Cover: 1.44		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 42.9% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	41.1	x 2 =	82.2
FAC species	18.1	x 3 =	54.30
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	64.2	(A)	156.5 (B)

Prevalence Index = B/A = 2.438

Hydrophytic Vegetation Indicators:

- ☐ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations**[1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation**[1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 85

Total Cover of Bryophytes 10

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: trace unid herbs, trace unidentified Poa.

SOIL

Sampling Point: CB_65

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc²		
0-18	10YR 2/1	60					Coarse Sandy Loam	40% rounded-semiang gravels, bolts, wires

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:
Depth (inches):

Hydric Soil Present? Yes ○ No ●

Remarks:

no hydric soil indicators. fill from decomissioned white alice site.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ○ No ●

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

no wetland hydrology indicators. Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_66

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Kettle

Local relief (concave, convex, none): concave **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 90

Subregion : Northern Alaska **Lat.:** 66.8477033333333 **Long.:** -162.607706666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1H

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?**	Yes ● No ○
Hydric Soil Present?	Yes ● No ○		
Wetland Hydrology Present?	Yes ● No ○		

Remarks: small pond w emergent fringe HGWFS. Pond ca 5ft below ajacent tundra grade. Extends up small swale as SLCW.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Herb Stratum			
1. Carex aquatilis	15	☑	OBL
2. Eriophorum angustifolium	15	☑	OBL
3. Carex bigelowii	1	☐	FAC
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	31		

50% of Total Cover: 15.5 20% of Total Cover: 6.2

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	30	x 1 =	30	
FACW species	0	x 2 =	0	
FAC species	1	x 3 =	3	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	31	(A)	33	(B)

Prevalence Index = B/A = 1.065

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Plot size (radius, or length x width) 2m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 50

Total Cover of Bryophytes 45

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: emergent ring around standing water

SOIL

Sampling Point: CB_66

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc²		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

☐ Alaska Color Change (TA4)[4]
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:
Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 6
Water Table Present? Yes ○ No ● Depth (inches):
Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_67

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Flat

Local relief (concave, convex, none): hummocky **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 125

Subregion : Northern Alaska **Lat.:** 66.8498383333334 **Long.:** -162.609895 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PEM1E

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

Hydrophytic Vegetation Present? Yes ● No ○

Hydric Soil Present? Yes ● No ○

Wetland Hydrology Present? Yes ● No ○

Is the Sampled Area within a Wetland? Yes ● No ○

Remarks: patterning appears to be strangmoor (vermiculations at the least) - check in aerials. flarks HGWST with 6+ in water, strangs SDEV on hummocks. both communities captured in plot.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		

50% of Total Cover: 0 20% of Total Cover: 0

Sapling/Shrub Stratum			
1. Andromeda polifolia	3	☑	FACW
2.		☐	
3. Alnus viridis ssp. crispa	1	☐	FAC
4. Salix richardsonii	3	☑	FACW
5. Betula nana	2	☐	FAC
6. Arctostaphylos alpina	1	☐	FACU
7. Vaccinium uliginosum	10	☑	FAC
8. Empetrum nigrum	2	☐	FAC
9.		☐	
10.		☐	
Total Cover:	22		

50% of Total Cover: 11 20% of Total Cover: 4.4

Herb Stratum			
1. Carex aquatilis	10	☑	OBL
2. Eriophorum angustifolium	10	☑	OBL
3. Eriophorum scheuchzeri	5	☐	OBL
4. Carex limosa	3	☐	OBL
5. Parnassia palustris	1	☐	FACW
6. Rubus chamaemorus	1	☐	FACW
7. Tofieldia pusilla	0.5	☐	FAC
8.		☐	
9.		☐	
10.		☐	
Total Cover:	30.5		

50% of Total Cover: 15.25 20% of Total Cover: 6.1

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	28	x 1 =	28
FACW species	8	x 2 =	16
FAC species	15.5	x 3 =	46.5
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	52.5	(A)	94.5 (B)

Prevalence Index = B/A = 1.800

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation[1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 45

Total Cover of Bryophytes 45

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: trace unid herbs

SOIL

Sampling Point: CB_67

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 6

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Cape Blossom Wetlands **Borough/City:** Northwest Arctic Borough **Sampling Date:** 27-Aug-12

Applicant/Owner: Baker/ADOT&PF **Sampling Point:** CB_68

Investigator(s): SLI/EKJ **Landform (hillside, terrace, hummocks etc.):** Pothole

Local relief (concave, convex, none): concave **Slope:** 0.0 **%** / 0.0 **°** **Elevation:** 95

Subregion : Northern Alaska **Lat.:** 66.8513883333333 **Long.:** -162.611326666667 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:** PUBH

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

Hydrophytic Vegetation Present?	Yes ● No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ● No ○	
Wetland Hydrology Present?	Yes ● No ○	

Remarks: PUBH with very narrow vegetated fringe. Characterizing pond as a whole.

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

Tree Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
Total Cover:	0		
50% of Total Cover: 0	20% of Total Cover: 0		

Sapling/Shrub Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Salix glauca	2	☑	FAC
2. Salix richardsonii	3	☑	FACW
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	5		
50% of Total Cover: 2.5	20% of Total Cover: 1		

Herb Stratum	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. Carex aquatilis	2	☑	OBL
2. Eriophorum angustifolium	3	☑	OBL
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
Total Cover:	5		
50% of Total Cover: 2.5	20% of Total Cover: 1		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	5	x 1 =	5	
FACW species	3	x 2 =	6	
FAC species	2	x 3 =	6	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	10	(A)	17	(B)

Prevalence Index = B/A = 1.700

Hydrophytic Vegetation Indicators:

- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0**
- ☐ **Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation [1] (Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Plot size (radius, or length x width) 10m

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground 98

Total Cover of Bryophytes 0

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: bare ground includes open water. water level high, submerged willows. banks 1-3ft above water level.

SOIL

Sampling Point: CB_68

Profile Description: Describe to depth needed to document the presence or absence of indicators

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1] Type: C=Concentration D=Depletion RM=Reduced Matrix [2] Location: PL=Pore Lining RC=Root Channel 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:[3]

- ☐ Alaska Color Change (TA4)[4]
- ☐ Alaska Alpine swales (TA5)
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☑ Other (Explain in Remarks)

[3] One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present

[4] Give details of color change in Remarks

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ● No ○

Remarks:

assume hydric soil due to hydrophytic vegetation and standing water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one 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 (two or more are 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): 36

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Western Regional Climate Center data for the Kotzebue Airport (Station 50576) long term (1949-2012)

Remarks:

3+ ft. Total precipitation for August (4.36 inches) was nearly double both the long-term (2.14 inches) and NCDC Normal (2.18 inches) August means.

Appendix A1. Verification plot data, Cape Blossom to Kotzebue Road, Alaska, 2012.

Plot ID	Cowardin	Date Completed	Investigators	Dominant Species	Field Notes
CB_V 01	PSS1/EM1B	8/24/2012	SLI, EKJ	*Empetrum nigrum, Ledum decumbens, Vaccinium uliginosum, Vaccinium vitis-idaea, Eriophorum vaginatum*	Mostly moist low open mixed shrub-sedge tussock tundra polygons (PSS1B) with wet sedge meadow tundra swales (PEM1E).
CB_V 02	PSS1B	8/24/2012	SLI, EKJ	*Salix alaxensis, Salix glauca, Salix pulchra, Salix richardsonii*	Sloughed bank of pond with closed low willow.
CB_V 03	PSS1B	8/25/2012	SLI, EKJ	*Salix glauca, Salix pulchra, Salix richardsonii, Vaccinium uliginosum, Calamagrostis Canadensis, Carex bigelowii*	Open low willow adjacent to bluff.
CB_V 04	PSS1B	8/25/2012	SLI, EKJ	*Alnus viridis* ssp. *crispa, Salix bebbiana, Artemisia tilesii, Calamagrostis Canadensis, Carex bigelowii, Chamerion angustifolium, Equisetum pretense, Rubus chamaemorus*	Tall closed alder.
CB_V 05	PSS1B	8/25/2012	SLI, EKJ	*Salix alexensis, Salix glauca, Salix pulchra, Salix richardsonii, Equisetum pretense, Petasites frigidus*	Sloughed bank with closed low willow.
CB_V 06	PSS1/EM1B	8/25/2012	SLI, EKJ	*Empetrum nigrum, Ledum decumbens, Vaccinium uliginosum, Vaccinium vitis-idaea, Eriophorum vaginatum*	Flat toped low open mixed shrub sedge tussock tundra polygons with wet sedge meadow tundra troughs. Sandhill cranes observed on the ground in this community.
CB_V 07	PSS1B	8/26/2012	SLI, EKJ	*Salix glauca, Salix pulchra, Vaccinium uliginosum, Equisetum arvense, Petasites frigidus*	Tall open willow
CB_V 08	PEM1F	8/27/2012	SLI, EKJ	*Carex aquatilis, Comarum palustre, Eriophorum angustifolium*	Wet sedge meadow tundra lacustrine fringe wetland with few scattered hummocks.
CB_V 09	L1UBH	8/27/2012	SLI, EKJ		Lake greater than 20 acres with no rooted vegetation. Shoreline with well vegetated banks up to 1ft above water level and emergent swales draining from the lake. Few sloughed banks.
CB_V 10	M2US1P	8/27/2012	SLI, EKJ		On the beach the permafrost has been undercut 10 to 15ft, causing mast wasting. Pieces of the well vegetated shore have fallen onto the beach. A storm on 25 Sep 2012 seems to have contributed a significantly to the bluff getting undercut and eroded.

Appendix A1. Continued.

Plot ID	Cowardin	Date Completed	Investigators	Dominant Species	Field Notes
CB_V 11	PEM1/SS1E	8/27/2012	SLI, EKJ	*Andromeda polifolia, Arctostaphylos alpine, Betula nana, Ledum decumbens, Vaccinium uliginosum, Vaccinium vitis-idaea*	Open low mixed shrub-sedge tussock tundra on the rims of low center polygons with wet sedge willow tundra. Ptarmigan and goose scat found on the rims of the polygons.
CB_V12	PEM1/SS1E	8/27/2012	SLI, EKJ	*Betula nana, Empetrum nigrum, Ledum decumbens, Vaccinium uliginosum, Vaccinium vitis-idaea, Eriophorum angustifolium, Rubus chamaemorus*	Low open mixed shrub tussock tundra community on the low center polygon rims with wet sedge willow tundra.
CB_V13	PSS1B	8/27/2012	SLI, EKJ	*Salix glauca, Salix pulchra, Salix richardsonii, Carex bigelowii, Eriophorum vaginatum*	Low open willow with tussocks.

Appendix B. Site photos from wetlands verification plots, Cape Blossom to Kotzebue Road, Alaska, 2012.

SITE PHOTOS

CB_01: Lower Perennial River
NWI Class: R2UBH

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_02: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

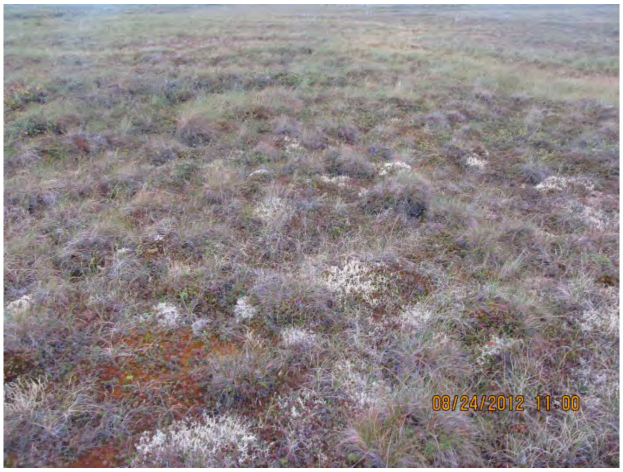
Hydrology: Saturated (A3) with high water table (A2)
Soils: Organics over silty clay loam (Problematic, AK Gleyed)

CB_03: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1E

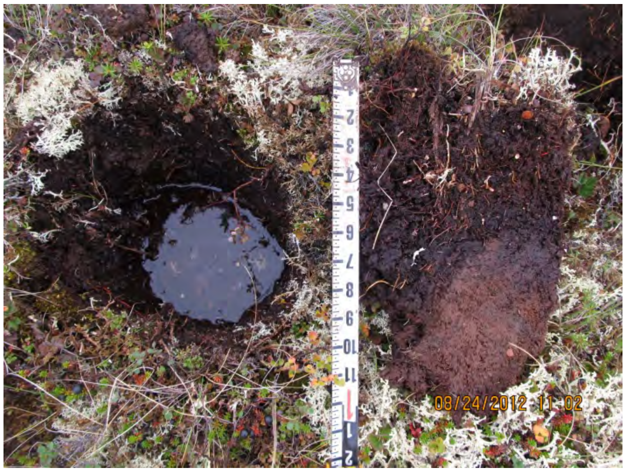
Hydrology: Surface water (A1) with shallow aquitard (D3)
Soils: No pit dug, inundated

CB_04: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

Hydrology: Saturated (A3) with high water table (A2)
Soils: Organics over silty clay loam (Alaska Redox A14)



CB_05: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PSS3/EM1B



Hydrology: Saturated (A3) with high water table (A2)
Soils: No pit dug, inundated

CB_06: Saturated Birch-Ericaceous Scrub Tundra
NWI Class: PSS1B

Hydrology: Saturated (A3) with high water table (A2)
Soils: Organics over silty clay loam (Alaska Redox A14)

CB_07: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

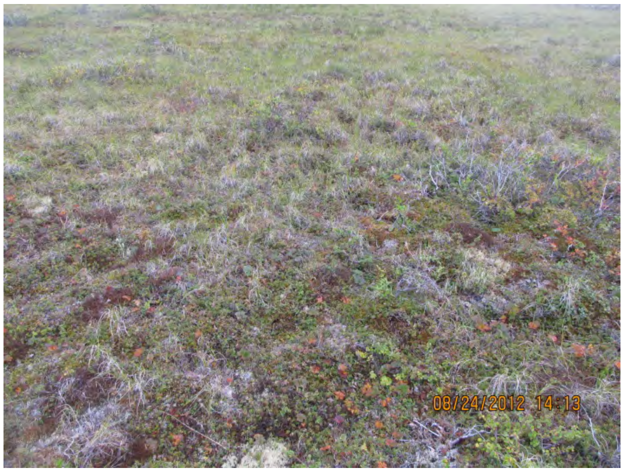
Hydrology: Saturated (A3) with high water table (A2)
Soils: Organics over silty clay loam (Problematic, Other)

CB_08: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PEM1B

Hydrology: Saturated (A3) with high water table (A2)
Soils: Organics over silty clay loam (Problematic, Other)

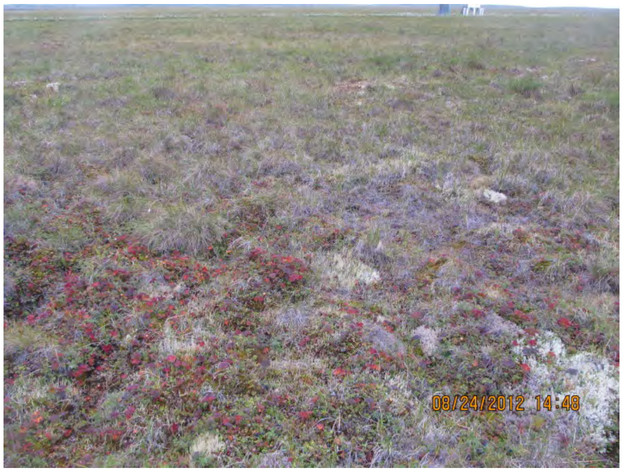
CB_09: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1E

Hydrology: Surface water (A1)
Soils: No pit dug, inundated



CB_10: Saturated Birch-Ericaceous Scrub Tundra
NWI Class: PSS3B

Hydrology: Saturation (A3) with high water table (A2)
Soils: Organics over silty clay loam (Histic Epipedon A2)



CB_11: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PSS3/EM1B

Hydrology: Saturated (A3) with high water table (A2)
Soils: Organics over silty clay loam (Histic Epipedon A2)

CB_12: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1E

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_13: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

Hydrology: Saturation (A3) with high water table (A2)
Soils: Organics over silty clay loam (Histic Epipedon A2)

CB_14: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

Hydrology: Saturation (A3) with a shallow aquitard (D3)
Soils: Organics over silty clay loam (Histic Epipedon A2)

CB_15: Permanently Flooded Lake or Pond
NWI Class: PUBH

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_16: Upland
NWI Class: Upland

Hydrology: Well drained
Soils: Organics over silty clay loam

CB_17: Seasonally Flooded Sat. Low and Tall Deciduous Shrub
NWI Class: PSS1C

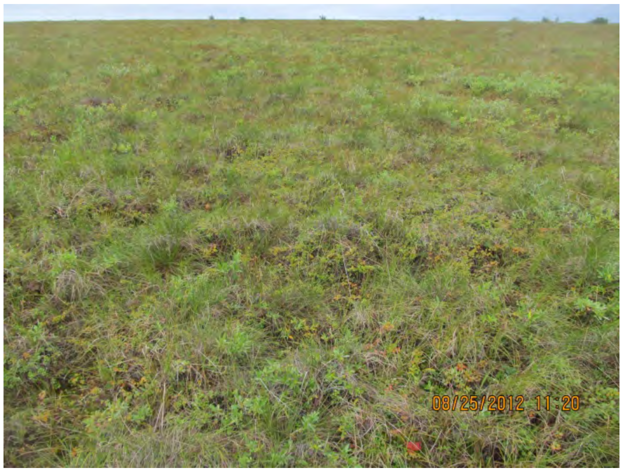
Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_18: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

Hydrology: Shallow aquitard (D3) and FAC-neutral (D5)
Soils: Organics over silty clay loam (Alaska Redox A14)

CB_19: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

Hydrology: Saturated (A3) with high water table (A2)
Soils: Organics over silty clay loam (Histic Epipedon A2)



CB_20: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PEM1/SS1B

Hydrology: Saturation (A3) with high water table (A2)
Soils: Organics over silty clay loam (Histic Epipedon A2)

CB_21: Saturated Dwarf Shrub Tundra
NWI Class: PSS4B

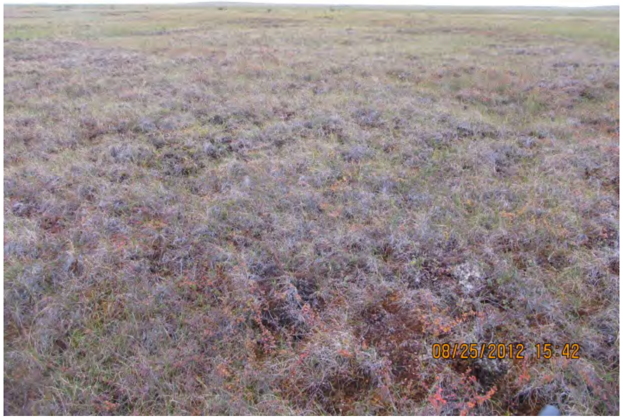
Hydrology: Saturation (A3) with high water table (A2)
Soils: Organics over silty clay loam (Histic Epipedon A2)

CB_22: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

Hydrology: Saturated (A3) with shallow aquitard (D3)
Soils: Organics over silty clay loam (Alaska Gleyed A13)

CB_23: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PEM1/SS3B

Hydrology: Saturation (A3) with shallow aquitard (D3)
Soils: Organics over silty clay loam (Histic Epipedon A2)



CB_24: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1E

Hydrology: Saturation (A3) with a high water table (A2)
Soils: Organics (Histic Epipedon A2)


08/25/2012 16:21

CB_25: Saturated Dwarf Shrub Tundra
NWI Class: PSS4B


08/25/2012 16:24

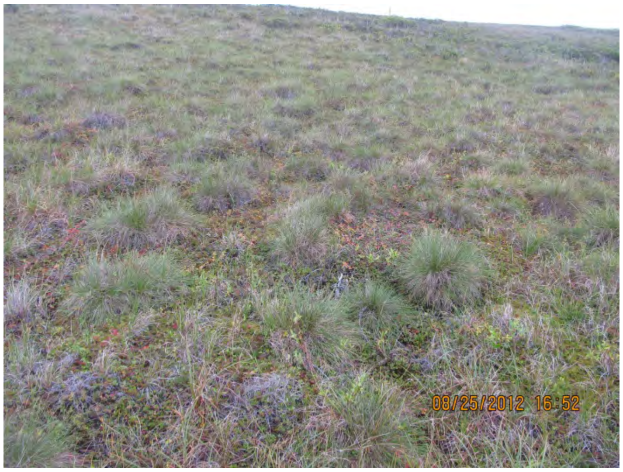
Hydrology: Saturated (A3) with high water table (A2)
Soils: Organics over silty clay loam (Histic Epipedon A2)


08/25/2012 16:38

CB_26: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1E


08/25/2012 16:38

Hydrology: Surface water (A1)
Soils: No pit dug, inundated


08/25/2012 16:52

CB_27: Saturated Dwarf Shrub Tundra
NWI Class: PSS4B


08/25/2012 16:52

Hydrology: Saturation (A3) with a high water table (A2)
Soils: Organics over silty clay loam (Histic Epipedon A2)

CB_28: Littoral Aquatic Bed and Lacustrine Fringe
NWI Class: PEM1F

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_29: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PSS1/EM1B

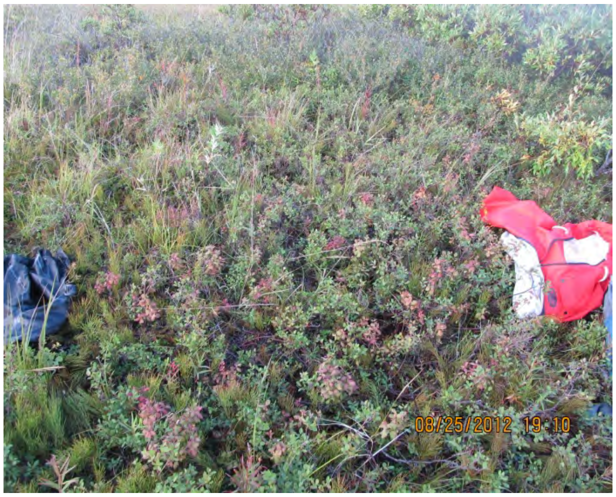
Hydrology: Saturation (A3) with a high water table (A2)
Soils: Organics (Histic Epipedon A2)

CB_30: Semi-Permanently Flooded Sedge-Shrub Meadow
NWI Class: PEM1F

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_31: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1/SS1E

Hydrology: Surface water (A1)
Soils: No pit dug, inundated



CB_32: Upland
NWI Class: Upland

Hydrology: Well drained
Soils: Organics over silty clay loam

CB_33: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1E

Hydrology: Saturation (A3) with a high water table (A2)
Soils: Organics over silty clay loam (Histic Epipedon A2)

CB_34: Permanently Flooded Sedge Marsh
NWI Class: PEM1H

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_35: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1E

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_36: Semi-Permanently Flooded Sedge-Shrub Meadow
NWI Class: PEM1/SS1F

Hydrology: Surface water (A1)
Soils: No pit dug, inundated


08/26/2012 09:41


08/26/2012 09:44

CB_37: Semi-Permanently Flooded Sedge-Shrub Meadow
NWI Class: PEM1/SS1F

Hydrology: Saturation (A3) with high water table (A2)
Soils: Organics (Histic Epipedon A2)


08/26/2012 10:21


08/26/2012 10:27

CB_38: Upland
NWI Class: Upland

Hydrology: Saturation (A3) with a high water table (A2)
Soils: Organics over silty clay loam


08/26/2012 10:54


08/26/2012 10:55

CB_39: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1E

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_40: Permanently Flooded Sedge Marsh
NWI Class: PEM1F

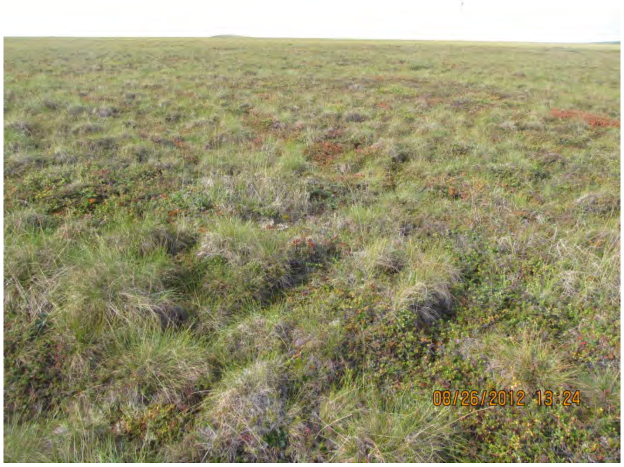
Hydrology: Saturated (A3) with high water table (A2)
Soils: Organics over slity clay loam (Alaska Redox A14)

CB_41: Semi-Permanently Flooded Sedge-Shrub Meadow
NWI Class: PEM1/SS1F

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

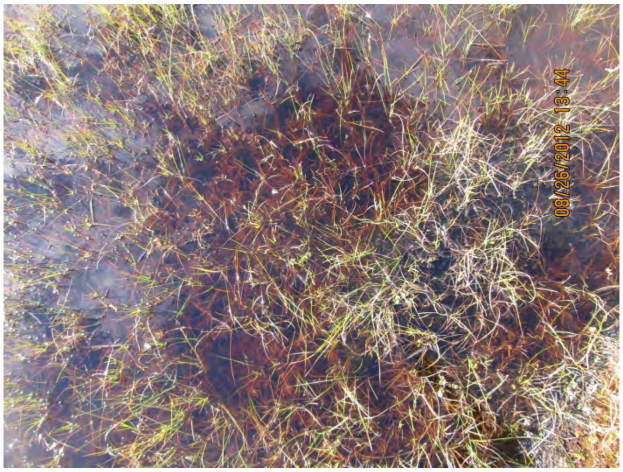
CB_42: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1/SS1E

Hydrology: Surface water (A1)
Soils: No pit dug, inundated



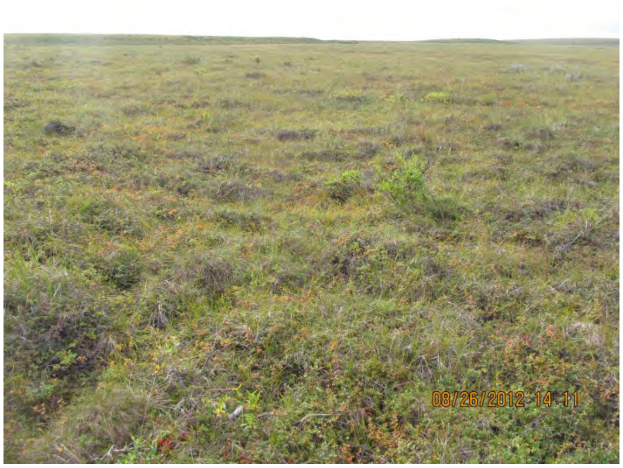
CB_43: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PSS3/EM1B

Hydrology: Saturated (A3) with high water table (A2)
Soils: Organics over silty clay loam (Histic Epipedon A2)



CB_44: Semi-Permanently Flooded Sedge-Shrub Meadow
NWI Class: PEM1F/SS1F

Hydrology: Surface water (A1)
Soils: No pit dug, inundated



CB_45: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PSS3/EM1B

Hydrology: Saturation (A3) with a shallow aquitard (D3)
Soils: Organics over silty clay loam (Histic Epipedon A2)

CB_46: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

Hydrology: Shallow aquitard (D3) and FAC-neutral (D5)
Soils: Organics over slity clay loam (Alaska Redox A14)

CB_47: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PSS1/EM1B

Hydrology: Saturation (A3) with a shallow aquitard (D3)
Soils: Organics over silty clay loam (Alaska Redox A14)

CB_48: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PEM1/SS1B

Hydrology: Saturation (A3) and high water table (A2)
Soils: Organics (Histic Epipedon A2)

CB_49: Semi-Permanently Flooded Sedge-Shrub Meadow
NWI Class: PEM1/PSS1F

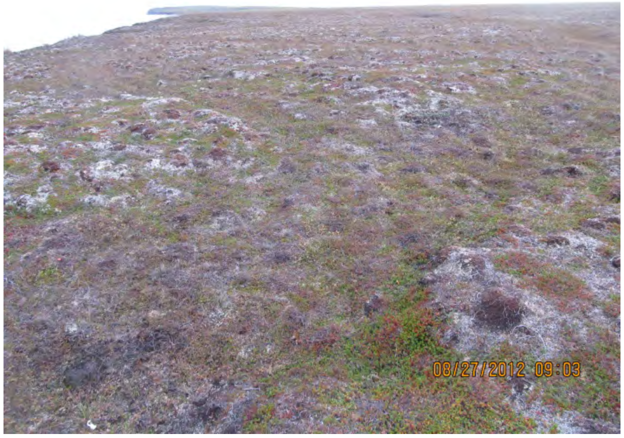
Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_50: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PSS1B

Hydrology: Saturation (A3) with a high water table (A2)
Soils: Organics (Histic Epipedon A2)

CB_51: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PSS1B

Hydrology: Saturation (A3) with a high water table (A2)
Soils: Organics (Histic Epipedon A2)



CB_52: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PSS1/EM1B

Hydrology: Shallow aquitard (D3) and FAC-neutral (D5)
Soils: Histel (A1)

CB_53: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PSS1/EM1B

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_54: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1/SS1E

Hydrology: Saturation (A3) and high water table (A2)
Soils: Organics (Histic Epipedon A2)

CB_55: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1E

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

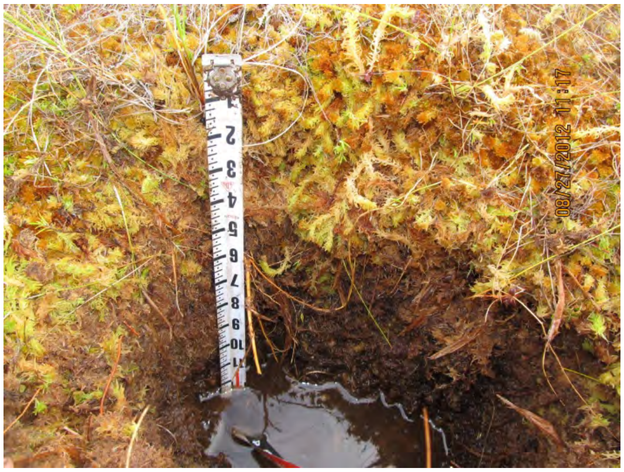
CB_56: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PEM1/SS1B

Hydrology: Saturation (A3) with a high water table (A2)
Soils: Organics over silty clay loam (Histic Epipedon A2)

CB_57: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1/SS1E

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_58: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1/SS1E



Hydrology: Saturation (A3) with high water table (A2)
Soils: Organics (Histic Epipedon A2)

CB_59: Saturated Dwarf Shrub Tundra
NWI Class: PSS1/3B

Hydrology: Saturation (A3) and high water table (A2)
Soils: Organics over silty clay loam (Histic Epipedon A2)

CB_60: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PSS3/EM1B

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_61: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PSS3/EM1B

Hydrology: Saturation (A3) with shallow aquitard (D3)
Soils: Organics over slity clay loam (Histic Epipedon A2)

CB_62: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1E

Hydrology: Saturation (A3) with a high water table (A2)
Soils: Organics over silty clay loam (Histic Epipedon A2)

CB_63: Saturated Birch-Ericaceous Scrub Tundra
NWI Class: PSS1B

Hydrology: Saturation (A3) with a shallow aquitard (D3)
Soils: Organics over slity clay loam (Histic Epipedon)

CB_64: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

Hydrology: Saturation (A3) with high water table (A2)
Soils: Organics over silty clay loam (Alaska Gleyed A13)

CB_65: Upland
NWI Class: Upland

Hydrology: Well drained
Soils: course sandy loam

CB_66: Permanently Flooded Sedge Marsh
NWI Class: PEM1H

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_67: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1E

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

CB_68: Permanently Flooded Lake or Pond
NWI Class: PUBH

Hydrology: Surface water (A1)
Soils: No pit dug, inundated

VERIFICATION SITE PHOTOS

CB_V01: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PSS1/EM1B

CB_V02: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

CB_V03: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

CB_V04: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

CB_V05: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

CB_V06: Saturated Emergent Sedge-Shrub Meadow
NWI Class: PSS1/PEM1B

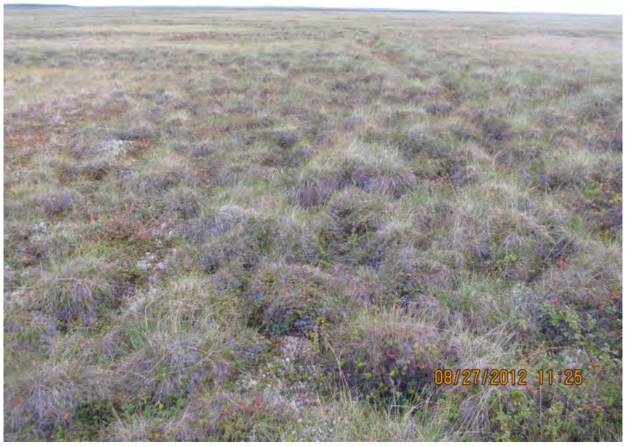
CB_V07: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

CB_V08: Littoral Aquatic Bed and Lacustrine Fringe
NWI Class: PEM1FE

CB_V09: Permanently Flooded Lake or Pond
NWI Class: L1UBH

CB_64: Marine Waters and Unconsolidated Shore
NWI Class: M2US1P

CB_V11: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1/SS1E



CB_V12: Seasonally Flooded Saturated Sedge-Shrub Meadow
NWI Class: PEM1/SS1E

CB_V13: Saturated Low and Tall Deciduous Shrub
NWI Class: PSS1B

Appendix C. Functional Assessment Data Forms.

Wetland Functions Data Form-Alaska Regulatory Best Professional Judgment Characterization

(Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Kotzebue to Cape Blossom Road, AK Date: 10/18/2012
Wetland: Seasonal Tidal Estuary PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
1. Wetland is within a permafrost system, with a near-surface active layer. *If yes, proceed no further, wetland is low functioning.* 2. Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions. 3. Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding. 4. If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris. 5. Wetland has dense (≥40% cover) woody vegetation. 6. Wetland receives floodwater from an adjacent water course at least once every 10 years. 7. Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 6. N/A 7. N/A ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
1. Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland. 2. Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years. 3. Dense (≥50% cover) herbaceous vegetation is present. 4. At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years. 5. Sediment deposits are present (evidence of deposition during floods). 6. Thick surface organic horizon and/or abundant fine organic litter is present.	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 6. N/A ≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
C. **Erosion Control and Shoreline Stabilization**	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland directly abuts permanent or relatively permanent water. 1. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion. 2. An at least moderately dense herbaceous layer is present.	1. N/A 2. N/A 1–2 attributes (Y)—High Function None—Low Function
D. Production of Organic Matter and its Export	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
Function only applicable if wetland is flooded at least once every 10 years. 1. A more than minimal amount of organic matter is flushed from the wetland by water flow at least once every 10 years. *If no, proceed no further, wetland is low functioning.* 2. Wetland has at least 30% cover of herbaceous vegetation. 3. Woody plants in wetland are mostly deciduous. 4. High degree of plant community structure, vegetation density, and species richness present. 5. Interspersion of vegetation and water is at least moderate.	1. N 2. N/A 3. N/A 4. N/A 5. N/A 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function

E. General Habitat Suitability	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Wetland is not fragmented by development. 2. Upland surrounding wetland is undisturbed. 3. Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each). 4. Plant community has two or more strata, with at least two of those strata having ≥10% total cover. 5. Wetland has at least a moderate degree of Cowardin Class interspersion. 6. Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.	1. Y 2. Y 3. N 4. N 5. Y 6. N 5–6 attributes (Y)—High Function 2–4 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
Function only applicable if wetland has perennial or intermittent surface water connection to a fish-bearing water body. 1. Wetland has sufficient size and depth of open water so as not to freeze completely during winter. 2. Fish are present or are known to be present. 3. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter. 4. Spawning areas are present (aquatic vegetation and/or gravel beds 5. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).	1. Y 2. Y 3. N 4. Y 5. Y 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
G. Native Plant Richness	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable in vegetated wetlands. 1. At least 20 native plant species occur in the wetland 2. Wetland contains two or more Cowardin Classes. 3. Wetland has three or more strata of vegetation with at least 10% cover in each stratum.	1. N/A 2. N/A 3. N/A 2–3 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Site has documented scientific or educational use. 2. Wetland is in public ownership. 3. Accessible trails are available. 4. Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).	1. N 2. Y 3. Y 4. Y ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
I. Uniqueness and Special Status	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland contains documented occurrence of a state or federally listed threatened or endangered species. *If yes, wetland is high functioning.* 2. Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service 3. Wetland has biological, geological, or other features that are determined to be rare. 4. Wetland has been determined significant because it provides functions scarce for the area.	1. N 2. N 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function

Wetland Functions Data Form-Alaska Regulatory Best Professional Judgment Characterization

(Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Kotzebue to Cape Blossom Road, AK Date: 10/18/2012
Wetland: Permanently Flooded Lake or Pond PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Wetland is within a permafrost system, with a near-surface active layer. *If yes, proceed no further, wetland is low functioning.* 2. Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions. 3. Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding. 4. If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris. 5. Wetland has dense (≥40% cover) woody vegetation. 6. Wetland receives floodwater from an adjacent water course at least once every 10 years. 7. Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.	1. N 2. Y 3. Y 4. N 5. N 6. Y 7. Y ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland. 2. Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years. 3. Dense (≥50% cover) herbaceous vegetation is present. 4. At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years. 5. Sediment deposits are present (evidence of deposition during floods). 6. Thick surface organic horizon and/or abundant fine organic litter is present.	1. N 2. Y 3. N 4. N 5. N 6. Y ≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
C. **Erosion Control and Shoreline Stabilization**	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland directly abuts permanent or relatively permanent water. 1. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion. 2. An at least moderately dense herbaceous layer is present.	1. N/A 2. N/A 1–2 attributes (Y)—High Function None—Low Function
D. Production of Organic Matter and its Export	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
Function only applicable if wetland is flooded at least once every 10 years. 1. A more than minimal amount of organic matter is flushed from the wetland by water flow at least once every 10 years. *If no, proceed no further, wetland is low functioning.* 2. Wetland has at least 30% cover of herbaceous vegetation. 3. Woody plants in wetland are mostly deciduous. 4. High degree of plant community structure, vegetation density, and species richness present. 5. Interspersion of vegetation and water is at least moderate.	1. N 2. N/A 3. N/A 4. N/A 5. N/A 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function

E. General Habitat Suitability	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Wetland is not fragmented by development. 2. Upland surrounding wetland is undisturbed. 3. Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each). 4. Plant community has two or more strata, with at least two of those strata having ≥10% total cover. 5. Wetland has at least a moderate degree of Cowardin Class interspersion. 6. Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.	1. Y 2. Y 3. N 4. N 5. N 6. N 5–6 attributes (Y)—High Function 2–4 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
Function only applicable if wetland has perennial or intermittent surface water connection to a fish-bearing water body. 1. Wetland has sufficient size and depth of open water so as not to freeze completely during winter. 2. Fish are present or are known to be present. 3. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter. 4. Spawning areas are present (aquatic vegetation and/or gravel beds 5. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).	1. Y 2. Y 3. N 4. Y 5. Y 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
G. Native Plant Richness	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable in vegetated wetlands. 1. At least 20 native plant species occur in the wetland 2. Wetland contains two or more Cowardin Classes. 3. Wetland has three or more strata of vegetation with at least 10% cover in each stratum.	1. N/A 2. N/A 3. N/A 2–3 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Site has documented scientific or educational use. 2. Wetland is in public ownership. 3. Accessible trails are available. 4. Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).	1. N 2. Y 3. N 4. Y ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
I. Uniqueness and Special Status	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland contains documented occurrence of a state or federally listed threatened or endangered species. *If yes, wetland is high functioning.* 2. Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service 3. Wetland has biological, geological, or other features that are determined to be rare. 4. Wetland has been determined significant because it provides functions scarce for the area.	1. N 2. N 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function

Wetland Functions Data Form-Alaska Regulatory Best Professional Judgment Characterization

(Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Kotzebue to Cape Blossom Road, AK Date: 10/18/2012
Wetland: Lower Perennial River PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
1. Wetland is within a permafrost system, with a near-surface active layer. *If yes, proceed no further, wetland is low functioning.* 2. Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions. 3. Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding. 4. If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris. 5. Wetland has dense (≥40% cover) woody vegetation. 6. Wetland receives floodwater from an adjacent water course at least once every 10 years. 7. Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 6. N/A 7. N/A ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland. 2. Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years. 3. Dense (≥50% cover) herbaceous vegetation is present. 4. At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years. 5. Sediment deposits are present (evidence of deposition during floods). 6. Thick surface organic horizon and/or abundant fine organic litter is present.	1. N 2. Y 3. N 4. N 5. N 6. N ≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
C. **Erosion Control and Shoreline Stabilization**	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland directly abuts permanent or relatively permanent water. 1. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion. 2. An at least moderately dense herbaceous layer is present.	1. N/A 2. N/A 1–2 attributes (Y)—High Function None—Low Function
D. Production of Organic Matter and its Export	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
Function only applicable if wetland is flooded at least once every 10 years. 1. A more than minimal amount of organic matter is flushed from the wetland by water flow at least once every 10 years. *If no, proceed no further, wetland is low functioning.* 2. Wetland has at least 30% cover of herbaceous vegetation. 3. Woody plants in wetland are mostly deciduous. 4. High degree of plant community structure, vegetation density, and species richness present. 5. Interspersion of vegetation and water is at least moderate.	1. Y 2. N/A 3. N/A 4. N/A 5. N/A 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function

E. General Habitat Suitability	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Wetland is not fragmented by development. 2. Upland surrounding wetland is undisturbed. 3. Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each). 4. Plant community has two or more strata, with at least two of those strata having >10% total cover. 5. Wetland has at least a moderate degree of Cowardin Class interspersion. 6. Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.	1. Y 2. Y 3. N 4. N 5. N 6. Y 5–6 attributes (Y)—High Function 2–4 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
Function only applicable if wetland has perennial or intermittent surface water connection to a fish-bearing water body. 1. Wetland has sufficient size and depth of open water so as not to freeze completely during winter. 2. Fish are present or are known to be present. 3. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter. 4. Spawning areas are present (aquatic vegetation and/or gravel beds 5. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).	1. Y 2. Y 3. N 4. Y 5. Y 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
G. Native Plant Richness	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable in vegetated wetlands. 1. At least 20 native plant species occur in the wetland 2. Wetland contains two or more Cowardin Classes. 3. Wetland has three or more strata of vegetation with at least 10% cover in each stratum.	1. N/A 2. N/A 3. N/A 2–3 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Site has documented scientific or educational use. 2. Wetland is in public ownership. 3. Accessible trails are available. 4. Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).	1. N 2. Y 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
I. Uniqueness and Special Status	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland contains documented occurrence of a state or federally listed threatened or endangered species. *If yes, wetland is high functioning.* 2. Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service 3. Wetland has biological, geological, or other features that are determined to be rare. 4. Wetland has been determined significant because it provides functions scarce for the area.	1. N 2. N 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function

Wetland Functions Data Form-Alaska Regulatory Best Professional Judgment Characterization

(Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Kotzebue to Cape Blossom Road, AK Date: 10/18/2012
Wetland: Littoral Aquatic Bed and Lacustrine Fringe PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Wetland is within a permafrost system, with a near-surface active layer. *If yes, proceed no further, wetland is low functioning.* 2. Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions. 3. Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding. 4. If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris. 5. Wetland has dense (>40% cover) woody vegetation. 6. Wetland receives floodwater from an adjacent water course at least once every 10 years. 7. Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.	1. N 2. Y 3. Y 4. N 5. N 6. Y 7. Y ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland. 2. Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years. 3. Dense (>50% cover) herbaceous vegetation is present. 4. At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years. 5. Sediment deposits are present (evidence of deposition during floods). 6. Thick surface organic horizon and/or abundant fine organic litter is present.	1. N 2. Y 3. Y 4. Y 5. N 6. Y ≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
C. **Erosion Control and Shoreline Stabilization**	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
Function only applicable if wetland directly abuts permanent or relatively permanent water. 1. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion. 2. An at least moderately dense herbaceous layer is present.	1. N 2. Y 1–2 attributes (Y)—High Function None—Low Function
D. Production of Organic Matter and its Export	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
Function only applicable if wetland is flooded at least once every 10 years. 1. A more than minimal amount of organic matter is flushed from the wetland by water flow at least once every 10 years. *If no, proceed no further, wetland is low functioning*. 2. Wetland has at least 30% cover of herbaceous vegetation. 3. Woody plants in wetland are mostly deciduous. 4. High degree of plant community structure, vegetation density, and species richness present. 5. Interspersion of vegetation and water is at least moderate.	1. Y 2. Y 3. N/A 4. N 5. Y 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function

E. General Habitat Suitability	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Wetland is not fragmented by development. 2. Upland surrounding wetland is undisturbed. 3. Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each). 4. Plant community has two or more strata, with at least two of those strata having ≥10% total cover. 5. Wetland has at least a moderate degree of Cowardin Class interspersion. 6. Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.	1. Y 2. Y 3. N 4. N 5. N 6. Y 5–6 attributes (Y)—High Function 2–4 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
Function only applicable if wetland has perennial or intermittent surface water connection to a fish-bearing water body. 1. Wetland has sufficient size and depth of open water so as not to freeze completely during winter. 2. Fish are present or are known to be present. 3. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter. 4. Spawning areas are present (aquatic vegetation and/or gravel beds 5. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).	1. N 2. Y 3. Y 4. Y 5. Y 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
G. Native Plant Richness	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
Function only applicable in vegetated wetlands. 1. At least 20 native plant species occur in the wetland 2. Wetland contains two or more Cowardin Classes. 3. Wetland has three or more strata of vegetation with at least 10% cover in each stratum.	1. N 2. Y 3. N 2–3 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Site has documented scientific or educational use. 2. Wetland is in public ownership. 3. Accessible trails are available. 4. Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).	1. N 2. Y 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
I. Uniqueness and Special Status	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland contains documented occurrence of a state or federally listed threatened or endangered species. *If yes, wetland is high functioning.* 2. Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service 3. Wetland has biological, geological, or other features that are determined to be rare. 4. Wetland has been determined significant because it provides functions scarce for the area.	1. N 2. N 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function

Wetland Functions Data Form-Alaska Regulatory Best Professional Judgment Characterization

(Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Kotzebue to Cape Blossom Road, AK Date: 10/18/2012
Wetland: Permanently Flooded Sedge Marsh PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Wetland is within a permafrost system, with a near-surface active layer. *If yes, proceed no further, wetland is low functioning.* 2. Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions. 3. Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding. 4. If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris. 5. Wetland has dense (≥40% cover) woody vegetation. 6. Wetland receives floodwater from an adjacent water course at least once every 10 years. 7. Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.	1. N 2. Y 3. Y 4. Y 5. N 6. Y 7. Y ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland. 2. Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years. 3. Dense (≥50% cover) herbaceous vegetation is present. 4. At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years. 5. Sediment deposits are present (evidence of deposition during floods). 6. Thick surface organic horizon and/or abundant fine organic litter is present.	1. N 2. Y 3. N 4. Y 5. N 6. N ≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
C. **Erosion Control and Shoreline Stabilization**	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
Function only applicable if wetland directly abuts permanent or relatively permanent water. 1. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion. 2. An at least moderately dense herbaceous layer is present.	1. N 2. Y 1–2 attributes (Y)—High Function None—Low Function
D. Production of Organic Matter and its Export	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
Function only applicable if wetland is flooded at least once every 10 years. 1. A more than minimal amount of organic matter is flushed from the wetland by water flow at least once every 10 years. *If no, proceed no further, wetland is low functioning.* 2. Wetland has at least 30% cover of herbaceous vegetation. 3. Woody plants in wetland are mostly deciduous. 4. High degree of plant community structure, vegetation density, and species richness present. 5. Interspersion of vegetation and water is at least moderate.	1. Y 2. Y 3. N/A 4. N 5. N 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function

E. General Habitat Suitability	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Wetland is not fragmented by development. 2. Upland surrounding wetland is undisturbed. 3. Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each). 4. Plant community has two or more strata, with at least two of those strata having ≥10% total cover. 5. Wetland has at least a moderate degree of Cowardin Class interspersion. 6. Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.	1. Y 2. Y 3. N 4. N 5. N 6. N 5–6 attributes (Y)—High Function 2–4 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
Function only applicable if wetland has perennial or intermittent surface water connection to a fish-bearing water body. 1. Wetland has sufficient size and depth of open water so as not to freeze completely during winter. 2. Fish are present or are known to be present. 3. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter. 4. Spawning areas are present (aquatic vegetation and/or gravel beds 5. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).	1. N 2. N 3. Y 4. Y 5. Y 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
G. Native Plant Richness	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
Function only applicable in vegetated wetlands. 1. At least 20 native plant species occur in the wetland 2. Wetland contains two or more Cowardin Classes. 3. Wetland has three or more strata of vegetation with at least 10% cover in each stratum.	1. N 2. Y 3. N 2–3 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Site has documented scientific or educational use. 2. Wetland is in public ownership. 3. Accessible trails are available. 4. Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).	1. N 2. Y 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
I. Uniqueness and Special Status	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland contains documented occurrence of a state or federally listed threatened or endangered species. *If yes, wetland is high functioning.* 2. Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service 3. Wetland has biological, geological, or other features that are determined to be rare. 4. Wetland has been determined significant because it provides functions scarce for the area.	1. N 2. N 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function

Wetland Functions Data Form-Alaska Regulatory Best Professional Judgment Characterization

(Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Kotzebue to Cape Blossom Road, AK Date: 10/18/2012
Wetland: Semi-Permanently Flooded Sedge-Shrub Meadow PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Wetland is within a permafrost system, with a near-surface active layer. *If yes, proceed no further, wetland is low functioning.* 2. Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions. 3. Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding. 4. If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris. 5. Wetland has dense (≥40% cover) woody vegetation. 6. Wetland receives floodwater from an adjacent water course at least once every 10 years. 7. Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.	1. N 2. Y 3. Y 4. N 5. N 6. Y 7. Y ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland. 2. Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years. 3. Dense (≥50% cover) herbaceous vegetation is present. 4. At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years. 5. Sediment deposits are present (evidence of deposition during floods). 6. Thick surface organic horizon and/or abundant fine organic litter is present.	1. N 2. Y 3. N 4. Y 5. N 6. Y ≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
C. **Erosion Control and Shoreline Stabilization**	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland directly abuts permanent or relatively permanent water. 1. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion. 2. An at least moderately dense herbaceous layer is present.	1. N/A 2. N/A 1–2 attributes (Y)—High Function None—Low Function
D. Production of Organic Matter and its Export	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
Function only applicable if wetland is flooded at least once every 10 years. 1. A more than minimal amount of organic matter is flushed from the wetland by water flow at least once every 10 years. *If no, proceed no further, wetland is low functioning.* 2. Wetland has at least 30% cover of herbaceous vegetation. 3. Woody plants in wetland are mostly deciduous. 4. High degree of plant community structure, vegetation density, and species richness present. 5. Interspersion of vegetation and water is at least moderate.	1. Y 2. Y 3. Y 4. N 5. Y 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function

E. General Habitat Suitability	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Wetland is not fragmented by development. 2. Upland surrounding wetland is undisturbed. 3. Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each). 4. Plant community has two or more strata, with at least two of those strata having ≥10% total cover. 5. Wetland has at least a moderate degree of Cowardin Class interspersion. 6. Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.	1. Y 2. Y 3. Y 4. Y 5. N 6. Y 5–6 attributes (Y)—High Function 2–4 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland has perennial or intermittent surface water connection to a fish-bearing water body. 1. Wetland has sufficient size and depth of open water so as not to freeze completely during winter. 2. Fish are present or are known to be present. 3. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter. 4. Spawning areas are present (aquatic vegetation and/or gravel beds 5. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
G. Native Plant Richness	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
Function only applicable in vegetated wetlands. 1. At least 20 native plant species occur in the wetland 2. Wetland contains two or more Cowardin Classes. 3. Wetland has three or more strata of vegetation with at least 10% cover in each stratum.	1. N 2. Y 3. N 2–3 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Site has documented scientific or educational use. 2. Wetland is in public ownership. 3. Accessible trails are available. 4. Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).	1. N 2. Y 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
I. Uniqueness and Special Status	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland contains documented occurrence of a state or federally listed threatened or endangered species. *If yes, wetland is high functioning.* 2. Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service 3. Wetland has biological, geological, or other features that are determined to be rare. 4. Wetland has been determined significant because it provides functions scarce for the area.	1. N 2. N 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function

Wetland Functions Data Form-Alaska Regulatory Best Professional Judgment Characterization

(Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Kotzebue to Cape Blossom Road, AK Date: 10/18/2012
Wetland: Seasonally Flooded Saturated Sedge-Shrub Meadow PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Wetland is within a permafrost system, with a near-surface active layer. *If yes, proceed no further, wetland is low functioning.* 2. Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions. 3. Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding. 4. If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris. 5. Wetland has dense (≥40% cover) woody vegetation. 6. Wetland receives floodwater from an adjacent water course at least once every 10 years. 7. Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.	1. N 2. Y 3. Y 4. N 5. N 6. Y 7. Y ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland. 2. Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years. 3. Dense (≥50% cover) herbaceous vegetation is present. 4. At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years. 5. Sediment deposits are present (evidence of deposition during floods). 6. Thick surface organic horizon and/or abundant fine organic litter is present.	1. N 2. Y 3. N 4. Y 5. N 6. Y ≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
C. **Erosion Control and Shoreline Stabilization**	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
Function only applicable if wetland directly abuts permanent or relatively permanent water. 1. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion. 2. An at least moderately dense herbaceous layer is present.	1. N 2. Y 1–2 attributes (Y)—High Function None—Low Function
D. Production of Organic Matter and its Export	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
Function only applicable if wetland is flooded at least once every 10 years. 1. A more than minimal amount of organic matter is flushed from the wetland by water flow at least once every 10 years. *If no, proceed no further, wetland is low functioning.* 2. Wetland has at least 30% cover of herbaceous vegetation. 3. Woody plants in wetland are mostly deciduous. 4. High degree of plant community structure, vegetation density, and species richness present. 5. Interspersion of vegetation and water is at least moderate.	1. Y 2. Y 3. Y 4. N 5. Y 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function

E. General Habitat Suitability	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Wetland is not fragmented by development. 2. Upland surrounding wetland is undisturbed. 3. Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each). 4. Plant community has two or more strata, with at least two of those strata having ≥10% total cover. 5. Wetland has at least a moderate degree of Cowardin Class interspersion. 6. Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.	1. Y 2. Y 3. N 4. Y 5. Y 6. Y 5–6 attributes (Y)—High Function 2–4 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland has perennial or intermittent surface water connection to a fish-bearing water body. 1. Wetland has sufficient size and depth of open water so as not to freeze completely during winter. 2. Fish are present or are known to be present. 3. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter. 4. Spawning areas are present (aquatic vegetation and/or gravel beds 5. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
G. Native Plant Richness	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
Function only applicable in vegetated wetlands. 1. At least 20 native plant species occur in the wetland 2. Wetland contains two or more Cowardin Classes. 3. Wetland has three or more strata of vegetation with at least 10% cover in each stratum.	1. N 2. Y 3. N 2–3 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Site has documented scientific or educational use. 2. Wetland is in public ownership. 3. Accessible trails are available. 4. Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).	1. N 2. Y 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
I. Uniqueness and Special Status	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland contains documented occurrence of a state or federally listed threatened or endangered species. *If yes, wetland is high functioning.* 2. Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service 3. Wetland has biological, geological, or other features that are determined to be rare. 4. Wetland has been determined significant because it provides functions scarce for the area.	1. N 2. N 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function

Wetland Functions Data Form-Alaska Regulatory Best Professional Judgment Characterization

(Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Kotzebue to Cape Blossom Road, AK Date: 10/18/2012
Wetland: Seasonally Flooded Saturated Low and Tall Decid. Shrub PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Wetland is within a permafrost system, with a near-surface active layer. *If yes, proceed no further, wetland is low functioning.* 2. Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions. 3. Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding. 4. If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris. 5. Wetland has dense (>40% cover) woody vegetation. 6. Wetland receives floodwater from an adjacent water course at least once every 10 years. 7. Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.	1. N 2. N 3. N 4. N 5. Y 6. Y 7. N ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland. 2. Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years. 3. Dense (>50% cover) herbaceous vegetation is present. 4. At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years. 5. Sediment deposits are present (evidence of deposition during floods). 6. Thick surface organic horizon and/or abundant fine organic litter is present.	1. N 2. Y 3. N 4. Y 5. N 6. N ≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
C. **Erosion Control and Shoreline Stabilization**	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
Function only applicable if wetland directly abuts permanent or relatively permanent water. 1. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion. 2. An at least moderately dense herbaceous layer is present.	1. Y 2. N 1–2 attributes (Y)—High Function None—Low Function
D. Production of Organic Matter and its Export	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
Function only applicable if wetland is flooded at least once every 10 years. 1. A more than minimal amount of organic matter is flushed from the wetland by water flow at least once every 10 years. *If no, proceed no further, wetland is low functioning.* 2. Wetland has at least 30% cover of herbaceous vegetation. 3. Woody plants in wetland are mostly deciduous. 4. High degree of plant community structure, vegetation density, and species richness present. 5. Interspersion of vegetation and water is at least moderate.	1. Y 2. N 3. Y 4. N 5. Y 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function

E. General Habitat Suitability	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Wetland is not fragmented by development. 2. Upland surrounding wetland is undisturbed. 3. Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each). 4. Plant community has two or more strata, with at least two of those strata having ≥10% total cover. 5. Wetland has at least a moderate degree of Cowardin Class interspersion. 6. Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.	1. Y 2. Y 3. N 4. Y 5. N 6. N 5–6 attributes (Y)—High Function 2–4 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland has perennial or intermittent surface water connection to a fish-bearing water body. 1. Wetland has sufficient size and depth of open water so as not to freeze completely during winter. 2. Fish are present or are known to be present. 3. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter. 4. Spawning areas are present (aquatic vegetation and/or gravel beds 5. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
G. Native Plant Richness	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
Function only applicable in vegetated wetlands. 1. At least 20 native plant species occur in the wetland 2. Wetland contains two or more Cowardin Classes. 3. Wetland has three or more strata of vegetation with at least 10% cover in each stratum.	1. N 2. N 3. N 2–3 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Site has documented scientific or educational use. 2. Wetland is in public ownership. 3. Accessible trails are available. 4. Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).	1. N 2. Y 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
I. Uniqueness and Special Status	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland contains documented occurrence of a state or federally listed threatened or endangered species. *If yes, wetland is high functioning.* 2. Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service 3. Wetland has biological, geological, or other features that are determined to be rare. 4. Wetland has been determined significant because it provides functions scarce for the area.	1. N 2. N 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function

Wetland Functions Data Form-Alaska Regulatory Best Professional Judgment Characterization

(Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Kotzebue to Cape Blossom Road, AK Date: 10/18/2012
Wetland: Saturated Emergent Sedge-Shrub Meadow PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland is within a permafrost system, with a near-surface active layer. *If yes, proceed no further, wetland is low functioning.* 2. Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions. 3. Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding. 4. If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris. 5. Wetland has dense (≥40% cover) woody vegetation. 6. Wetland receives floodwater from an adjacent water course at least once every 10 years. 7. Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.	1. Y 2. N/A 3. N/A 4. N/A 5. N/A 6. N/A 7. N/A ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland. 2. Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years. 3. Dense (≥50% cover) herbaceous vegetation is present. 4. At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years. 5. Sediment deposits are present (evidence of deposition during floods). 6. Thick surface organic horizon and/or abundant fine organic litter is present.	1. N 2. N 3. N 4. N 5. N 6. Y ≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
C. **Erosion Control and Shoreline Stabilization**	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland directly abuts permanent or relatively permanent water. 1. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion. 2. An at least moderately dense herbaceous layer is present.	1. N/A 2. N/A 1–2 attributes (Y)—High Function None—Low Function
D. Production of Organic Matter and its Export	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland is flooded at least once every 10 years. 1. A more than minimal amount of organic matter is flushed from the wetland by water flow at least once every 10 years. *If no, proceed no further, wetland is low functioning.* 2. Wetland has at least 30% cover of herbaceous vegetation. 3. Woody plants in wetland are mostly deciduous. 4. High degree of plant community structure, vegetation density, and species richness present. 5. Interspersion of vegetation and water is at least moderate.	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function

E. General Habitat Suitability	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Wetland is not fragmented by development. 2. Upland surrounding wetland is undisturbed. 3. Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each). 4. Plant community has two or more strata, with at least two of those strata having ≥10% total cover. 5. Wetland has at least a moderate degree of Cowardin Class interspersion. 6. Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.	1. Y 2. Y 3. N 4. Y 5. Y 6. Y 5–6 attributes (Y)—High Function 2–4 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland has perennial or intermittent surface water connection to a fish-bearing water body. 1. Wetland has sufficient size and depth of open water so as not to freeze completely during winter. 2. Fish are present or are known to be present. 3. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter. 4. Spawning areas are present (aquatic vegetation and/or gravel beds 5. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
G. Native Plant Richness	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
Function only applicable in vegetated wetlands. 1. At least 20 native plant species occur in the wetland 2. Wetland contains two or more Cowardin Classes. 3. Wetland has three or more strata of vegetation with at least 10% cover in each stratum.	1. N 2. Y 3. N 2–3 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Site has documented scientific or educational use. 2. Wetland is in public ownership. 3. Accessible trails are available. 4. Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).	1. N 2. Y 3. N 4. Y ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
I. Uniqueness and Special Status	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland contains documented occurrence of a state or federally listed threatened or endangered species. *If yes, wetland is high functioning.* 2. Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service 3. Wetland has biological, geological, or other features that are determined to be rare. 4. Wetland has been determined significant because it provides functions scarce for the area.	1. N 2. N 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function

Wetland Functions Data Form-Alaska Regulatory Best Professional Judgment Characterization

(Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Kotzebue to Cape Blossom Road, AK Date: 10/18/2012
Wetland: Saturated Dwarf Shrub Tundra PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland is within a permafrost system, with a near-surface active layer. *If yes, proceed no further, wetland is low functioning.* 2. Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions. 3. Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding. 4. If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris. 5. Wetland has dense (>40% cover) woody vegetation. 6. Wetland receives floodwater from an adjacent water course at least once every 10 years. 7. Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.	1. Y 2. N/A 3. N/A 4. N/A 5. N/A 6. N/A 7. N/A ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland. 2. Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years. 3. Dense (>50% cover) herbaceous vegetation is present. 4. At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years. 5. Sediment deposits are present (evidence of deposition during floods). 6. Thick surface organic horizon and/or abundant fine organic litter is present.	1. N 2. N 3. N 4. N 5. N 6. Y ≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
C. **Erosion Control and Shoreline Stabilization**	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland directly abuts permanent or relatively permanent water. 1. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion. 2. An at least moderately dense herbaceous layer is present.	1. N/A 2. N/A 1–2 attributes (Y)—High Function None—Low Function
D. Production of Organic Matter and its Export	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland is flooded at least once every 10 years. 1. A more than minimal amount of organic matter is flushed from the wetland by water flow at least once every 10 years. *If no, proceed no further, wetland is low functioning.* 2. Wetland has at least 30% cover of herbaceous vegetation. 3. Woody plants in wetland are mostly deciduous. 4. High degree of plant community structure, vegetation density, and species richness present. 5. Interspersion of vegetation and water is at least moderate.	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function

E. General Habitat Suitability	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Wetland is not fragmented by development. 2. Upland surrounding wetland is undisturbed. 3. Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each). 4. Plant community has two or more strata, with at least two of those strata having ≥10% total cover. 5. Wetland has at least a moderate degree of Cowardin Class interspersion. 6. Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.	1. Y 2. Y 3. N 4. Y 5. Y 6. Y 5–6 attributes (Y)—High Function 2–4 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland has perennial or intermittent surface water connection to a fish-bearing water body. 1. Wetland has sufficient size and depth of open water so as not to freeze completely during winter. 2. Fish are present or are known to be present. 3. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter. 4. Spawning areas are present (aquatic vegetation and/or gravel beds 5. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
G. Native Plant Richness	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
Function only applicable in vegetated wetlands. 1. At least 20 native plant species occur in the wetland 2. Wetland contains two or more Cowardin Classes. 3. Wetland has three or more strata of vegetation with at least 10% cover in each stratum.	1. N 2. Y 3. N 2–3 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Site has documented scientific or educational use. 2. Wetland is in public ownership. 3. Accessible trails are available. 4. Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).	1. N 2. Y 3. N 4. Y ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
I. Uniqueness and Special Status	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland contains documented occurrence of a state or federally listed threatened or endangered species. *If yes, wetland is high functioning.* 2. Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service 3. Wetland has biological, geological, or other features that are determined to be rare. 4. Wetland has been determined significant because it provides functions scarce for the area.	1. N 2. N 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function

Wetland Functions Data Form-Alaska Regulatory Best Professional Judgment Characterization

(Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Kotzebue to Cape Blossom Road, AK Date: 10/18/2012
Wetland: Saturated Birch-Ericaceous Scrub Tundra PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland is within a permafrost system, with a near-surface active layer. *If yes, proceed no further, wetland is low functioning.* 2. Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions. 3. Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding. 4. If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris. 5. Wetland has dense (≥40% cover) woody vegetation. 6. Wetland receives floodwater from an adjacent water course at least once every 10 years. 7. Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.	1. Y 2. N/A 3. N/A 4. N/A 5. N/A 6. N/A 7. N/A ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland. 2. Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years. 3. Dense (≥50% cover) herbaceous vegetation is present. 4. At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years. 5. Sediment deposits are present (evidence of deposition during floods). 6. Thick surface organic horizon and/or abundant fine organic litter is present.	1. N 2. N 3. N 4. N 5. N 6. Y ≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
C. **Erosion Control and Shoreline Stabilization**	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland directly abuts permanent or relatively permanent water. 1. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion. 2. An at least moderately dense herbaceous layer is present.	1. N/A 2. N/A 1–2 attributes (Y)—High Function None—Low Function
D. Production of Organic Matter and its Export	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland is flooded at least once every 10 years. 1. A more than minimal amount of organic matter is flushed from the wetland by water flow at least once every 10 years. *If no, proceed no further, wetland is low functioning.* 2. Wetland has at least 30% cover of herbaceous vegetation. 3. Woody plants in wetland are mostly deciduous. 4. High degree of plant community structure, vegetation density, and species richness present. 5. Interspersion of vegetation and water is at least moderate.	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function

E. General Habitat Suitability	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Wetland is not fragmented by development. 2. Upland surrounding wetland is undisturbed. 3. Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each). 4. Plant community has two or more strata, with at least two of those strata having ≥10% total cover. 5. Wetland has at least a moderate degree of Cowardin Class interspersion. 6. Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.	1. Y 2. Y 3. N 4. Y 5. Y 6. N 5–6 attributes (Y)—High Function 2–4 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland has perennial or intermittent surface water connection to a fish-bearing water body. 1. Wetland has sufficient size and depth of open water so as not to freeze completely during winter. 2. Fish are present or are known to be present. 3. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter. 4. Spawning areas are present (aquatic vegetation and/or gravel beds 5. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
G. Native Plant Richness	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
Function only applicable in vegetated wetlands. 1. At least 20 native plant species occur in the wetland 2. Wetland contains two or more Cowardin Classes. 3. Wetland has three or more strata of vegetation with at least 10% cover in each stratum.	1. N 2. Y 3. N 2–3 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Site has documented scientific or educational use. 2. Wetland is in public ownership. 3. Accessible trails are available. 4. Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).	1. N 2. Y 3. N 4. Y ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
I. Uniqueness and Special Status	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland contains documented occurrence of a state or federally listed threatened or endangered species. *If yes, wetland is high functioning.* 2. Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service 3. Wetland has biological, geological, or other features that are determined to be rare. 4. Wetland has been determined significant because it provides functions scarce for the area.	1. N 2. N 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function

Wetland Functions Data Form-Alaska Regulatory Best Professional Judgment Characterization

(Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Kotzebue to Cape Blossom Road, AK Date: 10/18/2012
Wetland: Saturated Low and Tall Deciduous Shrub PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland is within a permafrost system, with a near-surface active layer. *If yes, proceed no further, wetland is low functioning.* 2. Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions. 3. Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding. 4. If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris. 5. Wetland has dense (>40% cover) woody vegetation. 6. Wetland receives floodwater from an adjacent water course at least once every 10 years. 7. Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.	1. Y 2. N/A 3. N/A 4. N/A 5. N/A 6. N/A 7. N/A ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland. 2. Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years. 3. Dense (>50% cover) herbaceous vegetation is present. 4. At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years. 5. Sediment deposits are present (evidence of deposition during floods). 6. Thick surface organic horizon and/or abundant fine organic litter is present.	1. Y 2. N 3. Y 4. N 5. N 6. Y ≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
C. **Erosion Control and Shoreline Stabilization**	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
Function only applicable if wetland directly abuts permanent or relatively permanent water. 1. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion. 2. An at least moderately dense herbaceous layer is present.	1. Y 2. Y 1–2 attributes (Y)—High Function None—Low Function
D. Production of Organic Matter and its Export	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland is flooded at least once every 10 years. 1. A more than minimal amount of organic matter is flushed from the wetland by water flow at least once every 10 years. *If no, proceed no further, wetland is low functioning.* 2. Wetland has at least 30% cover of herbaceous vegetation. 3. Woody plants in wetland are mostly deciduous. 4. High degree of plant community structure, vegetation density, and species richness present. 5. Interspersion of vegetation and water is at least moderate.	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function

E. General Habitat Suitability	Wetland likely to perform function? (**Y** or N) Rating: **Moderate Function**
1. Wetland is not fragmented by development. 2. Upland surrounding wetland is undisturbed. 3. Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each). 4. Plant community has two or more strata, with at least two of those strata having ≥10% total cover. 5. Wetland has at least a moderate degree of Cowardin Class interspersion. 6. Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.	1. N 2. N 3. Y 4. Y 5. N 6. Y 5–6 attributes (Y)—High Function 2–4 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (Y or **N**) Rating: **N/A**
Function only applicable if wetland has perennial or intermittent surface water connection to a fish-bearing water body. 1. Wetland has sufficient size and depth of open water so as not to freeze completely during winter. 2. Fish are present or are known to be present. 3. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter. 4. Spawning areas are present (aquatic vegetation and/or gravel beds 5. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 4–5 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
G. Native Plant Richness	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
Function only applicable in vegetated wetlands. 1. At least 20 native plant species occur in the wetland 2. Wetland contains two or more Cowardin Classes. 3. Wetland has three or more strata of vegetation with at least 10% cover in each stratum.	1. N 2. N 3. N 2–3 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (**Y** or N) Rating: **High Function**
1. Site has documented scientific or educational use. 2. Wetland is in public ownership. 3. Accessible trails are available. 4. Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).	1. N 2. Y 3. Y 4. Y ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
I. Uniqueness and Special Status	Wetland likely to perform function? (**Y** or N) Rating: **Low Function**
1. Wetland contains documented occurrence of a state or federally listed threatened or endangered species. *If yes, wetland is high functioning.* 2. Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service 3. Wetland has biological, geological, or other features that are determined to be rare. 4. Wetland has been determined significant because it provides functions scarce for the area.	1. N 2. N 3. N 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function

Appendix D. Plates 1–13: photos documenting fisheries investigations for the Cape Blossom to Kotzebue Road, Alaska, 2012.

SITE PHOTOS

Plate 1. Site MS1, looking upstream

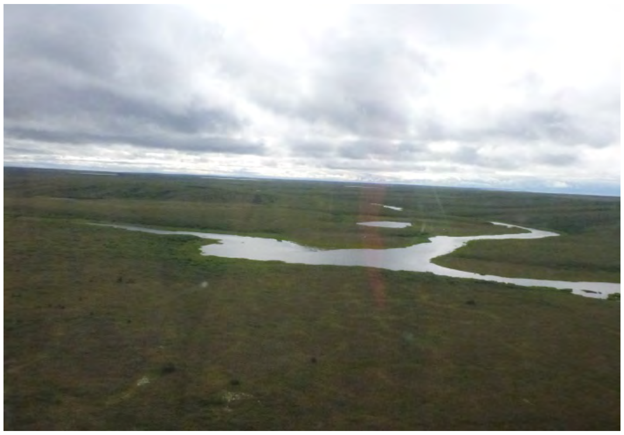


Plate 2. Aerial photo looking upstream of the north and south of Sadie Creek

Plate 3. Site NF2, looking upstream on north fork of Sadie Creek

Plate 4. Example of a fyke net set along stream margins, Site NF1

Plate 5. Aerial view of fyke nets set cod-end to cod-end

Plate 6. Fyke net blocking stream, Site NF3

Plate 7. Looking upstream on typical riparian vegetation of grasses, Site SF2

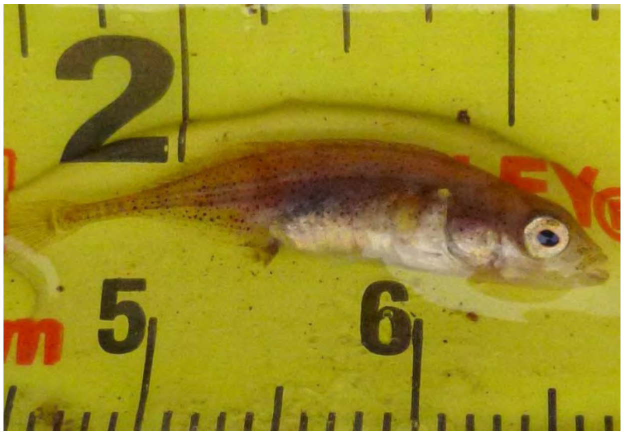


Plate 8. Nine-spine stickleback caught at Site TR1

Plate 9. Three-spine stickleback caught at Site NF3

Plate 10. Juvenile broad whitefish caught at Site SF2

Plate 11. Adult humpback whitefish caught at Site NF3

Plate 12. Adult least cisco caught at Site NF3

Plate 13. Northern pike caught at Site TR2

Appendix E. Stream wetted widths, depths, velocity, and discharge data measured at 3 sites in Sadie Creek and its tributaries near Kotzebue, Alaska, 11–13 August 2012. Discharge for each width increment was calculated by multiplying that increment's depth and velocity. Total discharge for the entire wetted width was calculated by adding incremental discharge by site.

Site	Date	Wetted Width (m)	Width Increment (m)	Increment Depth (m)	Increment Velocity (m/s)	Increment Discharge (m^3/s)	Total Discharge by Site (m^3/s)
NF3	11 Aug 12	2.2	0.22	0.73	0.02	0.003	
NF3	11 Aug 12		0.44	0.88	0.02	0.004	
NF3	11 Aug 12		0.66	0.9	0.06	0.012	
NF3	11 Aug 12		0.88	0.79	0.04	0.007	
NF3	11 Aug 12		1.1	0.9	0.05	0.010	
NF3	11 Aug 12		1.32	0.9	0.04	0.008	
NF3	11 Aug 12		1.54	0.9	0.03	0.006	
NF3	11 Aug 12		1.76	0.88	0.05	0.010	
NF3	11 Aug 12		1.98	0.86	0.03	0.006	
NF3	11 Aug 12		2.2	0.44	0.04	0.004	0.069
TR2	11 Aug 12	8	0.80	0.64	0.02	0.010	
TR2	11 Aug 12		1.60	0.58	0.01	0.005	
TR2	11 Aug 12		2.40	0.68	0.04	0.022	
TR2	11 Aug 12		3.20	0.66	0.03	0.016	
TR2	11 Aug 12		4.00	0.72	0.03	0.017	
TR2	11 Aug 12		4.80	0.74	0.02	0.012	
TR2	11 Aug 12		5.60	0.7	0.03	0.017	
TR2	11 Aug 12		6.40	0.66	0.02	0.011	
TR2	11 Aug 12		7.20	0.52	0.02	0.008	
TR2	11 Aug 12		8.00	0.56	0.03	0.013	0.131
SF2	13 Aug 12	5.5	0.55	0.52	0.08	0.023	
SF2	13 Aug 12		1.10	0.58	0.13	0.041	
SF2	13 Aug 12		1.65	0.56	0.09	0.028	
SF2	13 Aug 12		2.20	0.62	0.08	0.027	
SF2	13 Aug 12		2.75	0.66	0.01	0.004	
SF2	13 Aug 12		3.30	0.64	0.11	0.039	
SF2	13 Aug 12		3.85	0.7	0.14	0.054	
SF2	13 Aug 12		4.40	0.62	0.05	0.017	
SF2	13 Aug 12		4.95	0.58	0.1	0.032	
SF2	13 Aug 12		5.50	0.58	0.08	0.026	0.290

Appendix F. ADFG Fish Resource Permit #SF2012-259.

THE STATE
of ALASKA
GOVERNOR SEAN PARNELL

**Department of
Fish and Game**

DIVISION OF SPORT FISH
Headquarters Office

1255 West 8th Street
P.O. Box 115526
Juneau, Alaska 99811-5526
Main: 907.465.4180
Fax: 907.465.2772

July 22, 2012

John Seigle
ABR Inc., Environmental Research
Box 240268
Anchorage, AK99524

Dear Mr. Seigle:

Please find enclosed your ADF&G Fish Resource Permit (#SF2012-259). You need to read this permit carefully not only to understand what you are authorized and required to do, but also to check for mistakes that must be corrected immediately by contacting us. If your plans are modified later on (e.g. personnel changes, larger than expected collections, different sampling locations, etc), contact us as soon as you know so that an amendment to your permit can be prepared and issued in time to avert disruptions to planned field work. Failure to abide by permit requirements or to amend your permit when conditions change are permit violations that can result in a citation and/or loss of your permit.

Please be sure that you and all authorized personnel carry a copy of the permit while conducting collecting activities.

A report detailing all collections for this permit is due on or before October 30, 2012. Please use the ADF&G data submissions form for this task. If you do not have the opportunity to utilize your permit, please submit a letter or email stating that the permit was not used. A telephone message is not sufficient.

Wishing you success with your project,

Bob Piorkowski

Bob Piorkowski
(907)465-6109
Robert.Piorkowski@alaska.gov

Enclosure

STATE OF ALASKA
DEPARTMENT OF FISH AND GAME
P.O. BOX 115525
JUNEAU, ALASKA 99811-5525

Permit #: **SF2012-259**

Expires: **9/30/2012**

Collections Report Due: **10/30/2012**

FISH RESOURCE PERMIT
(For Scientific/Educational Purposes)

This permit authorizes **John Seigle** *(whose signature is required on page 2 for permit validation)*
person

of **ABR Inc.-Environmental Research** at **Box 240268, Anchorage, AK 99524**
agency or organization address

to conduct the following activities **from** July 16, 2012 **to** September 30, 2012 in accordance with AS 16.05.930:

Purpose: To determine resident and/or anadromous fish presence and evaluate potential habitat for spawning, rearing and overwintering in the study location.

Location: Sadie Creek near Kotzebue.

Species Collected: Local species

Method of Capture: Fyke net, beach seine, minnow trap

Final Disposition:
≤50 of each species may be captured and released alive at each capture site.
Species specific sampling must end at a sampling site once that species has been detected.
If lake trout are captured, kill and collect age/sex/length measurements and their otoliths for the AMB **(Stipulation #1)**
≤2 individuals of each unknown species may be killed and saved for later identification
All unintended mortalities must be recorded and returned to capture site waters.

-Continued on Back-

COLLECTIONS REPORT DUE October 30, 2012. The report, using a data submission form furnished by ADF&G), shall include ***ALL*** species, numbers, dates, and locations of collection (datum/GPS coordinates in the decimal degrees format (dd.ddddd)) and disposition, and if applicable, sex, age, and breeding condition, and lengths and weights of fish handled. *It must also include the date/time the local biologist was contacted for final authorization to carry out collecting activities.* A completion report (abstract, background, methods, data, analysis), if not submitted with the collection report described above, must be submitted to the FRP program coordinator by: ***March/2013***. Data from such reports are considered public information. The report shall also include other information as may be required under the permit stipulations section.

GENERAL CONDITIONS, EXCEPTIONS AND RESTRICTIONS

1. This permit must be carried by person(s) specified during approved activities who shall show it on request to persons authorized to enforce Alaska's fish and game laws. This permit is nontransferable and will be revoked or renewal denied by the Commissioner of Fish and Game if the permittee violates any of its conditions, exceptions or restrictions. No redelegation of authority may be allowed under this permit unless specifically noted.
2. No specimens taken under authority hereof may be sold or bartered. All specimens must be deposited in a public museum or a public scientific or educational institution unless otherwise stated herein. Subpermittees shall not retain possession of live animals or other specimens.
3. The permittee shall keep records of all activities conducted under authority of this permit, available for inspection at all reasonable hours upon request of any authorized state enforcement officer.
4. Permits will not be renewed until the department has received detailed reports, as specified above.
5. UNLESS SPECIFICALLY STATED HEREIN, THIS PERMIT DOES NOT AUTHORIZE the exportation of specimens or the taking of specimens in areas otherwise closed to hunting and fishing; without appropriate licenses required by state regulations; during closed seasons; or in any manner, by any means, at any time not permitted by those regulations.

Fish Resource Permit Coordinator
Division of Sport Fish

Director
Division of Sport Fish

7/20/12
Date

Authorized Personnel: The following persons may perform collecting activities under terms of this permit:

**Matt Appling, Joel Gottschalk, Laura Gutierrez, Jena Lemke, Elizabeth Miner,
John Rose, John Seigle, Adam Webber**

Employees and volunteers under the direct supervision of, and in the presence of, one of the authorized personnel listed above may participate in collecting activities under terms of this permit.

Permit Stipulations:

1) The local Area Management Biologist (AMB), **Brendan Scanlon** (443-5796; brendan.scanlon@alaska.gov) Northwest/North slope, must be notified **prior** to you engaging in any collecting activities. *The time/date of this contact must be included in your collections report (using the "data submission form" furnished by ADF&G).* This biologist has the right to specify methods for collecting, as well as limiting the collections of any species by number/time/location.

2) Felt or absorbent soles on waders and wading boots are prohibited.

3) An instance of >10% unintended collecting mortality requires sampling at a site to cease and the AMB contacted.

4) Each piece of unattended sampling gear must be; 1) labeled with the permittee's name, telephone number, and permit number, 2) securely tied to substrate, 3) soak no more than twenty-four hours at a time 4) located with GPS coordinates, and 5) accounted for/ removed at the conclusion of sampling.

5) Salmon eggs used as bait in traps must either be; sterilized commercial eggs or, if raw, be disinfected prior to use. A 10-minute soak in 1/100 Betadyne solution or some other iodophor disinfectant is adequate.

6) Gloves, boots, and collecting gear should be disinfected initially to reduce the potential of pathogen transmission. A wash/rinse in 1/100 Betadyne solution is adequate.

7) If anadromous fish species new to permitted streams and rivers are found, the permit holder will work closely with ADF&G to see that information is included in the database for the *Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes*. Anadromous fish include *Oncorhynchus spp.*, Arctic char, Dolly Varden, sheefish, smelts, lamprey, whitefish, and sturgeon. Please direct questions to J. Johnson, 267-2337 or j.johnson@alaska.gov

8) Atlantic salmon and other non-native invasive aquatic species encountered should be killed. Contact the nearest AMB (**Stipulation #1**) immediately with species identification or description, capture or sighting location, number captured, size, and sex. Preserve/turn in the whole specimen to the nearest ADF&G office.

9) *A copy of this permit, including any amendments, must be made available at all field collection sites and project sites for inspection upon request by a representative of the department or a law enforcement officer.*

10) Issuance of this permit does not absolve the permittee from compliance in full with any and all other applicable federal, state, or local laws, regulations, or ordinances.

11) A report of collecting activities, referenced to this fish resource permit number, must be submitted to the Alaska Department of Fish and Game, Division of Sport Fish HQ, P.O. Box 115525, Juneau, AK 99811-5525, Attention: Bob Piorkowski (465-6109; Robert.Piorkowski@alaska.gov), and to the AMB **(Stipulation #1)** within 30 days after the expiration of this permit. This report must summarize the number of fish captured by date, by location (provide GPS coordinates and datum), and by species, and the fate of those fish. Fish length, weight, sex, and age data should be included if collected. A completion report (abstract/background/methods /data/analysis), if not submitted with the collection report described above, must be submitted to the department within six months of the expiration of the permit. Data from such reports are considered public information. A report is required whether or not collecting activities were undertaken.

PERMIT VALIDATION requires permittee's signature agreeing to abide by permit conditions before beginning collecting activities:

____
Signature of Permittee

cc: Brendan Scanlon, Division of Sport Fish, Fairbanks
Jim Menard, Division of Commercial Fisheries, Nome
Will Morris, Division of Habitat, Fairbanks
Fish and Wildlife Protection, Fairbanks

STATE OF ALASKA
DEPARTMENT OF FISH AND GAME-SPORT FISH

P.O. BOX 115525
JUNEAU, ALASKA 99811-5525

FISH RESOURCE PERMIT AMENDMENT #1

Permit No. SF2012-259

Permit Issued To: **John Seigle** *(signature required below for permit validation)*

This amendment of Fish Resource Permit SF2012-259:

1) *under* **Final Disposition;** *modifies it to read:*

Any number fish may be captured/released alive at each sampling site.
If lake trout are captured, kill and collect age/sex/length measurements and their otoliths for the AMB (Stipulation #1)
≤2 individuals of each unknown species may be killed and saved for later identification
Unintended mortalities must be recorded and returned to the capture site.

2) *under* **Authorized Personnel;** *adds the following name:*

Nick Haxton

All other conditions specified in Fish Resource Permit SF2012-259 remain in effect.

This amendment must be attached to the original permit.

Bob Piorkowski
Division of Sport Fish

7/31/12
Date

PERMIT AMENDMENT VALIDATION requires permittee's signature agreeing to abide by conditions of this permit amendment:

Signature of Permittee

cc: Brendan Scanlon, Division of Sport Fish, Fairbanks
Jim Menard, Division of Commercial Fisheries, Nome
Will Morris, Division of Habitat, Fairbanks
Fish and Wildlife Protection, Fairbanks

Appendix G. Typical fish species found in fresh and brackish waters in northern Alaska.

Species	Scientific name	Life Stage
Pink salmon	*Oncorhynchus gorbuscha*	Adult, juvenile
Chum salmon	*Oncorhynchus keta*	Adult, juvenile
Coho salmon	*Oncorhynchus ksutch*	Adult, juvenile
Sockeye salmon	*Oncorhynchus nerka*	Adult, juvenile
Chinook salmon	*Oncorhynchus tshawytscha*	Adult, juvenile
Dolly Varden	*Salvelinus malma*	Adult, juvenile
Arctic grayling	*Thymallus arcticus*	Adult, juvenile
Round whitefish	*Prosopium cylindraceum*	Adult, juvenile
Broad whitefish	*Coregonus nasus*	Adult, juvenile
Humpback whitefish	*Coregonus clupeafomis*	Adult, juvenile
Bering cisco	*Coregonus laurettae*	Adult, juvenile
Least cisco	*Coregonus sardinella*	Adult, juvenile
Sheefish	*Stenodus leucichthys*	Adult, juvenile
Northern pike	*Esox lucius*	Adult, juvenile
Burbot	*Lota lota*	Adult, juvenile
Alaska blackfish	*Dallia pectoralis*	Adult, juvenile
Longnose sucker	*Catostomus catostomus*	Adult, juvenile
Slimy sculpin	*Cottus cognatus*	Adult, juvenile
Ninespine stickleback	*Pungitius pungitius*	Adult, juvenile
Threespine stickleback	*Gasterosteus aculeatus*	Adult, juvenile

Appendix H. Fish lengths by site and gear type in Sadie Creek and its tributaries near Kotzebue, Alaska, 26–28 July and 11–13 August 2012.

Date	Site	Gear	Species	Length (mm)
26 Jul 12	SF1	Fyke	Humpback Whitefish	296
26 Jul 12	NF1	Fyke	Humpback Whitefish	325
27 Jul 12	NF1	Minnow	Ninespine Stickleback	36
27 Jul 12	NF1	Minnow	Ninespine Stickleback	27
27 Jul 12	NF1	Minnow	Ninespine Stickleback	31
27 Jul 12	NF1	Minnow	Ninespine Stickleback	36
27 Jul 12	NF1	Minnow	Ninespine Stickleback	33
27 Jul 12	NF1	Minnow	Ninespine Stickleback	36
27 Jul 12	NF1	Minnow	Ninespine Stickleback	25
27 Jul 12	NF1	Minnow	Ninespine Stickleback	31
27 Jul 12	NF1	Minnow	Ninespine Stickleback	35
27 Jul 12	NF1	Minnow	Ninespine Stickleback	37
27 Jul 12	SF1	Fyke	Threespine Stickleback	70
27 Jul 12	SF1	Fyke	Northern Pike	345
27 Jul 12	TR1	Seine	Ninespine Stickleback	21
27 Jul 12	TR1	Seine	Ninespine Stickleback	35
27 Jul 12	TR1	Seine	Ninespine Stickleback	34
27 Jul 12	TR1	Seine	Ninespine Stickleback	32
27 Jul 12	TR1	Seine	Ninespine Stickleback	28
27 Jul 12	TR1	Seine	Ninespine Stickleback	26
27 Jul 12	TR1	Seine	Ninespine Stickleback	34
27 Jul 12	TR1	Seine	Ninespine Stickleback	33
27 Jul 12	TR1	Seine	Ninespine Stickleback	35
27 Jul 12	TR1	Seine	Ninespine Stickleback	34
27 Jul 12	TR1	Seine	Ninespine Stickleback	35
27 Jul 12	TR1	Seine	Ninespine Stickleback	32
27 Jul 12	TR1	Seine	Ninespine Stickleback	30
27 Jul 12	TR1	Seine	Ninespine Stickleback	29
27 Jul 12	TR1	Seine	Ninespine Stickleback	30
27 Jul 12	TR1	Seine	Ninespine Stickleback	28
27 Jul 12	TR1	Seine	Ninespine Stickleback	25
27 Jul 12	TR1	Seine	Ninespine Stickleback	30
27 Jul 12	TR1	Seine	Ninespine Stickleback	24
27 Jul 12	TR1	Seine	Ninespine Stickleback	36
27 Jul 12	TR1	Seine	Ninespine Stickleback	33
27 Jul 12	TR1	Seine	Ninespine Stickleback	31
27 Jul 12	TR1	Seine	Ninespine Stickleback	39
27 Jul 12	TR1	Seine	Ninespine Stickleback	33
27 Jul 12	TR1	Seine	Ninespine Stickleback	31

Appendix H. Continued.

Date	Site	Gear	Species	Length (mm)
27 Jul 12	TR1	Seine	Ninespine Stickleback	32
27 Jul 12	TR1	Seine	Ninespine Stickleback	34
27 Jul 12	TR1	Seine	Ninespine Stickleback	32
27 Jul 12	SF1	Minnow	Ninespine Stickleback	34
27 Jul 12	SF1	Minnow	Ninespine Stickleback	34
27 Jul 12	SF1	Minnow	Ninespine Stickleback	31
27 Jul 12	SF1	Minnow	Ninespine Stickleback	31
27 Jul 12	SF1	Minnow	Ninespine Stickleback	26
27 Jul 12	SF1	Minnow	Ninespine Stickleback	26
27 Jul 12	SF1	Minnow	Ninespine Stickleback	26
27 Jul 12	SF1	Minnow	Ninespine Stickleback	40
27 Jul 12	SF1	Minnow	Ninespine Stickleback	36
27 Jul 12	SF1	Minnow	Ninespine Stickleback	33
27 Jul 12	SF1	Minnow	Ninespine Stickleback	26
27 Jul 12	SF1	Minnow	Ninespine Stickleback	23
28 Jul 12	SF1	Fyke	Threespine Stickleback	98
28 Jul 12	NF1	Fyke	Threespine Stickleback	85
28 Jul 12	NF1	Fyke	Humpback Whitefish	370
28 Jul 12	SF1	Fyke	Threespine Stickleback	85
28 Jul 12	NF2	Minnow	Ninespine Stickleback	26
28 Jul 12	MS1	Seine	Ninespine Stickleback	34
28 Jul 12	MS1	Seine	Ninespine Stickleback	32
28 Jul 12	MS1	Seine	Ninespine Stickleback	34
28 Jul 12	MS1	Seine	Ninespine Stickleback	39
28 Jul 12	MS1	Seine	Ninespine Stickleback	40
28 Jul 12	MS1	Seine	Ninespine Stickleback	34
28 Jul 12	MS1	Seine	Ninespine Stickleback	37
28 Jul 12	MS1	Seine	Ninespine Stickleback	35
28 Jul 12	MS1	Seine	Ninespine Stickleback	35
28 Jul 12	MS1	Seine	Ninespine Stickleback	26
28 Jul 12	MS1	Seine	Ninespine Stickleback	32
28 Jul 12	MS1	Seine	Ninespine Stickleback	30
28 Jul 12	MS1	Seine	Ninespine Stickleback	40
28 Jul 12	MS1	Seine	Ninespine Stickleback	31
28 Jul 12	MS1	Seine	Ninespine Stickleback	36
28 Jul 12	MS1	Seine	Ninespine Stickleback	34
28 Jul 12	MS1	Seine	Ninespine Stickleback	35
28 Jul 12	MS1	Seine	Ninespine Stickleback	35
28 Jul 12	MS1	Seine	Ninespine Stickleback	34
28 Jul 12	MS1	Seine	Ninespine Stickleback	34
28 Jul 12	MS1	Seine	Ninespine Stickleback	28

Appendix H. Continued.

Date	Site	Gear	Species	Length (mm)
28 Jul 12	MS1	Seine	Ninespine Stickleback	36
28 Jul 12	MS1	Seine	Ninespine Stickleback	37
28 Jul 12	MS1	Seine	Ninespine Stickleback	35
28 Jul 12	MS1	Seine	Ninespine Stickleback	32
28 Jul 12	MS1	Seine	Ninespine Stickleback	26
28 Jul 12	MS1	Seine	Ninespine Stickleback	39
28 Jul 12	NF1	Minnow	Ninespine Stickleback	27
28 Jul 12	NF1	Minnow	Ninespine Stickleback	30
28 Jul 12	NF1	Minnow	Ninespine Stickleback	34
28 Jul 12	NF1	Minnow	Ninespine Stickleback	29
28 Jul 12	NF1	Minnow	Ninespine Stickleback	33
28 Jul 12	NF1	Minnow	Ninespine Stickleback	32
28 Jul 12	NF1	Minnow	Ninespine Stickleback	35
28 Jul 12	NF1	Minnow	Ninespine Stickleback	31
28 Jul 12	NF1	Minnow	Ninespine Stickleback	31
28 Jul 12	NF1	Minnow	Ninespine Stickleback	23
28 Jul 12	NF1	Minnow	Ninespine Stickleback	25
28 Jul 12	NF1	Minnow	Ninespine Stickleback	32
28 Jul 12	NF1	Minnow	Ninespine Stickleback	35
28 Jul 12	NF1	Minnow	Ninespine Stickleback	32
28 Jul 12	NF1	Minnow	Ninespine Stickleback	26
28 Jul 12	NF1	Minnow	Ninespine Stickleback	27
28 Jul 12	NF1	Minnow	Ninespine Stickleback	56
28 Jul 12	NF1	Minnow	Ninespine Stickleback	31
28 Jul 12	NF1	Minnow	Ninespine Stickleback	31
28 Jul 12	NF1	Minnow	Ninespine Stickleback	36
28 Jul 12	NF1	Minnow	Ninespine Stickleback	30
28 Jul 12	NF1	Minnow	Ninespine Stickleback	35
28 Jul 12	NF1	Minnow	Ninespine Stickleback	32
28 Jul 12	NF1	Minnow	Ninespine Stickleback	26
28 Jul 12	NF1	Minnow	Ninespine Stickleback	29
28 Jul 12	NF1	Minnow	Ninespine Stickleback	30
28 Jul 12	NF1	Minnow	Ninespine Stickleback	31
28 Jul 12	NF1	Minnow	Ninespine Stickleback	29
28 Jul 12	NF1	Minnow	Ninespine Stickleback	28
28 Jul 12	NF1	Minnow	Ninespine Stickleback	26
28 Jul 12	NF1	Minnow	Ninespine Stickleback	57
28 Jul 12	NF1	Minnow	Ninespine Stickleback	25
28 Jul 12	NF1	Minnow	Ninespine Stickleback	35
28 Jul 12	NF1	Minnow	Ninespine Stickleback	46
28 Jul 12	NF1	Minnow	Ninespine Stickleback	33

Appendix H. Continued.

Date	Site	Gear	Species	Length (mm)
28 Jul 12	NF1	Minnow	Ninespine Stickleback	31
28 Jul 12	NF1	Minnow	Ninespine Stickleback	28
28 Jul 12	NF1	Minnow	Ninespine Stickleback	25
28 Jul 12	NF1	Minnow	Ninespine Stickleback	32
28 Jul 12	NF1	Minnow	Ninespine Stickleback	32
28 Jul 12	NF1	Minnow	Ninespine Stickleback	34
28 Jul 12	NF1	Minnow	Ninespine Stickleback	51
28 Jul 12	NF1	Minnow	Ninespine Stickleback	30
28 Jul 12	NF1	Minnow	Ninespine Stickleback	27
28 Jul 12	NF1	Minnow	Ninespine Stickleback	34
28 Jul 12	NF1	Minnow	Ninespine Stickleback	35
28 Jul 12	NF1	Minnow	Ninespine Stickleback	32
28 Jul 12	NF1	Minnow	Ninespine Stickleback	25
28 Jul 12	NF1	Minnow	Ninespine Stickleback	31
28 Jul 12	NF1	Minnow	Ninespine Stickleback	26
28 Jul 12	NF1	Minnow	Ninespine Stickleback	21
28 Jul 12	NF1	Minnow	Ninespine Stickleback	32
28 Jul 12	NF1	Minnow	Ninespine Stickleback	31
28 Jul 12	NF1	Minnow	Ninespine Stickleback	36
28 Jul 12	NF1	Minnow	Ninespine Stickleback	26
28 Jul 12	NF1	Minnow	Ninespine Stickleback	27
28 Jul 12	NF1	Minnow	Ninespine Stickleback	29
28 Jul 12	NF1	Minnow	Ninespine Stickleback	26
28 Jul 12	NF1	Minnow	Ninespine Stickleback	24
28 Jul 12	NF1	Minnow	Ninespine Stickleback	32
28 Jul 12	NF1	Minnow	Ninespine Stickleback	25
28 Jul 12	NF1	Minnow	Ninespine Stickleback	26
28 Jul 12	SF1	Minnow	Ninespine Stickleback	36
28 Jul 12	SF1	Minnow	Ninespine Stickleback	39
28 Jul 12	SF1	Minnow	Ninespine Stickleback	25
28 Jul 12	SF1	Minnow	Ninespine Stickleback	34
28 Jul 12	SF1	Minnow	Ninespine Stickleback	33
28 Jul 12	SF1	Minnow	Ninespine Stickleback	38
28 Jul 12	SF1	Minnow	Ninespine Stickleback	25
28 Jul 12	SF1	Minnow	Ninespine Stickleback	40
28 Jul 12	SF1	Minnow	Ninespine Stickleback	34
28 Jul 12	SF1	Minnow	Ninespine Stickleback	33
28 Jul 12	SF1	Minnow	Ninespine Stickleback	31
28 Jul 12	SF1	Minnow	Ninespine Stickleback	33
28 Jul 12	SF1	Minnow	Ninespine Stickleback	38
28 Jul 12	SF1	Minnow	Ninespine Stickleback	30

Appendix H. Continued.

Date	Site	Gear	Species	Length (mm)
28 Jul 12	SF1	Minnow	Ninespine Stickleback	47
28 Jul 12	SF1	Minnow	Ninespine Stickleback	36
28 Jul 12	SF1	Minnow	Ninespine Stickleback	37
28 Jul 12	SF1	Minnow	Ninespine Stickleback	35
28 Jul 12	SF1	Minnow	Ninespine Stickleback	39
28 Jul 12	SF1	Minnow	Ninespine Stickleback	43
28 Jul 12	SF1	Minnow	Ninespine Stickleback	41
28 Jul 12	SF1	Minnow	Ninespine Stickleback	41
28 Jul 12	SF1	Minnow	Ninespine Stickleback	36
28 Jul 12	SF1	Minnow	Ninespine Stickleback	38
28 Jul 12	SF1	Minnow	Ninespine Stickleback	36
28 Jul 12	SF1	Minnow	Ninespine Stickleback	39
28 Jul 12	SF1	Minnow	Ninespine Stickleback	32
28 Jul 12	SF1	Minnow	Ninespine Stickleback	33
28 Jul 12	SF1	Minnow	Ninespine Stickleback	36
28 Jul 12	SF1	Minnow	Ninespine Stickleback	52
11 Aug 12	NF3	Fyke	Least Cisco	209
11 Aug 12	NF3	Fyke	Humpback Whitefish	157
11 Aug 12	NF3	Fyke	Broad Whitefish	134
11 Aug 12	NF3	Fyke	Broad Whitefish	97
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	98
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	109
11 Aug 12	NF3	Fyke	Broad Whitefish	88
11 Aug 12	NF3	Fyke	Broad Whitefish	75
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	80
11 Aug 12	NF3	Fyke	Broad Whitefish	90
11 Aug 12	NF3	Fyke	Broad Whitefish	75
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	75
11 Aug 12	NF3	Fyke	Broad Whitefish	89
11 Aug 12	NF3	Fyke	Broad Whitefish	88
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	83
11 Aug 12	NF3	Fyke	Broad Whitefish	68
11 Aug 12	NF3	Fyke	Threespine Stickleback	80
11 Aug 12	NF3	Fyke	Humpback Whitefish	353
11 Aug 12	NF3	Fyke	Humpback Whitefish	295
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	85
11 Aug 12	NF3	Fyke	Unidentified Juvenile	86

Appendix H. Continued.

Date	Site	Gear	Species	Length (mm)
			Whitefish	
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	94
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	58
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	75
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	81
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	83
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	71
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	71
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	81
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	73
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	75
11 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	78
11 Aug 12	NF3	Fyke	Broad Whitefish	84
11 Aug 12	NF3	Fyke	Broad Whitefish	69
11 Aug 12	NF3	Fyke	Humpback Whitefish	318
11 Aug 12	NF3	Fyke	Humpback Whitefish	330
11 Aug 12	NF3	Fyke	Humpback Whitefish	367
11 Aug 12	TR2	Fyke	Northern Pike	452
11 Aug 12	TR2	Fyke	Northern Pike	411
11 Aug 12	TR2	Fyke	Northern Pike	420
11 Aug 12	TR2	Fyke	Northern Pike	417
11 Aug 12	NF1	Minnow	Ninespine Stickleback	36
11 Aug 12	SF1	Minnow	Ninespine Stickleback	38
11 Aug 12	SF1	Minnow	Ninespine Stickleback	43
11 Aug 12	SF1	Minnow	Ninespine Stickleback	37
11 Aug 12	SF1	Minnow	Ninespine Stickleback	27
11 Aug 12	SF1	Minnow	Ninespine Stickleback	27
11 Aug 12	SF1	Minnow	Ninespine Stickleback	41
11 Aug 12	SF1	Minnow	Ninespine Stickleback	45
11 Aug 12	SF1	Minnow	Ninespine Stickleback	39
11 Aug 12	SF1	Minnow	Ninespine Stickleback	31
11 Aug 12	SF1	Minnow	Ninespine Stickleback	33
11 Aug 12	SF1	Minnow	Ninespine Stickleback	41
11 Aug 12	SF1	Minnow	Ninespine Stickleback	38

Appendix H. Continued.

Date	Site	Gear	Species	Length (mm)
11 Aug 12	SF1	Minnow	Ninespine Stickleback	32
11 Aug 12	SF1	Minnow	Ninespine Stickleback	24
11 Aug 12	SF1	Minnow	Ninespine Stickleback	37
11 Aug 12	SF1	Minnow	Ninespine Stickleback	35
11 Aug 12	SF1	Minnow	Ninespine Stickleback	40
11 Aug 12	SF1	Minnow	Ninespine Stickleback	41
11 Aug 12	SF1	Minnow	Ninespine Stickleback	26
11 Aug 12	SF1	Minnow	Ninespine Stickleback	34
11 Aug 12	SF1	Minnow	Ninespine Stickleback	40
11 Aug 12	SF1	Minnow	Ninespine Stickleback	30
11 Aug 12	SF1	Minnow	Ninespine Stickleback	38
11 Aug 12	SF1	Minnow	Ninespine Stickleback	34
11 Aug 12	SF1	Minnow	Ninespine Stickleback	39
11 Aug 12	SF1	Minnow	Ninespine Stickleback	44
11 Aug 12	SF1	Minnow	Ninespine Stickleback	35
11 Aug 12	SF1	Minnow	Ninespine Stickleback	36
11 Aug 12	SF1	Minnow	Ninespine Stickleback	38
11 Aug 12	SF1	Minnow	Ninespine Stickleback	44
11 Aug 12	SF1	Minnow	Ninespine Stickleback	31
11 Aug 12	SF1	Minnow	Ninespine Stickleback	44
11 Aug 12	SF1	Minnow	Ninespine Stickleback	38
11 Aug 12	SF1	Minnow	Ninespine Stickleback	35
11 Aug 12	SF1	Minnow	Ninespine Stickleback	46
11 Aug 12	SF1	Minnow	Ninespine Stickleback	48
11 Aug 12	SF1	Minnow	Ninespine Stickleback	42
11 Aug 12	SF1	Minnow	Ninespine Stickleback	27
11 Aug 12	SF1	Minnow	Ninespine Stickleback	32
11 Aug 12	SF1	Minnow	Ninespine Stickleback	37
11 Aug 12	SF1	Minnow	Ninespine Stickleback	37
11 Aug 12	SF1	Minnow	Ninespine Stickleback	31
11 Aug 12	SF1	Minnow	Ninespine Stickleback	37
11 Aug 12	SF1	Minnow	Ninespine Stickleback	44
11 Aug 12	SF1	Minnow	Ninespine Stickleback	36
11 Aug 12	SF1	Minnow	Ninespine Stickleback	32
11 Aug 12	SF1	Minnow	Ninespine Stickleback	34
11 Aug 12	SF1	Minnow	Ninespine Stickleback	41
11 Aug 12	SF1	Minnow	Ninespine Stickleback	35
11 Aug 12	SF1	Minnow	Ninespine Stickleback	35
11 Aug 12	SF1	Minnow	Ninespine Stickleback	33
11 Aug 12	SF1	Minnow	Ninespine Stickleback	37
11 Aug 12	SF1	Minnow	Ninespine Stickleback	36

Appendix H. Continued.

Date	Site	Gear	Species	Length (mm)
11 Aug 12	SF1	Minnow	Ninespine Stickleback	32
11 Aug 12	SF1	Minnow	Ninespine Stickleback	33
11 Aug 12	SF1	Minnow	Ninespine Stickleback	34
11 Aug 12	SF1	Minnow	Ninespine Stickleback	35
11 Aug 12	SF1	Minnow	Ninespine Stickleback	41
11 Aug 12	SF1	Minnow	Ninespine Stickleback	33
11 Aug 12	SF1	Minnow	Ninespine Stickleback	41
11 Aug 12	SF1	Minnow	Ninespine Stickleback	43
11 Aug 12	SF1	Minnow	Ninespine Stickleback	29
11 Aug 12	SF1	Minnow	Ninespine Stickleback	39
11 Aug 12	SF1	Minnow	Ninespine Stickleback	38
11 Aug 12	SF1	Minnow	Ninespine Stickleback	33
11 Aug 12	SF1	Minnow	Ninespine Stickleback	39
11 Aug 12	SF1	Minnow	Ninespine Stickleback	31
11 Aug 12	SF1	Minnow	Ninespine Stickleback	38
11 Aug 12	SF1	Minnow	Ninespine Stickleback	34
11 Aug 12	SF1	Minnow	Ninespine Stickleback	40
11 Aug 12	SF1	Minnow	Ninespine Stickleback	30
11 Aug 12	SF1	Minnow	Ninespine Stickleback	34
11 Aug 12	SF1	Minnow	Ninespine Stickleback	36
11 Aug 12	SF1	Minnow	Ninespine Stickleback	36
11 Aug 12	SF1	Minnow	Ninespine Stickleback	37
11 Aug 12	SF1	Minnow	Ninespine Stickleback	39
11 Aug 12	SF1	Minnow	Ninespine Stickleback	36
11 Aug 12	SF1	Minnow	Ninespine Stickleback	36
11 Aug 12	SF1	Minnow	Ninespine Stickleback	34
11 Aug 12	SF1	Minnow	Ninespine Stickleback	31
11 Aug 12	SF1	Minnow	Ninespine Stickleback	31
11 Aug 12	SF1	Minnow	Ninespine Stickleback	40
11 Aug 12	SF1	Minnow	Ninespine Stickleback	38
11 Aug 12	SF1	Minnow	Ninespine Stickleback	42
11 Aug 12	SF1	Minnow	Ninespine Stickleback	36
11 Aug 12	SF1	Minnow	Ninespine Stickleback	34
11 Aug 12	SF1	Minnow	Ninespine Stickleback	38
11 Aug 12	SF1	Minnow	Ninespine Stickleback	34
11 Aug 12	SF1	Minnow	Ninespine Stickleback	29
11 Aug 12	SF1	Minnow	Ninespine Stickleback	34
11 Aug 12	SF1	Minnow	Ninespine Stickleback	37
11 Aug 12	SF1	Minnow	Ninespine Stickleback	36
11 Aug 12	SF1	Minnow	Ninespine Stickleback	35
11 Aug 12	SF1	Minnow	Ninespine Stickleback	40

Appendix H. Continued.

Date	Site	Gear	Species	Length (mm)
11 Aug 12	SF1	Minnow	Ninespine Stickleback	59
11 Aug 12	SF1	Minnow	Ninespine Stickleback	34
11 Aug 12	SF1	Minnow	Ninespine Stickleback	32
11 Aug 12	SF1	Minnow	Ninespine Stickleback	36
11 Aug 12	SF1	Minnow	Ninespine Stickleback	35
11 Aug 12	SF1	Minnow	Ninespine Stickleback	36
11 Aug 12	SF1	Minnow	Ninespine Stickleback	38
11 Aug 12	SF1	Minnow	Ninespine Stickleback	29
11 Aug 12	SF1	Minnow	Ninespine Stickleback	36
11 Aug 12	SF1	Minnow	Ninespine Stickleback	36
11 Aug 12	SF1	Minnow	Ninespine Stickleback	39
11 Aug 12	SF1	Minnow	Ninespine Stickleback	39
11 Aug 12	SF1	Minnow	Ninespine Stickleback	32
11 Aug 12	SF1	Minnow	Ninespine Stickleback	31
11 Aug 12	SF1	Minnow	Ninespine Stickleback	36
11 Aug 12	SF1	Minnow	Ninespine Stickleback	33
11 Aug 12	SF1	Minnow	Ninespine Stickleback	38
12 Aug 12	NF3	Fyke	Northern Pike	461
12 Aug 12	NF3	Fyke	Broad Whitefish	106
12 Aug 12	NF3	Fyke	Least Cisco	299
12 Aug 12	NF3	Fyke	Least Cisco	320
12 Aug 12	NF3	Fyke	Least Cisco	295
12 Aug 12	NF3	Fyke	Humpback Whitefish	240
12 Aug 12	NF3	Fyke	Humpback Whitefish	235
12 Aug 12	NF3	Fyke	Humpback Whitefish	352
12 Aug 12	NF3	Fyke	Humpback Whitefish	289
12 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	80
12 Aug 12	NF3	Fyke	Threespine Stickleback	78
12 Aug 12	TR2	Fyke	Northern Pike	359
12 Aug 12	TR2	Fyke	Northern Pike	398
12 Aug 12	TR2	Fyke	Northern Pike	385
13 Aug 12	NF3	Fyke	Threespine Stickleback	75
13 Aug 12	NF3	Fyke	Ninespine Stickleback	33
13 Aug 12	NF3	Fyke	Ninespine Stickleback	30
13 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	64
13 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	81
13 Aug 12	NF3	Fyke	Ninespine Stickleback	40
13 Aug 12	NF3	Fyke	Ninespine Stickleback	26
13 Aug 12	NF3	Fyke	Ninespine Stickleback	26

Appendix H. Continued.

Date	Site	Gear	Species	Length (mm)
13 Aug 12	NF3	Fyke	Ninespine Stickleback	27
13 Aug 12	NF3	Fyke	Ninespine Stickleback	26
13 Aug 12	NF3	Fyke	Ninespine Stickleback	34
13 Aug 12	NF3	Fyke	Ninespine Stickleback	34
13 Aug 12	NF3	Fyke	Ninespine Stickleback	35
13 Aug 12	NF3	Fyke	Ninespine Stickleback	26
13 Aug 12	NF3	Fyke	Ninespine Stickleback	31
13 Aug 12	NF3	Fyke	Ninespine Stickleback	29
13 Aug 12	NF3	Fyke	Ninespine Stickleback	26
13 Aug 12	NF3	Fyke	Ninespine Stickleback	41
13 Aug 12	NF3	Fyke	Ninespine Stickleback	32
13 Aug 12	NF3	Fyke	Ninespine Stickleback	33
13 Aug 12	NF3	Fyke	Ninespine Stickleback	29
13 Aug 12	NF3	Fyke	Ninespine Stickleback	26
13 Aug 12	NF3	Fyke	Ninespine Stickleback	61
13 Aug 12	NF3	Fyke	Ninespine Stickleback	26
13 Aug 12	NF3	Fyke	Ninespine Stickleback	34
13 Aug 12	NF3	Fyke	Ninespine Stickleback	34
13 Aug 12	NF3	Fyke	Ninespine Stickleback	26
13 Aug 12	NF3	Fyke	Ninespine Stickleback	28
13 Aug 12	NF3	Fyke	Ninespine Stickleback	38
13 Aug 12	NF3	Fyke	Ninespine Stickleback	24
13 Aug 12	NF3	Fyke	Ninespine Stickleback	38
13 Aug 12	NF3	Fyke	Ninespine Stickleback	24
13 Aug 12	NF3	Fyke	Ninespine Stickleback	28
13 Aug 12	NF3	Fyke	Ninespine Stickleback	30
13 Aug 12	NF3	Fyke	Ninespine Stickleback	33
13 Aug 12	NF3	Fyke	Ninespine Stickleback	30
13 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	68
13 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	70
13 Aug 12	NF3	Fyke	Alaska Blackfish	26
13 Aug 12	NF3	Fyke	Northern Pike	114
13 Aug 12	NF3	Fyke	Northern Pike	99
13 Aug 12	SF2	Fyke	Unidentified Juvenile Whitefish	73
13 Aug 12	SF2	Fyke	Northern Pike	132
13 Aug 12	SF2	Fyke	Northern Pike	147
13 Aug 12	SF2	Fyke	Northern Pike	135
13 Aug 12	SF2	Fyke	Northern Pike	148
13 Aug 12	SF2	Fyke	Northern Pike	145

Appendix H. Continued.

Date	Site	Gear	Species	Length (mm)
13 Aug 12	SF2	Fyke	Northern Pike	125
13 Aug 12	SF2	Fyke	Northern Pike	134
13 Aug 12	SF2	Fyke	Northern Pike	127
13 Aug 12	SF2	Fyke	Northern Pike	149
13 Aug 12	SF2	Fyke	Northern Pike	139
13 Aug 12	SF2	Fyke	Northern Pike	137
13 Aug 12	SF2	Fyke	Northern Pike	146
13 Aug 12	SF2	Fyke	Northern Pike	142
13 Aug 12	SF2	Fyke	Northern Pike	131
13 Aug 12	SF2	Fyke	Northern Pike	134
13 Aug 12	SF2	Fyke	Northern Pike	131
13 Aug 12	SF2	Fyke	Ninespine Stickleback	58
13 Aug 12	SF2	Fyke	Ninespine Stickleback	59
13 Aug 12	SF2	Fyke	Ninespine Stickleback	56
13 Aug 12	SF2	Fyke	Ninespine Stickleback	49
13 Aug 12	SF2	Fyke	Ninespine Stickleback	70
13 Aug 12	SF2	Fyke	Ninespine Stickleback	72
13 Aug 12	SF2	Fyke	Ninespine Stickleback	50
13 Aug 12	SF2	Fyke	Ninespine Stickleback	53
13 Aug 12	SF2	Fyke	Ninespine Stickleback	61
13 Aug 12	SF2	Fyke	Ninespine Stickleback	63
13 Aug 12	SF2	Fyke	Ninespine Stickleback	67
13 Aug 12	SF2	Fyke	Ninespine Stickleback	62
13 Aug 12	SF2	Fyke	Ninespine Stickleback	55
13 Aug 12	SF2	Fyke	Ninespine Stickleback	50
13 Aug 12	SF2	Fyke	Ninespine Stickleback	66
13 Aug 12	SF2	Fyke	Ninespine Stickleback	50
13 Aug 12	SF2	Fyke	Ninespine Stickleback	45
13 Aug 12	SF2	Fyke	Ninespine Stickleback	46
13 Aug 12	SF2	Fyke	Ninespine Stickleback	38
13 Aug 12	MS1	Seine	Ninespine Stickleback	16
13 Aug 12	MS1	Seine	Ninespine Stickleback	34
13 Aug 12	MS1	Seine	Ninespine Stickleback	37
13 Aug 12	MS1	Seine	Ninespine Stickleback	36
13 Aug 12	MS1	Seine	Ninespine Stickleback	31
13 Aug 12	MS1	Seine	Ninespine Stickleback	42
13 Aug 12	MS1	Seine	Ninespine Stickleback	38
13 Aug 12	MS1	Seine	Ninespine Stickleback	39
13 Aug 12	MS1	Seine	Ninespine Stickleback	45
13 Aug 12	MS1	Seine	Ninespine Stickleback	38
13 Aug 12	MS1	Seine	Ninespine Stickleback	39

Appendix H. Continued.

Date	Site	Gear	Species	Length (mm)
13 Aug 12	MS1	Seine	Ninespine Stickleback	42
13 Aug 12	MS1	Seine	Ninespine Stickleback	40
13 Aug 12	MS1	Seine	Ninespine Stickleback	38
13 Aug 12	MS1	Seine	Ninespine Stickleback	34
13 Aug 12	MS1	Seine	Ninespine Stickleback	45
13 Aug 12	MS1	Seine	Ninespine Stickleback	38
13 Aug 12	MS1	Seine	Ninespine Stickleback	33
13 Aug 12	MS1	Seine	Ninespine Stickleback	39
13 Aug 12	MS1	Seine	Ninespine Stickleback	43
13 Aug 12	MS1	Seine	Ninespine Stickleback	37
13 Aug 12	MS1	Seine	Ninespine Stickleback	42
13 Aug 12	MS1	Seine	Ninespine Stickleback	31
13 Aug 12	MS1	Seine	Ninespine Stickleback	33
13 Aug 12	MS1	Seine	Ninespine Stickleback	33
13 Aug 12	MS1	Seine	Ninespine Stickleback	43
13 Aug 12	MS1	Seine	Ninespine Stickleback	42
13 Aug 12	MS1	Seine	Ninespine Stickleback	44
13 Aug 12	MS1	Seine	Ninespine Stickleback	38
13 Aug 12	MS1	Seine	Ninespine Stickleback	43
13 Aug 12	NF3	Fyke	Northern Pike	393
13 Aug 12	NF3	Fyke	Ninespine Stickleback	31
13 Aug 12	NF3	Fyke	Northern Pike	124
13 Aug 12	NF3	Fyke	Northern Pike	90
13 Aug 12	NF3	Fyke	Unidentified Juvenile Whitefish	91
13 Aug 12	NF3	Fyke	Northern Pike	112
13 Aug 12	NF3	Fyke	Northern Pike	113
13 Aug 12	NF3	Fyke	Threespine Stickleback	74
13 Aug 12	NF3	Fyke	Ninespine Stickleback	33
13 Aug 12	NF3	Fyke	Ninespine Stickleback	35
13 Aug 12	NF3	Fyke	Ninespine Stickleback	43
13 Aug 12	NF3	Fyke	Ninespine Stickleback	42
13 Aug 12	NF3	Fyke	Ninespine Stickleback	27
13 Aug 12	NF3	Fyke	Ninespine Stickleback	32
13 Aug 12	NF3	Fyke	Ninespine Stickleback	31
13 Aug 12	NF3	Fyke	Ninespine Stickleback	42
13 Aug 12	NF3	Fyke	Ninespine Stickleback	36
13 Aug 12	NF3	Fyke	Ninespine Stickleback	23
13 Aug 12	NF3	Fyke	Ninespine Stickleback	31
13 Aug 12	NF3	Fyke	Ninespine Stickleback	31
13 Aug 12	NF3	Fyke	Ninespine Stickleback	30
13 Aug 12	NF3	Fyke	Ninespine Stickleback	32

Appendix H. Continued.

Date	Site	Gear	Species	Length (mm)
13 Aug 12	NF3	Fyke	Ninespine Stickleback	30
13 Aug 12	NF3	Fyke	Ninespine Stickleback	19
13 Aug 12	NF3	Fyke	Ninespine Stickleback	32
13 Aug 12	NF3	Fyke	Ninespine Stickleback	18
13 Aug 12	NF3	Fyke	Ninespine Stickleback	27
13 Aug 12	NF3	Fyke	Ninespine Stickleback	24
13 Aug 12	NF3	Fyke	Ninespine Stickleback	18
13 Aug 12	NF3	Fyke	Ninespine Stickleback	26
13 Aug 12	NF3	Fyke	Ninespine Stickleback	27
13 Aug 12	NF3	Fyke	Ninespine Stickleback	31
13 Aug 12	NF3	Fyke	Ninespine Stickleback	26
13 Aug 12	NF3	Fyke	Ninespine Stickleback	23
13 Aug 12	NF3	Fyke	Ninespine Stickleback	24
13 Aug 12	NF3	Fyke	Ninespine Stickleback	23
13 Aug 12	NF3	Fyke	Ninespine Stickleback	28
13 Aug 12	SF2	Fyke	Northern Pike	145
13 Aug 12	SF2	Fyke	Northern Pike	365
13 Aug 12	SF2	Fyke	Unidentified Juvenile Whitefish	88
13 Aug 12	SF2	Fyke	Unidentified Juvenile Whitefish	75
13 Aug 12	SF2	Fyke	Unidentified Juvenile Whitefish	90
13 Aug 12	SF2	Fyke	Unidentified Juvenile Whitefish	81
13 Aug 12	SF2	Fyke	Unidentified Juvenile Whitefish	86
13 Aug 12	SF2	Fyke	Ninespine Stickleback	40
13 Aug 12	SF2	Fyke	Northern Pike	446
13 Aug 12	SF2	Fyke	Unidentified Juvenile Whitefish	81
13 Aug 12	TR3	Minnow	Ninespine Stickleback	47
13 Aug 12	TR3	Minnow	Ninespine Stickleback	45
13 Aug 12	TR3	Minnow	Ninespine Stickleback	45
13 Aug 12	TR3	Minnow	Ninespine Stickleback	44
13 Aug 12	TR3	Minnow	Ninespine Stickleback	45
13 Aug 12	TR3	Minnow	Ninespine Stickleback	47
13 Aug 12	TR3	Minnow	Ninespine Stickleback	42
13 Aug 12	TR3	Minnow	Ninespine Stickleback	65
13 Aug 12	TR3	Minnow	Ninespine Stickleback	36
13 Aug 12	TR3	Minnow	Ninespine Stickleback	40
13 Aug 12	TR3	Minnow	Ninespine Stickleback	42
13 Aug 12	TR3	Minnow	Ninespine Stickleback	45

Appendix H. Continued.

Date	Site	Gear	Species	Length (mm)
13 Aug 12	TR3	Minnow	Ninespine Stickleback	46
13 Aug 12	TR3	Minnow	Ninespine Stickleback	39
13 Aug 12	TR3	Minnow	Ninespine Stickleback	37
13 Aug 12	TR3	Minnow	Ninespine Stickleback	35
13 Aug 12	TR3	Minnow	Ninespine Stickleback	39
13 Aug 12	TR3	Minnow	Ninespine Stickleback	47
13 Aug 12	TR3	Minnow	Ninespine Stickleback	33
13 Aug 12	TR3	Minnow	Ninespine Stickleback	42
13 Aug 12	TR3	Minnow	Ninespine Stickleback	34
13 Aug 12	TR3	Minnow	Ninespine Stickleback	52
13 Aug 12	TR3	Minnow	Ninespine Stickleback	41
13 Aug 12	TR3	Minnow	Ninespine Stickleback	40
13 Aug 12	TR3	Minnow	Ninespine Stickleback	44
13 Aug 12	TR3	Minnow	Ninespine Stickleback	38
13 Aug 12	TR3	Minnow	Ninespine Stickleback	37
13 Aug 12	TR3	Minnow	Ninespine Stickleback	39
13 Aug 12	TR3	Minnow	Ninespine Stickleback	40
13 Aug 12	TR3	Minnow	Ninespine Stickleback	43
13 Aug 12	TR3	Minnow	Ninespine Stickleback	44
13 Aug 12	TR3	Minnow	Ninespine Stickleback	42
13 Aug 12	TR3	Minnow	Alaska Blackfish	42
13 Aug 12	TR3	Minnow	Ninespine Stickleback	49
13 Aug 12	TR3	Minnow	Ninespine Stickleback	40
13 Aug 12	TR3	Minnow	Ninespine Stickleback	44
13 Aug 12	TR3	Minnow	Ninespine Stickleback	50
13 Aug 12	TR3	Minnow	Ninespine Stickleback	42
13 Aug 12	TR3	Minnow	Ninespine Stickleback	44
13 Aug 12	TR3	Minnow	Ninespine Stickleback	47
13 Aug 12	TR3	Minnow	Ninespine Stickleback	45
13 Aug 12	TR3	Minnow	Ninespine Stickleback	45
13 Aug 12	TR3	Minnow	Ninespine Stickleback	48
13 Aug 12	TR3	Minnow	Ninespine Stickleback	44
13 Aug 12	TR3	Minnow	Ninespine Stickleback	46
13 Aug 12	TR3	Minnow	Ninespine Stickleback	43
13 Aug 12	TR3	Minnow	Ninespine Stickleback	46
13 Aug 12	TR3	Minnow	Ninespine Stickleback	54
13 Aug 12	TR3	Minnow	Ninespine Stickleback	50
13 Aug 12	TR3	Minnow	Ninespine Stickleback	48
13 Aug 12	TR3	Minnow	Ninespine Stickleback	45
13 Aug 12	TR3	Minnow	Ninespine Stickleback	45
13 Aug 12	TR3	Minnow	Ninespine Stickleback	50

Appendix H. Continued.

Date	Site	Gear	Species	Length (mm)
13 Aug 12	TR3	Minnow	Ninespine Stickleback	53
13 Aug 12	TR3	Minnow	Ninespine Stickleback	50
13 Aug 12	TR3	Minnow	Ninespine Stickleback	55
13 Aug 12	TR3	Minnow	Ninespine Stickleback	45
13 Aug 12	TR3	Minnow	Ninespine Stickleback	44
13 Aug 12	TR3	Minnow	Ninespine Stickleback	45
13 Aug 12	TR3	Minnow	Ninespine Stickleback	48
13 Aug 12	TR3	Minnow	Northern Pike	133
13 Aug 12	TR3	Minnow	Alaska Blackfish	120
13 Aug 12	TR3	Minnow	Ninespine Stickleback	72
13 Aug 12	TR3	Minnow	Ninespine Stickleback	48
13 Aug 12	TR3	Minnow	Ninespine Stickleback	47
13 Aug 12	TR3	Minnow	Ninespine Stickleback	46
13 Aug 12	TR3	Minnow	Ninespine Stickleback	37
13 Aug 12	TR3	Minnow	Ninespine Stickleback	46
13 Aug 12	TR3	Minnow	Ninespine Stickleback	46
13 Aug 12	TR3	Minnow	Ninespine Stickleback	43
13 Aug 12	TR3	Minnow	Ninespine Stickleback	42
13 Aug 12	TR3	Minnow	Ninespine Stickleback	47
13 Aug 12	TR3	Minnow	Ninespine Stickleback	47
13 Aug 12	TR3	Minnow	Ninespine Stickleback	47
13 Aug 12	TR3	Minnow	Ninespine Stickleback	45
13 Aug 12	TR3	Minnow	Ninespine Stickleback	45
13 Aug 12	TR3	Minnow	Ninespine Stickleback	51
13 Aug 12	TR3	Minnow	Ninespine Stickleback	43
13 Aug 12	TR3	Minnow	Ninespine Stickleback	44
13 Aug 12	TR3	Minnow	Ninespine Stickleback	49
13 Aug 12	TR3	Minnow	Ninespine Stickleback	45
13 Aug 12	TR3	Minnow	Ninespine Stickleback	43
13 Aug 12	TR3	Minnow	Ninespine Stickleback	42
13 Aug 12	TR3	Minnow	Northern Pike	127
13 Aug 12	TR3	Minnow	Alaska Blackfish	116

Appendix D Kotzebue to Cape Blossom Road Project, 2012 Spring Breakup Study: Sadie Creek

KOTZEBUE TO CAPE BLOSSOM ROAD
2012 SPRING BREAKUP STUDY: SADIE CREEK

Prepared for

Alaska Department of Transportation & Public Facilities
2301 Peger Road
Fairbanks, Alaska 99709
AKSAS Project No: 76884 / Federal Project No: NCPD-0002(204)
PSA No: 025-2-1-009

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REVISION HISTORY

Revision	Date	Comments	MBJ Project Manager
Draft	12/17/2012	Draft for Review	D. Christianson
Final	03/01/2013	Final to Client	D. Christianson

EXECUTIVE SUMMARY

This report presents observations and findings of the Kotzebue to Cape Blossom Road 2012 Spring Breakup Study: Sadie Creek, conducted by Michael Baker Jr., Inc. for the State of Alaska Department of Transportation & Public Facilities. Spring breakup monitoring was conducted to determine the magnitude and extent of flooding during what is considered one of the higher-return annual flood events in the region.

Observations and measurements were recorded at four water crossings along the proposed routes (shown in Figure 1.1):

- One crossing at Sadie Creek (SC1) along Option 1
- Two crossings at Sadie Creek (SC2A and SC2B) along Option 2
- One crossing at an unnamed swale (JC)

Peak water surface elevation (WSE) and discharge for the study locations are summarized below:

Location	Peak WSE (ft)	Date (2012)	Peak Discharge (cfs)	Date (2012)
SC1	88.14	May 21	331	May 22
SC2A	93.44	May 24	339	May 24
SC2B	97.32	May 22	62	May 25
JC	97.70	May 28	13	May 28

Note: Elevations are based on a local benchmark of an assumed datum.

Bridges or adequately sized culverts are capable of conveying peak flow at the Sadie Creek crossings. However, because of the channel width during breakup and probable regulatory requirements, a bridge may be the more feasible crossing mode at SC1 and SC2A. A culvert is capable of conveying peak flow at SC2B and JC and will likely satisfy regulatory requirements. Breakup flow at the SC2B location was conveyed over and through the snowpack as it melted down to the natural channel. Collected WSE and discharge data was affected because of that process, the effects of which should be considered during drainage structure design.

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ACRONYMS AND ABBREVIATIONS

Baker	Michael Baker Jr., Inc.
°C	degrees Celsius
cfs	cubic feet per second
DOT&PF	State of Alaska Department of Transportation & Public Facilities
D/S	downstream
floe	ice floe
ft	feet
fps	feet per second
FHWA	Federal Highway Administration
GPS	global positioning system
JC	Unnamed Swale
LEW	left edge of water
NAD83	North American Datum of 1983
NEPA	National Environmental Policy Act
PT	pressure transducer
REW	right edge of water
RM	river miles
SC	Sadie Creek
UC	uniform channel
U/S	upstream
USGS	United States Geological Survey
WSE	water surface elevation(s)

1.0 INTRODUCTION

The State of Alaska Department of Transportation and Public Facilities (DOT&PF) has proposed the development of an all-season road from Kotzebue, Alaska, to Cape Blossom on the southern end of the Baldwin Peninsula. Proposed road alignments cross Sadie Creek, located approximately 5 miles south-southeast of Kotzebue. Figure 1.1 shows the project area.

Michael Baker Jr., Inc. (Baker) conducted spring breakup monitoring to determine the extent and magnitude of flooding near proposed road infrastructure. This was the first spring breakup study conducted for this area. This report presents the methods and results of the 2012 spring breakup monitoring activities at Sadie Creek and at an unnamed swale (approximately 3 miles south-southeast of Kotzebue). The report is organized as described below.

- **Section 1 – Introduction**: Discusses the objectives of the monitoring program and presents climatic information.
- **Section 2 – 2012 Monitoring Locations**: Discusses the 2012 monitoring sites.
- **Section 3 – Methods**: Describes the methods of fieldwork and data analyses.
- **Section 4 – 2012 Spring Breakup Results**: Presents the hydrologic observations and water surface elevations (WSE) at the Sadie Creek and unnamed swale proposed road crossings.
- **Section 5 – Discharge:** Presents results of the direct-measured and indirect-calculated discharge.
- **Section 6 – Conclusions and Recommendations:** Summarizes breakup and provides suggestions for drainage structure types at the studied locations.
- **Section 7 – References:** Contains list of references used in the development of this report.
- **Appendices:** Appendix A includes elevations and geographic locations of hydrologic staff gages and survey control**.** Discharge measurement notes for all monitoring sites are included in Appendix B.

Kotzebue to Cape Blossom Road
Overview Map
Figure 1.1

DOT&PF and Michael Baker Jr., Inc.

1.1 MONITORING OBJECTIVES

The primary objective of the Kotzebue to Cape Blossom Road 2012 Spring Breakup Study was to monitor and estimate the magnitude of breakup flooding where the proposed all-season road crosses Sadie Creek.

The hydrological data from this study provides initial baseline information to begin establishing appropriate design criteria. The data can be compared to estimated discharge values provided in the *Kotzebue to Cape Blossom Road Reconnaissance Study* (DOT&PF 2011) and potential drainage structure sizes can be estimated.

Findings will support an Environmental Document. This document will fully meet the requirements of the National Environmental Policy Act (NEPA) (40 CFR Part 230), the regulatory requirements of the Council on Environmental Quality (42 U.S.C. 4321-4370a and 40 CFR 1500), procedures for implementing NEPA (33 CFR 230), and the NEPA regulatory requirements of the Federal Highway Administration (FHWA 23 CFR 771).

1.2 MONITORING TASKS

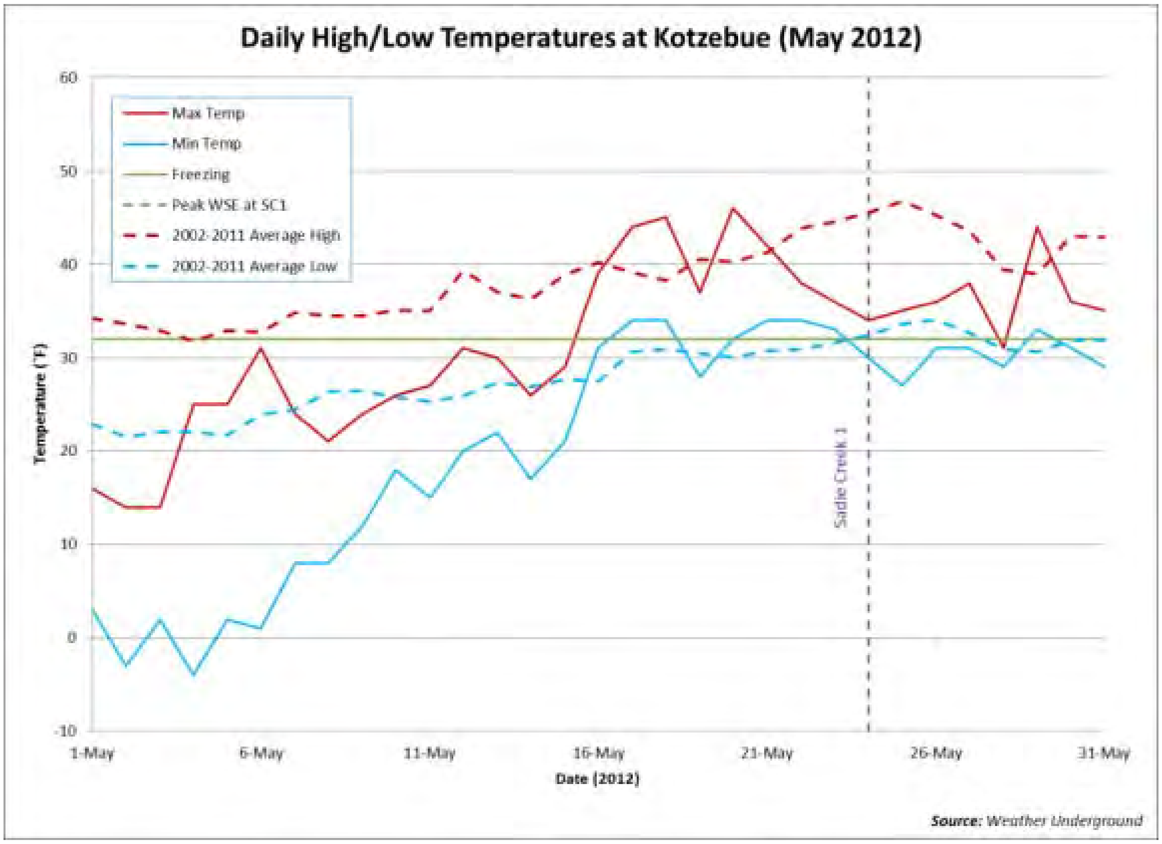
The hydrologic study was subdivided into four primary tasks:

- Task 1: Pre-field planning
    - Logistics, equipment, material, and personnel coordination and planning
    - Equipment maintenance, purchase and rental
    - Acquire Right Of Entry permits from Northwest Arctic Native Association and Kikiktagruk Inupiat Corporation
    - Selection of monitoring sites
- Task 2: Pre-breakup field setup
    - Site evaluation and refinement, temporary staff gage and local control installation and survey
    - Coordination of direct discharge measurement locations
- lTask 3: Breakup monitoring
    - Measurement of WSE using staff gages and pressure transducers (PT)
    - Photographic and written documentation of hydraulic and hydrologic conditions and floodwater distribution
    - Photographic and written documentation of ice jamming
    - Direct discharge measurements
- Task 4: Data analysis and reporting
    - Calculation of direct and indirect discharge
    - Review and tabulation of gaged and PT recorded WSE
    - Compilation of breakup observations, including photographic documentation
    - Report preparation presenting field observations and results of data analyses

1.3 CLIMATIC REVIEW

Spring above the Arctic Circle is often dominated by flooding. Little breakup meltwater is absorbed into the soil, as the active layer (underlain with continuous permafrost) remains frozen until later in the season. Meltwater often over-tops banks of streams and drainages filled with ice and wind-driven snow. Many streams and drainages freeze completely during the winter months. Snow pack, sustained cold or warm temperatures, ice thickness, wind speed and direction, precipitation, and solar radiation contribute to the timing and magnitude of the spring breakup event. The open water season for the area is generally limited to a four-month period from June through September.

Review of daily high and low temperatures can be helpful when considering breakup timing. Breakup processes initiate as daily temperatures rise toward freezing. As nightly lows begin to approach and exceed freezing temperatures, breakup processes tend to accelerate. Climatic records for 2012 are available from a monitoring station at Ralph Wien Memorial Airport in Kotzebue, approximately 4 air miles north of the monitored locations. Graph 1.1 provides high and low temperatures at Kotzebue for May 2012.



Source: *Weather Underground*

GRAPH 1.1: DAILY HIGH AND LOW TEMPERATURES AT KOTZEBUE (MAY 2012)

2.0 2012 MONITORING LOCATIONS

The Sadie Creek monitoring locations for the 2012 Spring Breakup Study were provided by DOT&PF based on proposed road alignments. An unnamed swale was identified by Baker as an active flow path that would likely require a hydraulic structure to maintain runoff conveyance.

WSE data is measured using a set of hydrologic staff gages at each site of interest. Gage locations were determined during pre-field planning; sites were selected at proposed road stream crossings, based on aerial imagery. Specific gage placement and the number of gages per set were refined during pre-breakup field setup based on field observations. Additional gages were installed during the early stages of monitoring to capture low stage conditions.

Monitoring was conducted at four channel crossings associated with the proposed alignment, presented in Figure 2.1. Two alternative alignments cross Sadie Creek; the Upgrade Route (Option 1) crosses Sadie Creek (SC1) where all flow is confined to a single channel, while the dismissed upper option (Option 2) crosses two smaller branches of Sadie Creek (SC2A and SC2B) approximately 1.5 river miles (RM) upstream of the western alignment. The confluence of the SC2A and SC2B channels lies approximately 0.75 RM upstream of the SC1 crossing. The fourth crossing is an unnamed swale (JC) which drains a ponded wetland area into June Creek.

Three gage sites (upstream [U/S], centerline, and downstream [D/S]) at each potential crossing on Sadie Creek and two gage sites (upstream and centerline) at the unnamed swale were monitored during the 2012 Spring Breakup Study. At each site, gages are installed in sets to capture the anticipated vertical change in WSE. The quantity of gages per set was dependent on local topography. Table 2.1 lists the hydrologic staff gages installed at each monitoring location and provides a summary of the naming convention. Hydrologic staff gages are discussed in more detail in Section 3.2.1.

TABLE 2.1: KOTZEBUE TO CAPE BLOSSOM ROAD HYDROLOGIC STAFF GAGES

Gage Naming Convention

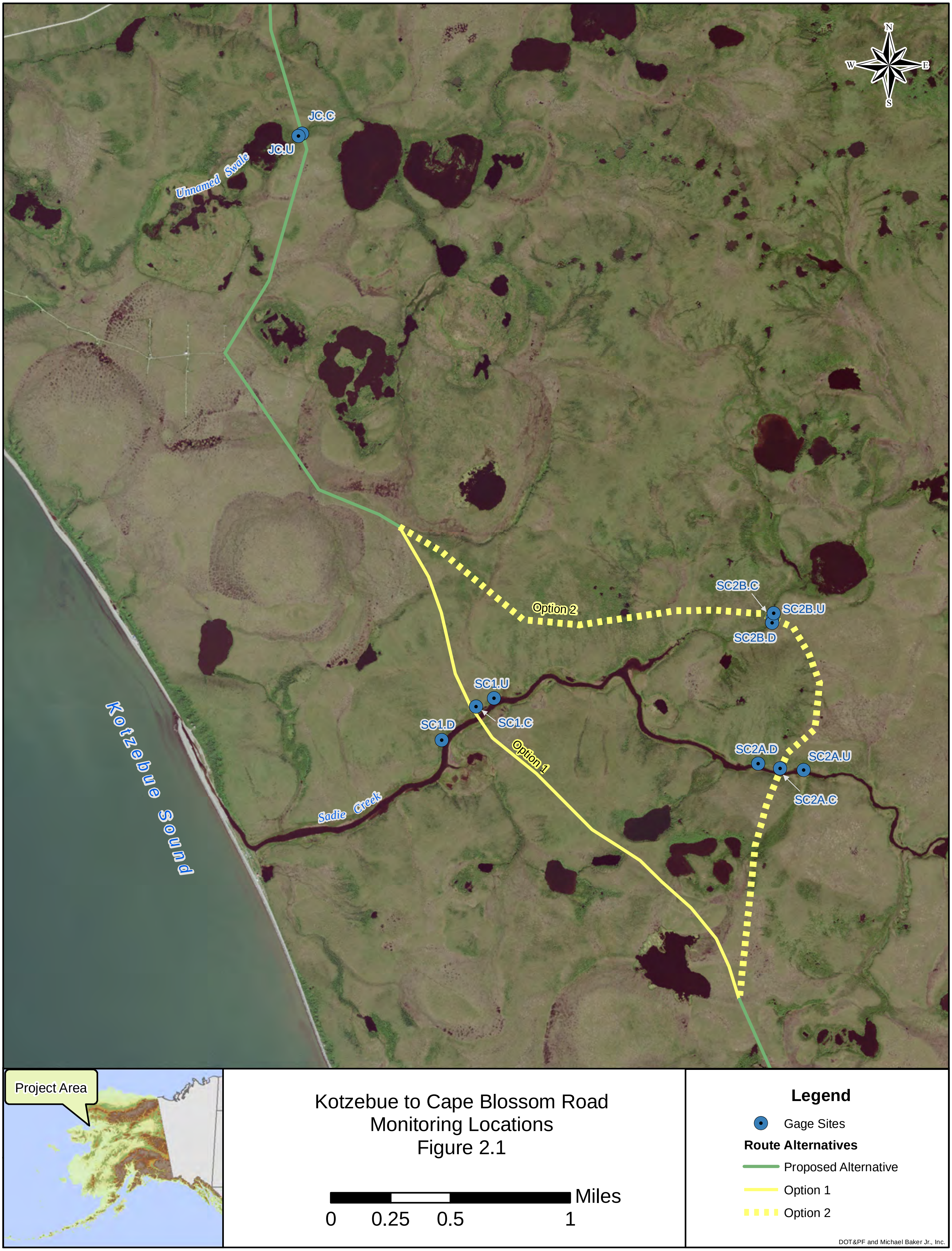
Example:

SC1.U-C

[SC1] Site (Sadie Creek 1)
[.U] Location (Upstream)
[-C] Gage ("C")

Site	U/S	Centerline	D/S
Sadie Creek 1 (SC1)	SC1.U-A1 SC1.U-A SC1.U-B SC1.U-C	SC1.C-A SC1.C-B SC1.C-C SC1.C-D	SC1.D-A1 SC1.D-A SC1.D-B SC1.D-C SC1.D-D
Sadie Creek 2A (SC2A)	SC2A.U-A SC2A.U-B	SC2A.C-A SC2A.C-B SC2A.C-C	SC2A.D-A1 SC2A.D-A SC2A.D-B SC2A.D-C
Sadie Creek 2B (SC2B)	SC2B.U-A SC2B.U-B	SC2B.C-A SC2B.C-B	SC2B.D-A SC2B.D-B
Unnamed Swale (JC)	JC.U-A JC.U-B	JC.C-A JC.C-B	No gages installed

U/S – Upstream; D/S - Downstream



Kotzebue to Cape Blossom Road
Monitoring Locations
Figure 2.1

DOT&PF and Michael Baker Jr., Inc.

2.1 SADIE CREEK SITE 1 (SC1)

SC1 is located roughly 5 miles south of Kotzebue along the Upgrade route road alignment. Gages located at SC1 were installed along a well-defined, fairly straight reach on May 3 and surveyed for elevation on May 5, 2012. They were located at the proposed crossing centerline, 500 feet upstream, and 1,000 feet downstream. PTs were installed at SC1.U and SC1.D. Hydrologic staff gage locations at SC1 are presented in Figure 2.2 through Figure 2.4. Photo 2.1 shows pre-breakup conditions at SC1 on May 2.

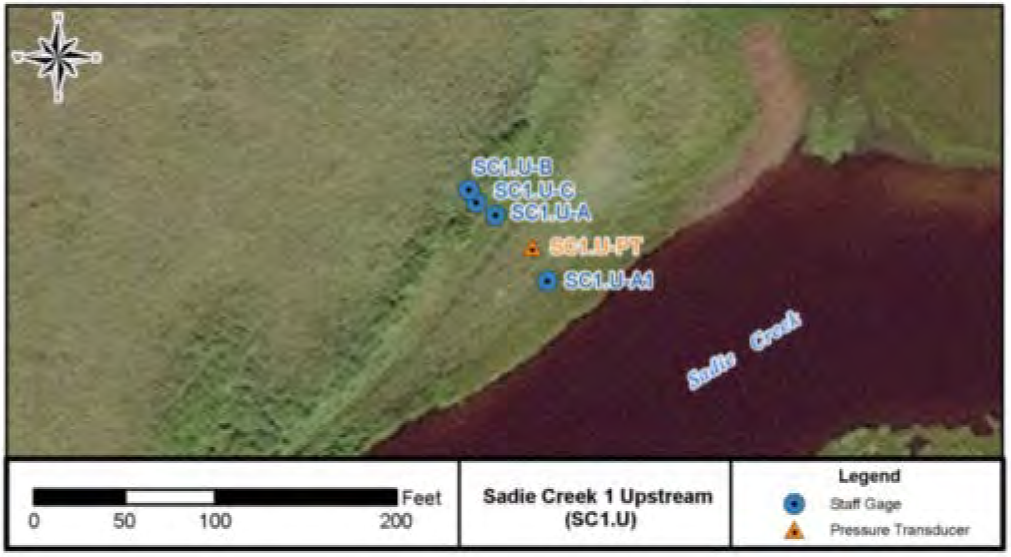


FIGURE 2.2: HYDROLOGIC STAFF GAGES INSTALLED AT SC1.U

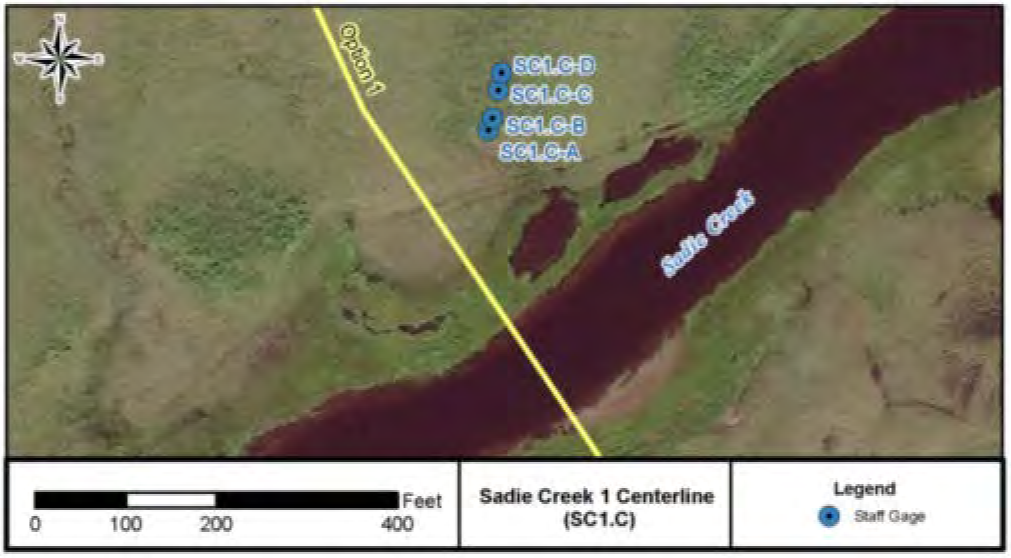


FIGURE 2.3: HYDROLOGIC STAFF GAGES INSTALLED AT SC1.C

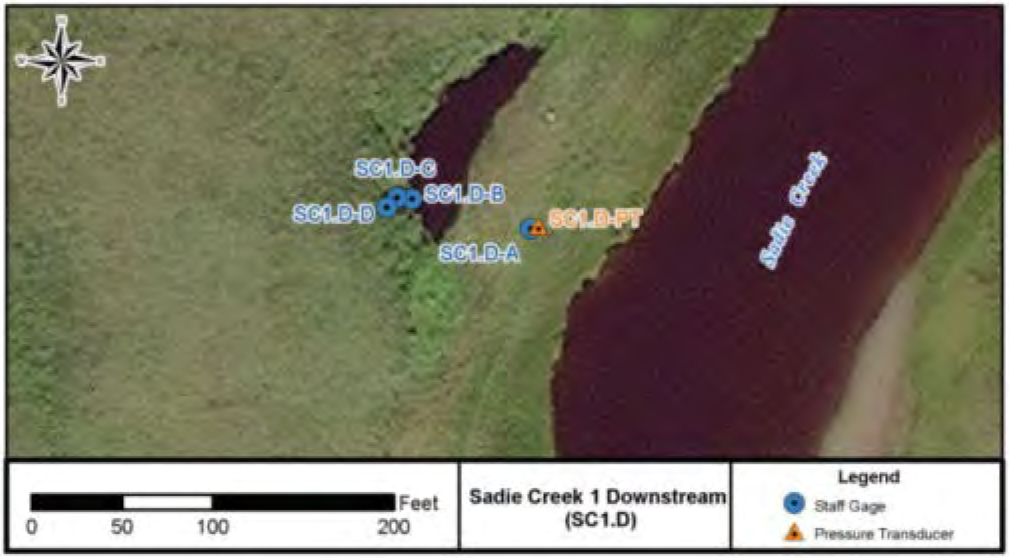


FIGURE 2.4: HYDROLOGIC STAFF GAGES INSTALLED AT SC1.D

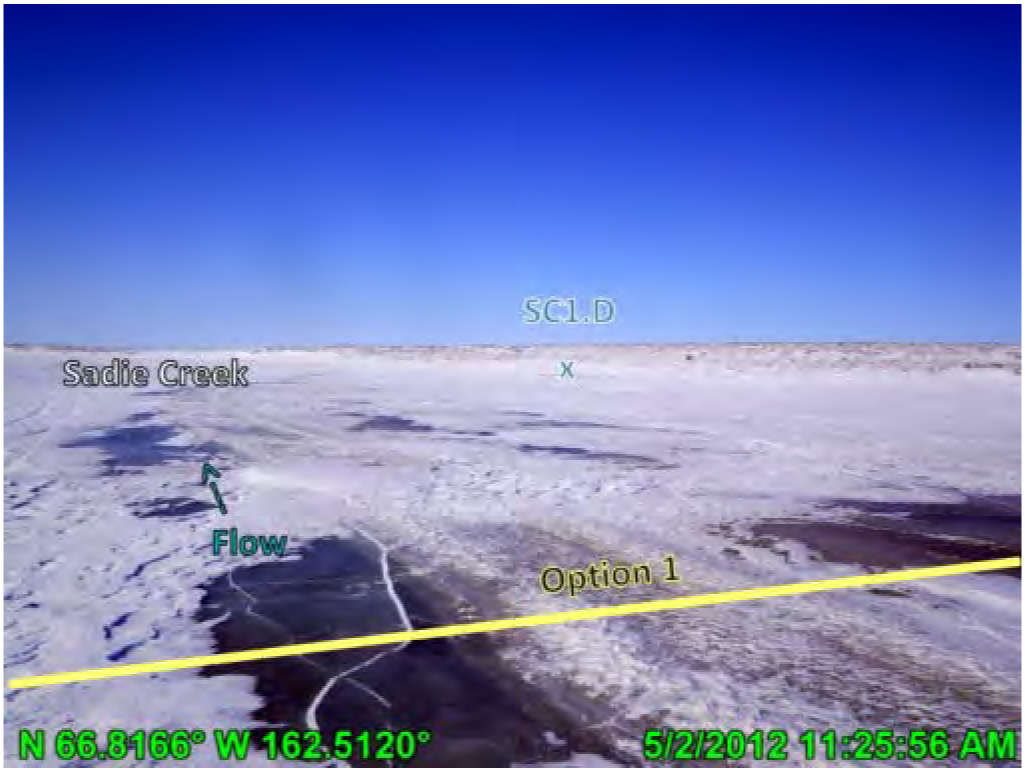


PHOTO 2.1: PROPOSED SC1 CROSSING PRIOR TO BREAKUP, LOOKING WEST; MAY 2, 2012

2.2 SADIE CREEK SITE 2A (SC2A)

SC2A gages are located along the dismissed upper option route (Option 2) road alignment, which crosses the southern branch of Sadie Creek. Along this alignment are depressions and areas susceptible to ponding during flooding events. Upstream of SC2A, the channel splits into a network of ponds and connecting channels, some of which are likely ephemeral.

Gages located at SC2A were installed along a nearly straight reach and surveyed for elevation on May 4. Gages were established at the proposed road crossing centerline and approximately 500 feet upstream and downstream. PTs were installed at SC2A.U and SC2A.D. Hydrologic staff gage locations at SC2A are presented in Figure 2.5 through Figure 2.7. Photo 2.2 shows pre-breakup conditions at SC2A on May 2.

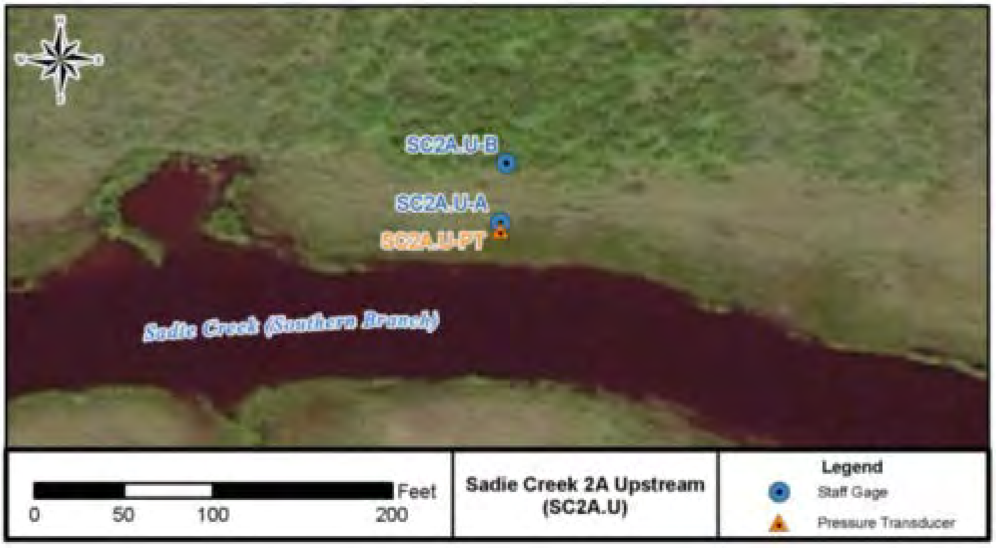


FIGURE 2.5: HYDROLOGIC STAFF GAGES INSTALLED AT SC2A.U

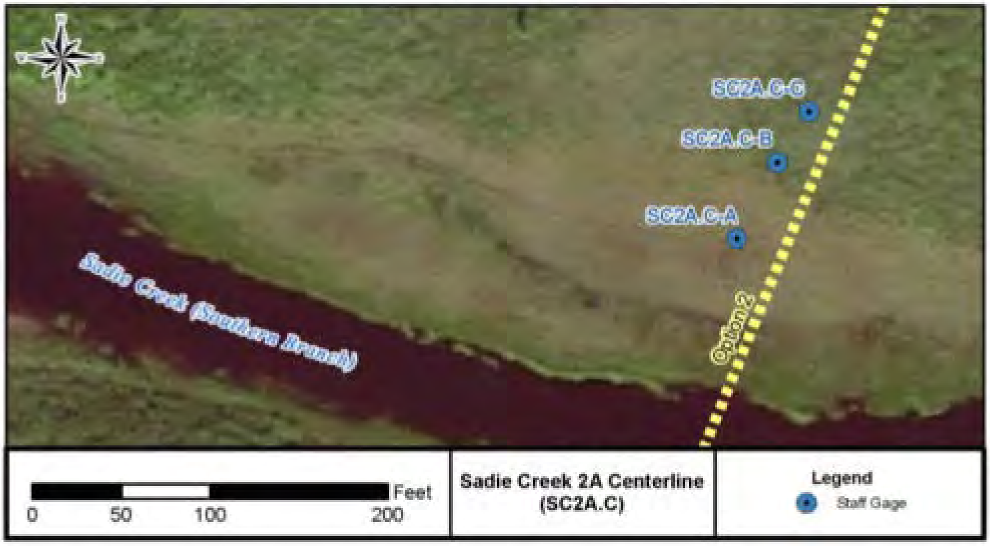


FIGURE 2.6: HYDROLOGIC STAFF GAGES INSTALLED AT SC2A.C

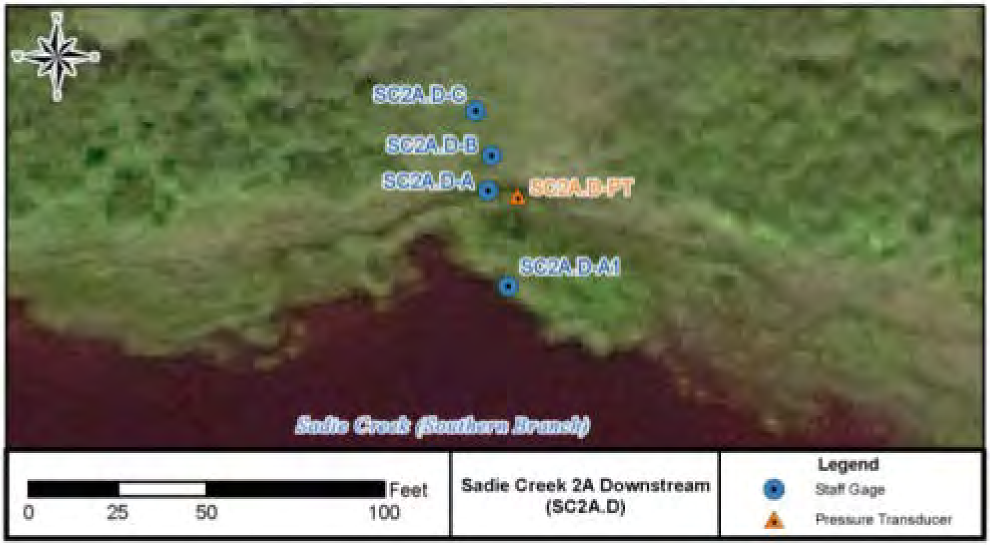


FIGURE 2.7: HYDROLOGIC STAFF GAGES INSTALLED AT SC2A.D

PHOTO 2.2: PROPOSED SC2A CROSSING PRIOR TO BREAKUP, LOOKING EAST; MAY 2, 2012

2.3 SADIE CREEK SITE 2B (SC2B)

SC2B gages are located along the dismissed upper Option 2 road alignment, which crosses the northern branch of Sadie Creek approximately 0.7 air miles north of SC2A. Directly upstream of the proposed SC2B crossing is a single pond fed by a network of ponds farther upstream. The stream branch is significantly smaller than SC2A. Originating from several ponds and wetlands, it is potentially ephemeral, flowing only as the result of breakup or heavy rain events.

Gages were established at the proposed road crossing centerline along a nearly straight reach, approximately 100 feet upstream and downstream, and surveyed for elevation on May 5. PTs were installed at SC2B.U and SC2B.D at the base of the "A" gages. Hydrologic staff gage locations at SC2B are presented in Figure 2.8. Photo 2.3 shows pre-breakup conditions at SC2B on May 2 ("←x→" indicates location and alignment of channel).

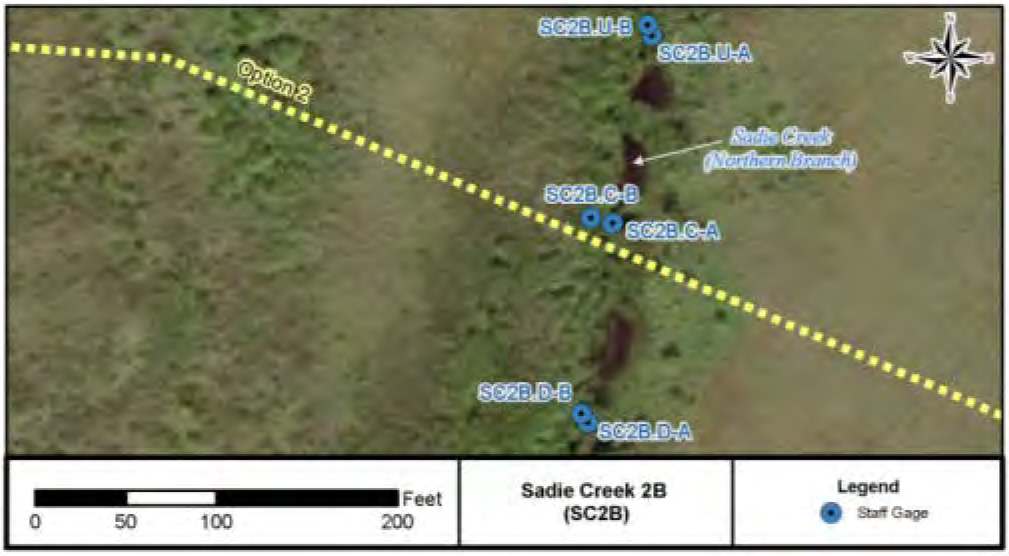


FIGURE 2.8: HYDROLOGIC STAFF GAGES INSTALLED AT SC2B

PHOTO 2.3: SC2B PRIOR TO BREAKUP, LOOKING EAST; MAY 2, 2012

2.4 UNNAMED SWALE (JC)

The proposed crossing of the unnamed swale is located 3 miles southeast of Kotzebue. Upstream of the site is a pond connected to a small network of wetlands or smaller ponds. This crossing was characterized by small brush and grasses with a fairly well defined drainage once the snowpack opened to floodwaters. On May 5, gages were installed and surveyed for elevation at the proposed road crossing centerline and 100 feet upstream. PTs were installed at JC.U and JC.C at the base of the "A" staff gages. Hydrologic staff gage locations at JC are presented in Figure 2.9. Photo 2.4 shows pre-breakup conditions at the proposed crossing on May 2.

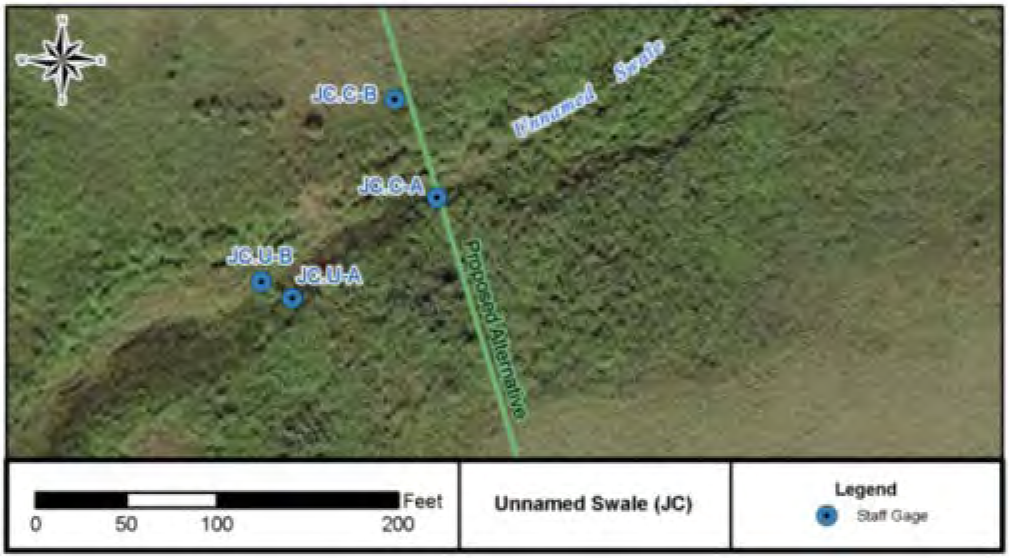


FIGURE 2.9: HYDROLOGIC STAFF GAGES INSTALLED AT JC

PHOTO 2.4: PROPOSED CROSSING OF THE UNNAMED SWALE PRIOR TO BREAKUP, LOOKING EAST; MAY 5, 2012

3.0 METHODS

Standard techniques appropriate for conditions found in arctic regions during spring breakup were used for data collection. These field methods included visual observations of melt water flow, ice behavior, documentation of WSE at gaging stations, and measurement of discharge. Challenges included logistics, weather, and safety.

3.1 VISUAL OBSERVATIONS

Evaluation of gaging locations was conducted from the ground via snowmachines during pre-breakup field setup from May 2 to May 5, 2012. Breakup monitoring observations were conducted via helicopter from May 18 to May 30, 2012. All observations were recorded daily in field notebooks. Digital photographs were taken to document the progression of spring breakup prior to, during, and after peak flooding. The geographic position of the camera, date, and time were automatically imprinted onto each photo.

3.2 WATER SURFACE ELEVATION

3.2.1 HYDROLOGIC STAFF GAGES

Temporary staff gages were installed in sets at each site as indicated in Table 2.1. From staff gages, WSE was measured relative to an assumed elevation. When water levels were not high enough to be recorded on the staff gages, standard level loop survey techniques were used to measure WSE using the gage as the basis of elevation.

Each gage assembly consisted of a 3.33-foot long metal gage faceplate mounted on a two-by-four timber attached to a 6-foot long 1.5-inch angle iron post driven approximately 2 feet into the ground. The horizontal position of each gage was recorded using a handheld Garmin GPSMAP® 62st GPS device in North American Datum of 1983 (NAD83). Photo 3.1 shows an example of a staff gage after installation.

PHOTO 3.1: GAGE ASSEMBLY AT SC2A.D, LOOKING SOUTH; MAY 23, 2012

Temporary benchmarks, consisting of a 2-foot long piece of rebar and a 5-inch square cap, were placed on the upper banks at each monitoring site. Each benchmark was assigned an assumed elevation prior to breakup. They were not tied together or to a known datum. The elevation of each gage was established from its local benchmark using standard level loop techniques. Elevations at each gage location are relative only to that site.

The basis of elevation for each gage and the horizontal position of respective benchmarks and gages are presented in Appendix A.

In locations where terrain elevation varied by more than three feet, or where loss of gages due to ice floes was likely, more than one gage was installed to provide redundancy in capturing WSE data. Where floodwaters were not high enough to reach gages, a gage was repositioned lower into the water. This occurred along the SC1 and SC2A channels.

3.2.2 PRESSURE TRANSDUCERS (PT)

Pressure transducers (PT) were installed at each upstream and downstream (upstream and centerline at the unnamed swale) gage sites to record WSE data. PTs measure the absolute pressure imparted by the atmosphere and water at the sensor, allowing the depth of water above the sensor to be calculated with the aid of barometric pressure sensor data. Resulting data yields a more comprehensive record of the fluctuations in WSE than can be captured by visual staff gage measurements alone.

Solinst 3001 Levelogger® Gold sensors were used. The instrument is a non-vented pressure sensor designed to collect and store pressure and temperature data at discrete intervals. The factory-calibrated transducers were set to collect absolute pressure and water temperature at 15-minute intervals. The measured pressure datum is the sum of the forces imparted by both the water column and atmospheric conditions. A correction of local barometric pressure was required and obtained from a Solinst 3001 Barologger® Gold located at SC1.C. This Barologger® location is considered to be representative of conditions at each monitoring site. See Appendix A for PT and Barologger® basis of elevation and horizontal positions.

Prior to deployment, PTs were configured using Solinst Levelogger Software 4.0.3® and underwent a functional test and calibration by Baker. The transducers were housed in a segment of perforated galvanized steel pipe, clamped to angle iron placed near the active channel at ground level (Photo 3.2). The transducer sensor was surveyed to establish a vertical datum using local control.

Water depth was calculated as the density of water multiplied by gage pressure. Gage pressure was calculated as the difference in simultaneous absolute and barometric pressure data. A standard density of water at 0 degrees Celsius (°C) was used for all

PHOTO 3.2: PT ASSEMBLY INSTALLED AT SC2A.U; MAY 4, 2012

calculations. Fluctuations in water temperature during the sampling period were not significant enough to affect WSE calculations due to the limited range in temperature and observed water depths. PT-based WSE values were determined by adding the calculated water depth and the surveyed sensor elevation. Additionally, gage WSE readings were used to calibrate the data collected by the PTs.

3.3 DISCHARGE MEASUREMENTS

3.3.1 DIRECT DISCHARGE

Discharge was measured using standard U.S. Geological Survey (USGS) midsection techniques (USGS 1982) at SC1, SC2A, and JC. Conditions did not allow for a safe or accurate direct discharge measurement at SC2B. Velocity and discharge measurements were taken daily as conditions permitted to collect data as close as possible to peak stage.

Depth and velocity measurements were taken from a jon boat at SC1 and SC2A with a sounding reel mounted on a wooden boom (Photo 3.3). A Price AA velocity meter was attached to the sounding reel and stabilized with a 30-pound Columbus-type lead sounding weight. A tag line was placed across the channel to define the cross section and to delineate measurement subsections within the channel. To ensure accurate performance of meters, procedures outlined in the Office of Surface Water Technical Memorandum No. 99.06 (OSW 1999) were followed.

PHOTO 3.3: DIRECT-DISCHARGE MEASUREMENT AT SC1, LOOKING SOUTHEAST; MAY 27, 2012

3.3.2 INDIRECT DISCHARGE

The slope-area method (Benson and Dalrymple 1967) for a uniform channel (UC) were used in the indirect discharge calculations to develop the estimates of peak discharge. The method is based on channel cross-section geometry and stage differential between gage sites as an estimate for hydraulic gradient. The UC method uses a single cross-section typically at the centerline of each site. Accuracy of this method depends on conditions at the time of calculation, cross sectional flow geometry, hydraulic roughness imparted on flow, ice jam activity, and backwater effects. Cross-sectional geometry was collected during direct measurements. Stage and hydraulic gradient data were determined from observations made at nearby gages and PT data.

4.0 2012 SPRING BREAKUP RESULTS

Breakup monitoring began on May 22 when field personnel arrived in Kotzebue. Daily observations were documented between May 22 and May 30 and are reported in this section. Quicksilver Air provided helicopter support for the duration of breakup monitoring.

4.1 BREAKUP TIMING

Unseasonably cool weather in late April and early May, with temperatures close to freezing at night, likely affected the 2012 breakup event. The cold temperatures preserved snowpack and ice, delaying breakup. The breakup event was affected by above average temperatures immediately preceding, and below average temperatures during, breakup. Between May 16 and May 23, air temperatures averaged above the freezing point and spiked into the mid-40's (see Graph 1.1). An early warming trend can often ripen the snow (local melt saturates the snow) for breakup by pre-softening snow such that when the main melt does occur, it occurs more rapidly and efficiently than without the early warming period.

Victor Jones, a local subcontractor with the Native Village of Kotzebue, provided photographic evidence of breakup processes at the monitoring areas beginning on May 18 (Photo 4.1), prior to Baker field crew mobilization to Kotzebue on May 22.

PHOTO 4.1: BREAKUP INITIATION AT SC1.U, LOOKING SOUTH; MAY 18, 2012

4.2 HYDROLOGIC OBSERVATIONS AND STAGE DATA

4.2.1 SADIE CREEK 1 (SC1)

Stage was captured at the SC1 site via PT on May 21, estimated as the date of arrival of the leading edge of breakup meltwater at the crossing location. Stage quickly peaked at the upstream gaging location (SC1.U) on this day, as evidenced by PT data. No evidence was available to indicate peak stage or a stage crest on May 21 at either the centerline (SC1.C) or downstream (SC1.D) locations, though a peak or crest is not unlikely.

On May 22, stage was low with no discernible velocity. Ice was bottom-fast in the channel and no ice floes were present (Photo 4.2). Stage continued decreasing on May 23, reaching the lowest elevations during the breakup period before rising again.

All gage locations experienced a second stage crest on May 24, when peak stage was recorded at SC1.C and SC1.D. The width of flow was approximately 300 feet during the second crest, with floodwaters and snow present in both left and right overbank areas. The gradient at the crossing location is relatively shallow and flow velocities were low during the peak stage period. Flow was ineffective in the overbank areas, with the majority being conveyed through the thalweg. Stage recession for the second time during breakup continued on May 25 at which time bottom-fast ice was still present along the toe of the left (north) bank (Photo 4.3).

By May 26, ice had lifted off the channel bed both upstream and downstream of the SC1 reach (Photo 4.4) and stage at all locations rose slightly. The following day, ice floes were observed approximately 0.5 RM upstream of SC1 (Photo 4.5). No significant effects to flow were seen at the crossing location as a result of this ice. Floes remained in the channel upstream of SC1 on May 29 as stage continued to drop.

By the final day of monitoring on May 30, the channel reach at the crossing location was open though occasional ice floes were present downstream (Photo 4.6). Flow was becoming more contained within the defined channel banks as stage continued decreasing. Both overbanks were still inundated with floodwater in places and some snow was present.

Stage data for the SC1 gages during breakup monitoring are contained in Table 4.1 and Graph 4.1. The PT at the SC1.D location malfunctioned and data was not recoverable.

PHOTO 4.2: BOTTOM-FAST ICE AT SC1.U, LOOKING SOUTHEAST; MAY 22, 2012

PHOTO 4.3: BOTTOM-FAST ICE ALONG TOE OF BANK AT SC1.C, LOOKING DOWNSTREAM; MAY 25, 2012

PHOTO 4.4: ICE LIFTING OFF THE CHANNEL BED 0.5 MILES UPSTREAM OF SC1 GAGES, LOOKING SOUTH; MAY 26, 2012

PHOTO 4.5: ICE FLOES UPSTREAM OF SC1 GAGES, LOOKING NORTHWEST; MAY 27, 2012

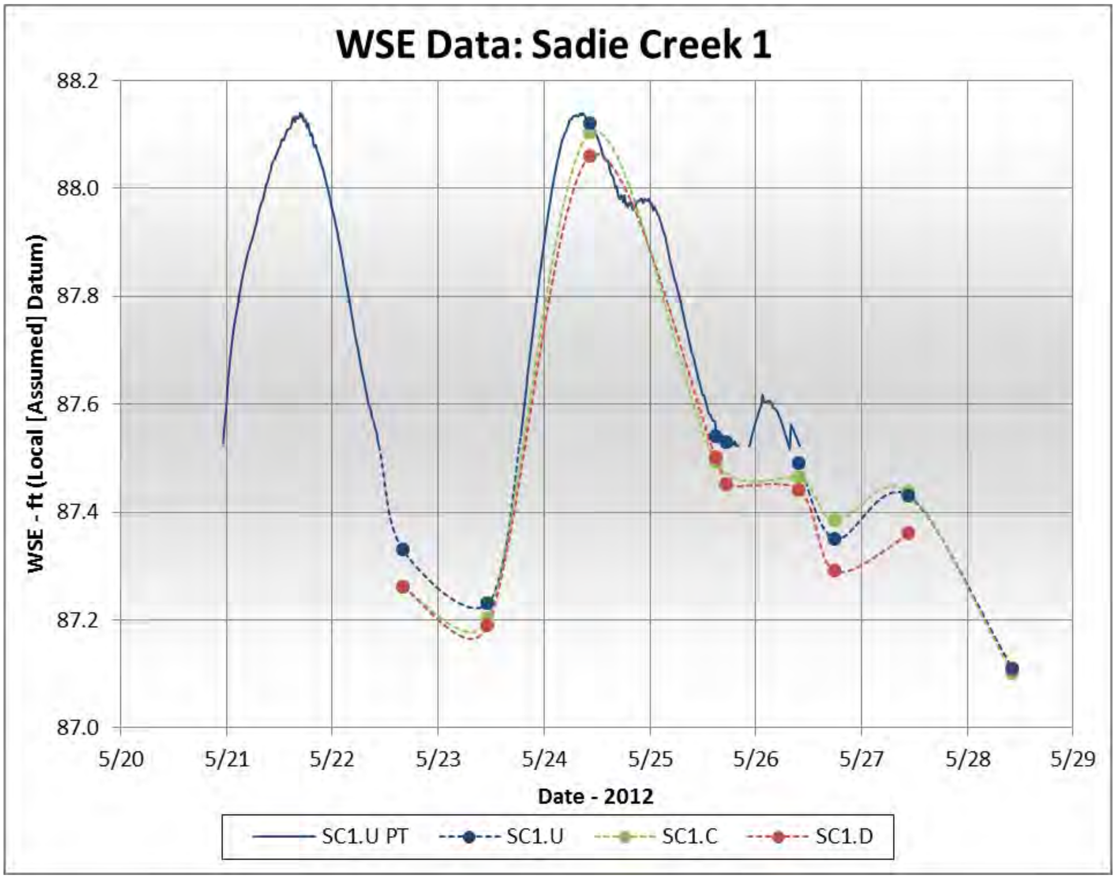
PHOTO 4.6: OPEN CHANNEL CONDITIONS DOWNSTREAM OF SC1 GAGES, LOOKING UPSTREAM TO CROSSING LOCATION; MAY 30, 2012

TABLE 4.1: STAGE DATA, SC1 GAGES

Date and Time	WSE (feet)			Notes
	SC1.U	SC1.C	SC1.D	
5/21/12 4:45 PM	88.14	-	-	**Peak stage;** based on PT data
5/22/12 4:00 PM	87.33	87.26	87.26	
5/23/12 11:15 AM	87.23	87.20	87.19	
5/24/12 10:30 AM	88.12	88.10	88.06	**Peak stage;** based on gage data
5/25/12 3:00 PM	87.54	87.49	87.50	
5/25/12 5:30 PM	87.53	-	87.45	
5/26/12 10:00 AM	87.49	87.46	87.44	
5/26/12 6:00 PM	87.35	87.38	87.29	
5/27/12 10:45 AM	87.43	87.44	87.36	
5/28/12 10:15 AM	87.11	87.10	-	

Notes:

1. Elevations are based on SC1 at 100.00 feet (local datum - assumed elevation) surveyed by Baker in 2012.
2. The PT at SC1.D malfunctioned and data was not recoverable.



GRAPH 4.1: STAGE DATA, SC1 GAGES

4.2.2 SADIE CREEK 2A (SC2A)

The leading edge of meltwater flow is estimated to have passed SC2A on May 21. An initial low stage crest was experienced at all gaging locations on this day, based on PT data. Stage had dropped below gage levels by May 22, reaching a breakup low on May 23. Bottom-fast ice was present along both banks and the channel was free of floes (Photo 4.7). Stage increased once again, reaching a peak at all locations on May 24. The width of flow at SC2A was approximately 160 feet during peak stage, with floodwaters and snow in both overbanks (Photo 4.8). No floes were in the vicinity. The gradient at the crossing location is relatively shallow and flow velocities were low during the peak period. Flow was ineffective in the overbank areas, with the majority being conveyed through the thalweg.

On May 25, the channel remained free of snow and ice floes as stage continued to drop. Conditions were similar until May 28 when bottom-fast ice lifted to the surface. Stage dropped below gages by May 29. Ice floes were grounding out approximately 0.5 RM downstream of SC2A and flow within the reach was confined almost entirely within the channel banks (Photo 4.9). No backwater effects were observed at the crossing location as a result of the rafted floes downstream. The majority of the snow in the area had melted and monitoring was discontinued.

Stage data for the SC2A gages during breakup monitoring are presented in Table 4.2 and Graph 4.2.

PHOTO 4.7: BOTTOM-FAST ICE ALONG BANKS AT SC2A.D, LOOKING SOUTHWEST; MAY 22, 2012

PHOTO 4.8: CONDITIONS DURING PEAK STAGE AT SC2A.D, LOOKING SOUTHWEST; MAY 24, 2012

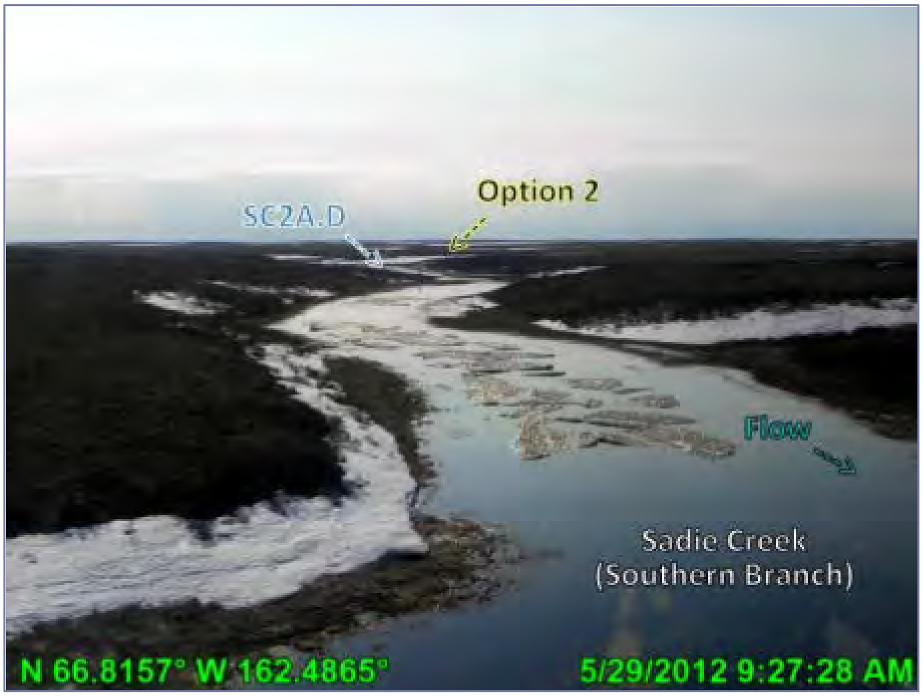


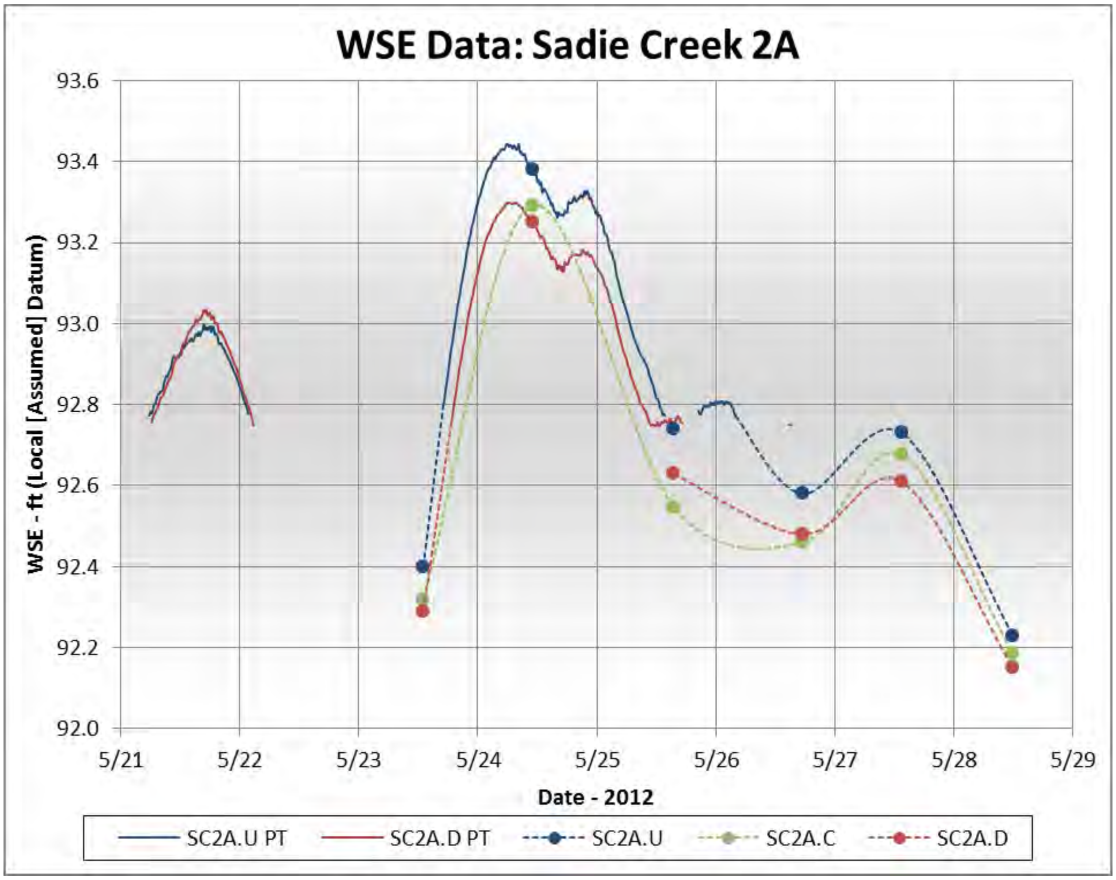
PHOTO 4.9: ICE FLOES 0.5 RM DOWNSTREAM OF SC2A, LOOKING WEST; MAY 29, 2012

TABLE 4.2: STAGE DATA, SC2A GAGES

Date and Time	WSE (feet)			Notes
	SC2A.U	SC2A.C	SC2A.D	
5/23/12 1:00 PM	92.40	92.32	92.29	
5/24/12 8:00 AM	93.44	-	93.30	**Peak stage;** based on PT data
5/24/12 11:00 AM	93.38	93.29	93.25	**Peak stage;** based on gage data
5/25/12 3:30 PM	92.74	92.55	92.63	
5/26/12 5:30 PM	92.58	92.46	92.48	
5/27/12 1:25 PM	92.73	92.68	92.61	
5/28/12 11:50 AM	92.23	92.19	92.15	

Notes:

1. Elevations are based on SC2A at 100.00 feet (local datum - assumed elevation) surveyed by Baker in 2012.



GRAPH 4.2: STAGE DATA, SC2A GAGES

4.2.3 SADIE CREEK 2B (SC2B)

This channel is a small tributary of Sadie Creek which drains a network of ponds. Conditions through this reach during spring breakup were very dynamic as flood flow was conveyed on top of and through the snowpack, adjacent to the natural channel, for the majority of the monitoring period. The gradient and geometry of the incised channel changed, becoming deeper and wider as breakup melt progressed. Eventually, flow cut through the snow near the end of the monitoring period, migrating to the natural channel on the ground. Stage was affected by this process and should not be considered representative of the natural channel.

The leading edge of meltwater flow is estimated to have passed SC2B on May 21. PT data indicates peak stage occurred at both the upstream (SC2A.U) and downstream (SC2A.D) locations on May 22. No evidence of peak stage occurring at the centerline location (SC2A.C) on this day is available, but it is likely that it occurred on May 22 as well.

Field crews first collected visual observations on May 23. The upstream gradient through this reach was steeper and flow was more confined within the channel cut through the snow. Downstream, the gradient became shallower, flow had lower velocity and was less confined, and ponding occurred on top of the snow (Photo 4.10 and Photo 4.11 on May 24). By May 25, the incised channel was more defined through the entire reach, though snow along both sides was saturated with ineffective flow (Photo 4.12). Water continued to pond just downstream, the shallow gradient and snow contributing to a backwater effect. Flow continued to deepen and widen the channel cut into the snowpack (Photo 4.13), reaching the natural channel by May 27 (Photo 4.14). The natural channel was partially under the left bank snowpack, which had been eroded over 10 feet deep and up to 20 feet wide in some locations through the crossing reach (Photo 4.15).

Stage data for the SC2B gages during breakup monitoring are presented in Table 4.3 and Graph 4.3.

PHOTO 4.10: STEEPER TO SHALLOWER GRADIENT FLOW OVER SNOW AT SC2B, LOOKING DOWNSTREAM; MAY 23, 2012

PHOTO 4.11: FLOW LESS CONFINED AS A RESULT OF SHALLOWER DOWNSTREAM GRADIENT AT SC2B, LOOKING DOWNSTREAM; MAY 24, 2012

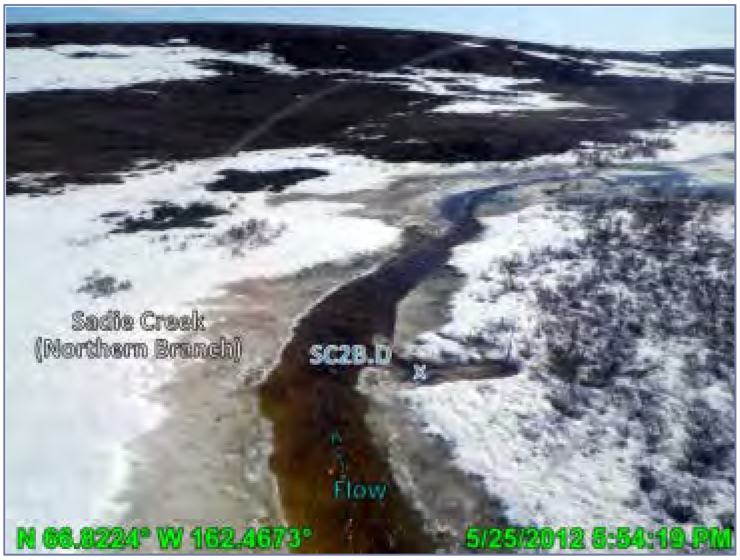


PHOTO 4.12: BREAKUP PROGRESSION AT SC2B AND DOWNSTREAM PONDING, LOOKING DOWNSTREAM; MAY 25, 2012

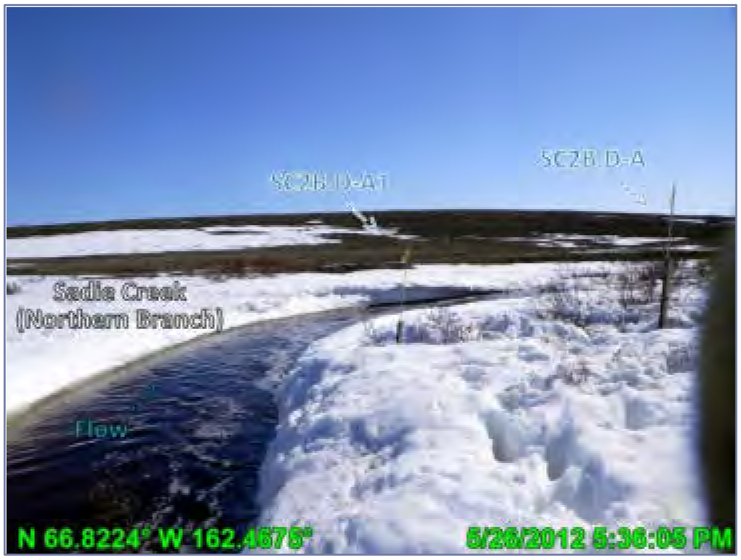


PHOTO 4.13: SC2B CHANNEL CUTTING INTO THE SNOWPACK, LOOKING DOWNSTREAM; MAY 26, 2012

PHOTO 4.14: SC2B CHANNEL CUT TO THE BOTTOM OF THE SNOWPACK, LOOKING DOWNSTREAM; MAY 27, 2012

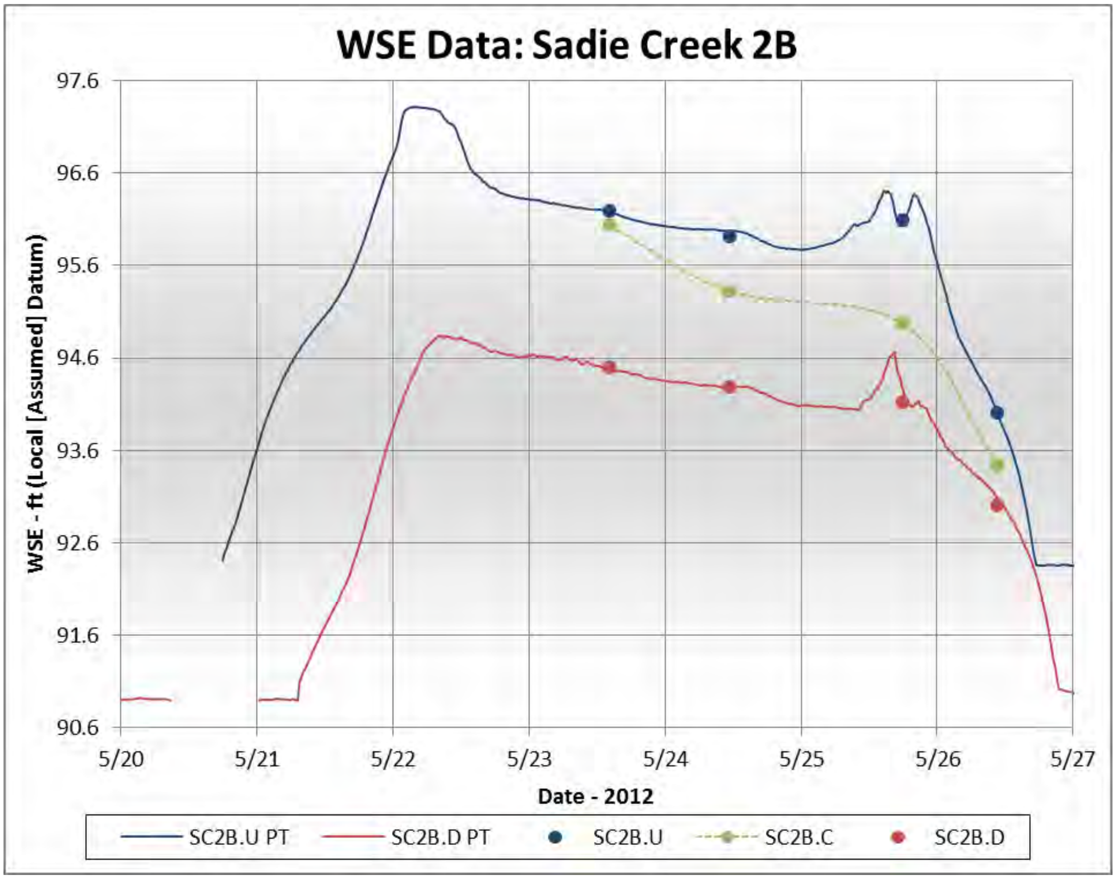
PHOTO 4.15: CUT IN SNOWPACK LEFT BY SC2B AND MIGRATION OF FLOW TOWARD NATURAL CHANNEL, LOOKING DOWNSTREAM; MAY 29, 2012

TABLE 4.3: STAGE DATA, SC2B GAGES

Date and Time	WSE (feet)			Notes
	SC2B.U	SC2B.C	SC2B.D	
5/22/12 4:00 AM	97.32	-	-	**Peak stage;** based on PT data
5/22/12 9:30 AM	-	-	94.84	**Peak stage;** based on PT data
5/23/12 2:15 PM	96.19	96.03	94.49	**Peak stage;** based on gage data
5/24/12 11:30 AM	95.91	95.32	94.28	
5/25/12 6:00 PM	96.09	94.97	94.12	
5/26/12 10:45 AM	94.00	93.43	93.00	

Notes:

1. Elevations are based on SC2B at 100.00 feet (local datum - assumed elevation) surveyed by Baker in 2012.
2. Flow through this reach was conveyed via a channel incised into the snowpack. Channel geometry and gradient changed with the progression of breakup melt. Stage data was affected by these processes and should not be considered representative of the natural channel.



GRAPH 4.3: STAGE DATA, SC2B GAGES

4.2.4 UNNAMED SWALE (JC)

The swale drains a network of small ponds and wetlands into June Creek. Local melt was observed at JC gages during the reconnaissance flight on May 22. By May 27, melt in the pond upstream had progressed sufficiently so water had reached the crossing location but stage was low (Photo 4.16). Snow was still present downstream of the gages and there was no flow. This swale was conveying flow at a maximum top-width of 30 feet by May 29 (Photo 4.17). The maximum depth was 1.3 feet and the surface of the water was discontinuous with ice, snow, and vegetation. Stage and flow had decreased by May 30, after which monitoring was discontinued.

Stage data for the JC gages during breakup monitoring are contained in Table 4.4 and Graph 4.4.

PHOTO 4.16: DISMISSED UNNAMED SWALE CROSSING, LOOKING WEST; MAY 27, 2012

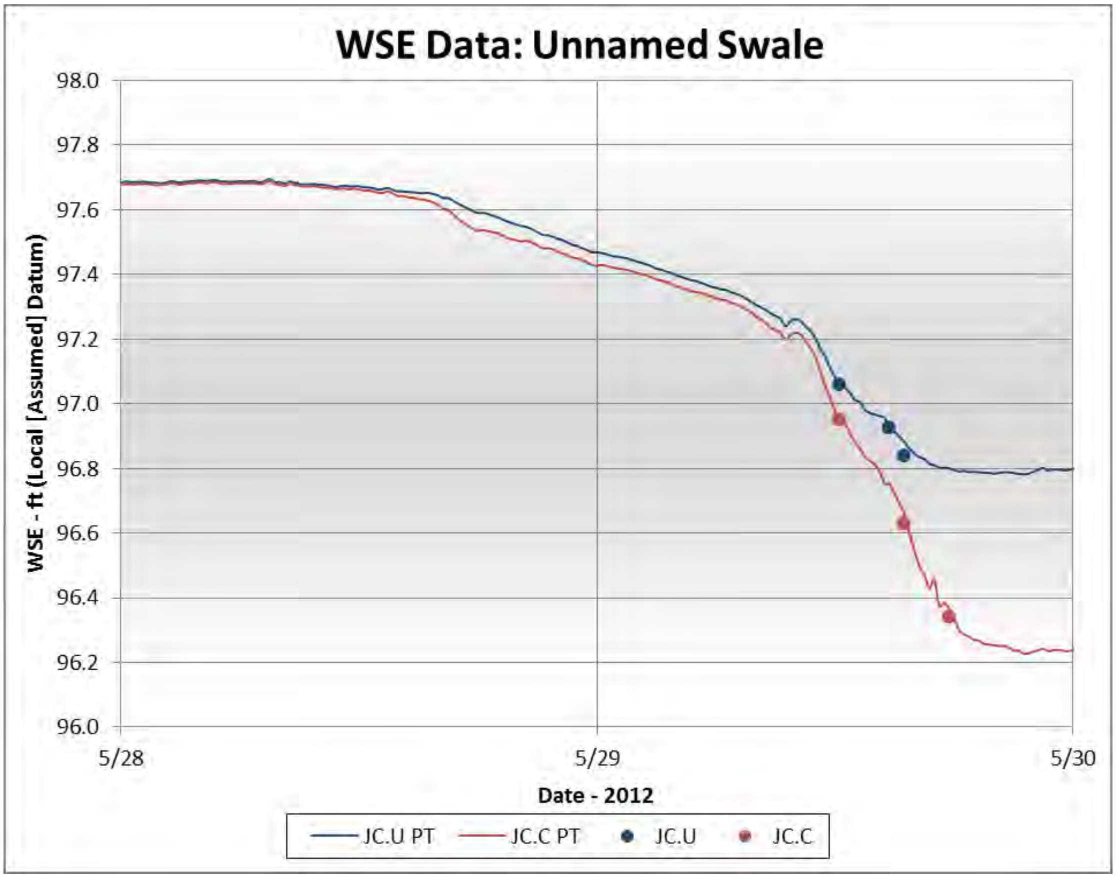
PHOTO 4.17: DISMISSED UNNAMED SWALE CROSSING, LOOKING NORTHEAST; MAY 29, 2012

TABLE 4.4: STAGE DATA, JC GAGES

Date and Time	WSE (feet)		Notes
	JC.U	JC.C	
5/28/12 7:30 AM	97.70	97.69	**Peak stage;** based on PT data
5/29/12 12:15 PM	97.06	96.95	
5/29/12 2:45 PM	96.92	-	
5/29/12 3:30 PM	96.84	96.63	
5/29/12 5:45 PM	-	96.34	

Notes:

1. Elevations are based on JC at 100.00 feet (local datum - assumed elevation) surveyed by Baker in 2012.
2. Local melt only through morning of May 28.
3. Only limited outflow was observed through the swale.



GRAPH 4.4: STAGE DATA, JC GAGES

5.0 DISCHARGE

Discharge was calculated at all monitoring locations using both direct and indirect methods. Measurements were performed at each site between May 24 and May 29 as close to peak stage as conditions allowed. Peak discharge through each crossing location was determined based on data collected during direct measurements and recorded stage values.

5.1 DIRECT DISCHARGE

Direct discharge measurements were performed as frequently as possible during peak stage conditions at each site. Data was collected using standard USGS techniques. Total discharge was determined by summing measurements in subsections along a cross-section, with the exception of SC2B. Flow at SC2B was conveyed over and through the snowpack instead of the natural channel, resulting in dynamic conditions impacting the accuracy of the discharge measurements. Total discharge for this location was determined using the continuity equation.

Measurements were collected by boat at SC1 and SC2A and by wading at SC2B and JC. Wind, ice, and snow in the channel and vegetation influenced the discharge measurements. Conditions at each location during direct discharge measurements are discussed in the following sections. Results are summarized in Table 5.1 and complete field data is included in 0.

5.1.1 SADIE CREEK 1 (SC1)

Direct discharge measurements were conducted at SC1 on May 24, 26, 27, and 28 near the centerline gaging location (SC1.C). The channel geometry at SC1.C was broad and shallow. Maximum measured top-width was 291 feet. Maximum measured depth was 4.4 feet. Large areas of ineffective flow covered both overbanks with the majority of flow being conveyed through the middle of the channel.

Conditions affecting discharge measurements were fairly consistent each day (Photo 5.1). A strong west wind persisted throughout the monitoring period and was strong enough to push the boat upstream of the tagline during each measurement. Direct discharge measurements were most likely impacted by the flow resistance induced by the wind, which varied in strength, and was weakest on May 26. The reach banks were free of snow prior to the first discharge measurement on May 24. Bottom-fast ice lined approximately half the channel cross section and remained in place during all discharge measurements. Bottom-fast ice began lifting upstream and downstream of the SC1.C on May 26. These floes gathered 0.5 RM upstream of SC1 and remained in place. No floes were in the vicinity of the crossing location during discharge measurements. No significant backwater effects were evident at SC1 as a result of downstream ice conditions.

PHOTO 5.1: SC1 REACH UPSTREAM OF GAGES, LOOKING DOWNSTREAM; MAY 26, 2012

5.1.2 SADIE CREEK 2A (SC2A)

Direct discharge measurements were conducted at SC2A on May 25, 26, 27, and 28 near the centerline gaging location (SC2A.C). Maximum measured top-width was 162 feet. Maximum measured depth was 4.5 feet. Areas of ineffective flow covered both overbanks with the majority of flow being conveyed through the middle of the channel.

Conditions at SC2A were similar to SC1 and remained fairly consistent each day (Photo 5.2). Similar to SC1, wind resistance most likely had an impact on direct discharge measurements. The reach overbanks were free of snow for all direct discharge measurements. Bottom-fast ice was present along the profile, but was not continuous across the entire width. Ice was observed lifting off the channel bottom both upstream and downstream of SC2A on May 26, but bottom-fast ice was not observed lifting at SC2A.C. No floes were in the vicinity of the crossing location during measurements and no significant backwater effects were observed.

PHOTO 5.2: SC2A REACH, LOOKING SOUTH; MAY 25, 2012

5.1.3 SADIE CREEK 2B (SC2B)

Direct discharge measurements were conducted at SC2B on May 25 and 26 near the centerline gaging location (SC2B.C). As discussed, flow at this location moved on top of and through the snowpack (Photo 5.3 and Photo 5.4) for the duration of the monitoring period, gradually cutting a rectangular channel toward the natural bed. The geometry of the incised channel consistently changed, as did the gradient. Data was collected as conditions allowed and with regard to safety. Mean velocity was estimated from a single measurement from the center of the channel at 60% water depth from the surface. Cross-sectional area was determined using rough measurements of the width and depth of the channel, which was soft and saturated snow. Discharge was computed using the continuity equation (Equation 1) where Q is discharge, A is cross-sectional area, and V is velocity.

$$Q = A * V \qquad \text{(EQ 1)}$$

During the first measurement on May 25, the channel in the snowpack was approximately 5 feet wide and 2 feet deep. During the next morning's discharge measurement, the channel had incised approximately 3.5 feet into the snowpack, and was approximately 6.5 feet wide and 4 feet deep. Flow was non-laminar and the velocity across the entire cross section was high. An undetermined quantity of ineffective flow was contained within the surrounding snow. Flow eroded though the entire depth of the snowpack by May 27. On May 27, the majority of the flow was located under the snowpack as it connected with the natural channel, preventing discharge measurements.

The direct discharge measurements were compared to the SC1 and SC2A discharge measurements using a conservation of mass analysis (Equation 2) where:

$$Q_{SC1} = Q_{SC2A} * Q_{SC2B} \qquad \text{(EQ 2)}$$

SC1 is downstream of the SC2A and SC2B bifurcation and because no other major tributaries are present between the monitoring locations, this provides a first order approximation for the reasonableness of the SC2B direct discharge measurements. Based on these results, the flow conditions, and the ability to access the incised channel, more confidence was placed on the May 25 direct discharge measurement than the May 26 measurement.

PHOTO 5.3: SC2B CONDITIONS DURING DISCHARGE MEASUREMENT, LOOKING NORTHEAST; MAY 25, 2012

PHOTO 5.4: CONDITIONS UPSTREAM OF SC2B.U, LOOKING NORTH; MAY 26, 2012

5.1.4 UNNAMED SWALE (JC)

Local melt was present under the snow at JC until flow was observed in the unnamed swale on May 29 (Photo 5.5). One discharge measurement was performed at the centerline gage location (JC.C).

Velocity was slow and the depth of water was low. Discharge was impacted by vegetation and snow in the channel.

PHOTO 5.5: JC CONDITIONS BEFORE DISCHARGE MEASUREMENT, LOOKING DOWNSTREAM; MAY 29, 2012

5.1.5 DIRECT DISCHARGE RESULTS

Table 5.1 summarizes the results of the direct discharge measurements performed during the 2012 breakup study.

TABLE 5.1: DIRECT DISCHARGE MEASUREMENT RESULTS SUMMARY

Location	Date & Time	WSE[1,4] (ft)	Width (ft)	Area (ft^2)	Mean Velocity (ft/s)	Discharge (cfs)	Measurement Rating[2]	Meter Type	Number of Sections	Measurement Type
SC1	5/24/12 3:40 PM	88.01[3]	291	662	0.13	83	Poor	Price AA	29	Boat
	5/26/12 11:50 AM	87.46	283	565	0.37	206	Fair	Price AA	30	Boat
	5/27/12 10:25 AM	87.44	273	577	0.38	**219**	Fair	Price AA	30	Boat
	5/28/12 10:00 AM	87.10	273	544	0.34	186	Fair	Price AA	30	Boat
SC2A	5/25/12 4:00 PM	92.55	162	362	0.63	**228**	Fair	Price AA	18	Boat
	5/26/12 2:00 PM	92.46	158	342	0.46	158	Fair	Price AA	17	Boat
	5/27/12 12:50 PM	92.64	162	369	0.62	227	Fair	Price AA	34	Boat
	5/28/12 11:55 AM	92.19	159	335	0.49	165	Fair	Price AA	22	Boat
SC2B	5/25/12 6:00 PM	96.09	5	11	5.17	54	Poor	Price AA	1	Wading
	5/26/12 10:40 AM	94.00	6.5	29	5.53	**162**	Poor	Price AA	1	Wading
JC	5/29/12 2:45 PM	96.92	19	17	0.41	**7**	Fair	Price AA	20	Wading

1. Centerline WSE at start of measurement.
2. Measurement Rating:

E - Excellent:	Point plots nearly on the rating curve; is within 2% of true value
G - Good:	Within 5% of true value
F - Fair:	Within 7-10% of true value
P - Poor:	Velocity <0.70 ft/s; Shallow depth for measurement, less than 15% of true value

3. WSE measured at upstream gage.
4. Elevations are based on a local benchmark of an assumed datum.

5.2 INDIRECT DISCHARGE

The slope-area method was used to calculate the indirect discharge at all locations. Equations used to estimate discharge through an open channel assume ideal conditions for a straight reach. Ideal conditions are represented by relative uniformity of physical characteristics through a reach, including cross sectional geometry, slope of the water surface, and channel roughness. Actual physical characteristics rarely represent ideal conditions.

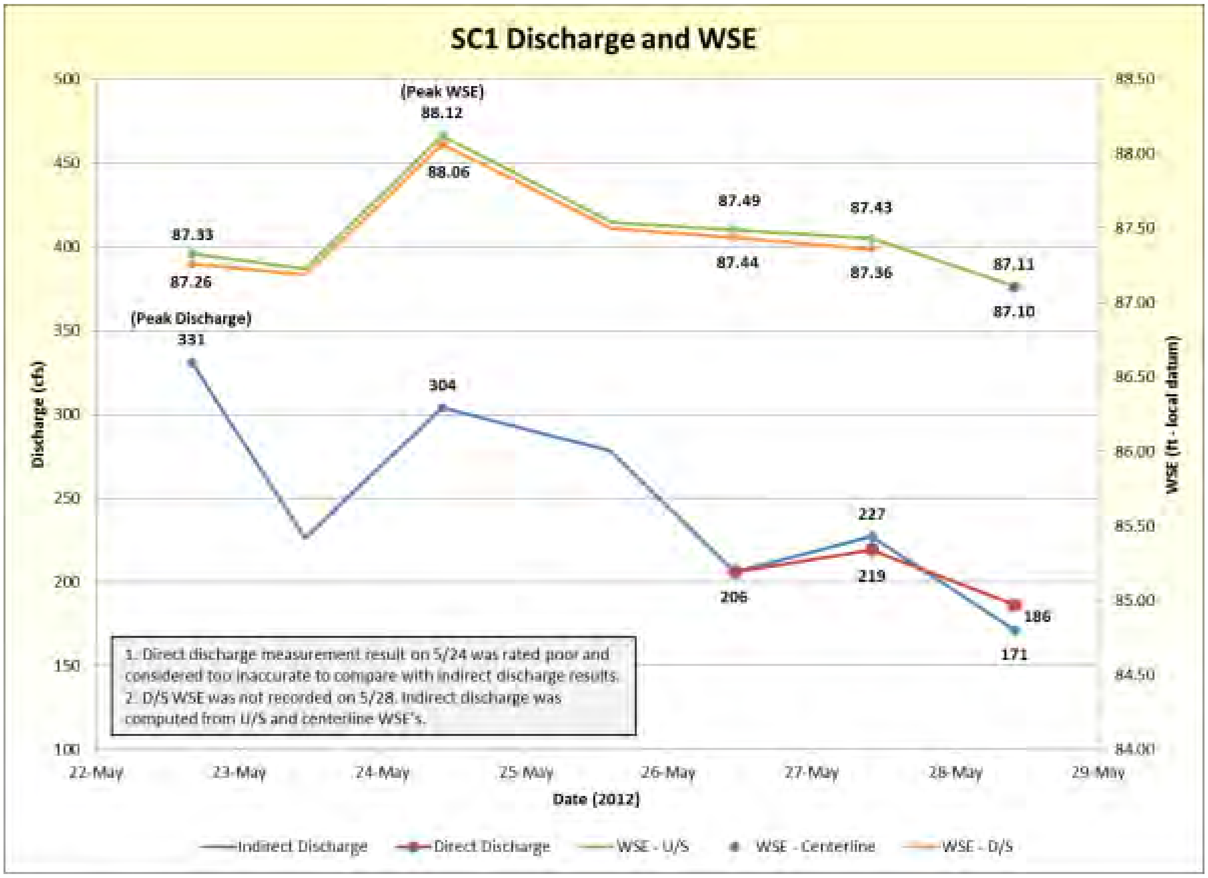
Calculations performed for peak flow at the stream crossings are based on data collected closest to the time of peak stage as possible to best represent peak discharge conditions. The presence and rapidly changing conditions of ice and snow in these streams during breakup flooding greatly affects actual discharge quantities. These effects were particularly apparent at the SC2B crossing location. In addition to energy losses due to the presence of snow and ice, additional losses in these streams are primarily attributable to factors such as strong winds, vegetation in the channel and overbanks, and irregularly shaped banks. The channel roughness was adjusted to calibrate the indirect discharge measurements and account for energy losses. The roughness was determined using cross section data and the slope of the water surface elevation at the time of direct discharge measurements. The slope of the water surface is assumed to represent the slope of the channel which is assumed to remain constant through the reach.

Physical data including WSE, cross sectional geometry, and factors contributing to energy losses were collected during direct discharge measurements and incorporated into the indirect discharge calculations. Indirect discharge calculations and results are discussed for the monitoring locations in the following sections.

5.2.1 SADIE CREEK 1 (SC1)

Channel geometry and roughness from direct discharge measurements on May 26 were used to calibrate the indirect discharge calculations. The May 26 direct discharge measurement was considered the most accurate based on flow conditions, including wind impacts. Close agreement between the other direct discharge values and the indirect discharge values, with the exception of the May 24 direct discharge measurement, justifies using the May 26 calibration. The May 24 direct discharge measurement was heavily impacted by opposing winds and was considered too inaccurate to be included for comparison with indirect discharge results. Channel geometry, the presence of bottom-fast ice, and snow conditions along the banks remained relatively consistent through the monitoring period; therefore, the calibration was deemed applicable for all indirect discharge measurements. A comparison of direct and indirect discharge values and WSE at SC1 is shown in Graph 5.1.

Peak discharge at SC1 was calculated as 331 cfs, occurring on May 22.

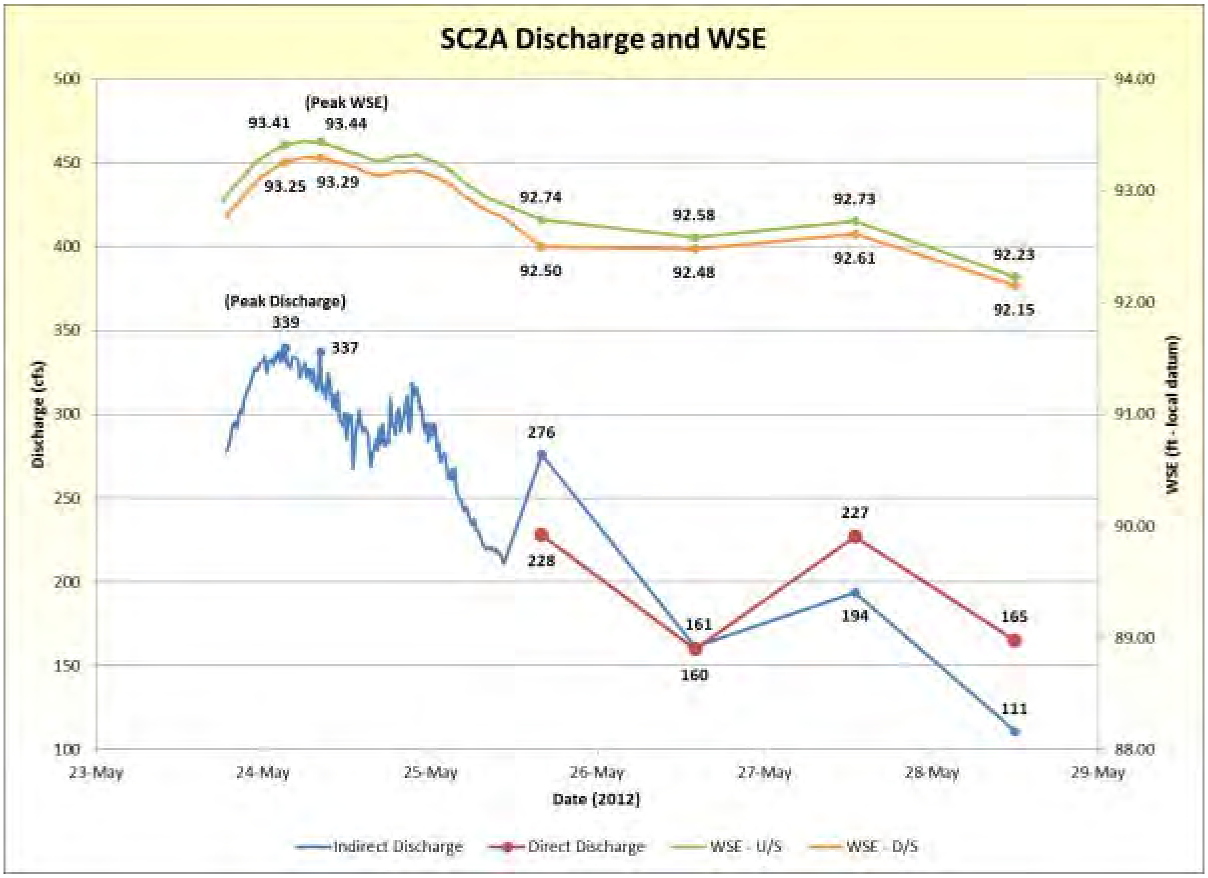


GRAPH 5.1: SC1 DISCHARGE AND WSE

5.2.2 SADIE CREEK 2A (SC2A)

Channel geometry and roughness from direct discharge measurements on May 26 were used to calibrate the indirect discharge calculations. The May 26 direct discharge measurement was considered the most accurate based on flow conditions, including wind impacts. General agreement between the other direct discharge values and the indirect discharge values justifies using the May 26 calibration. Channel geometry, the presence of bottom-fast ice, and snow conditions along the banks remained relatively consistent through the monitoring period; therefore, the calibration was deemed applicable for all indirect discharge measurements. A comparison of direct and indirect discharge values and WSE at SC2A is shown in Graph 5.2.

Peak discharge at SC2A was calculated as 339 cfs, occurring on May 24.



GRAPH 5.2: SC2A DISCHARGE AND WSE

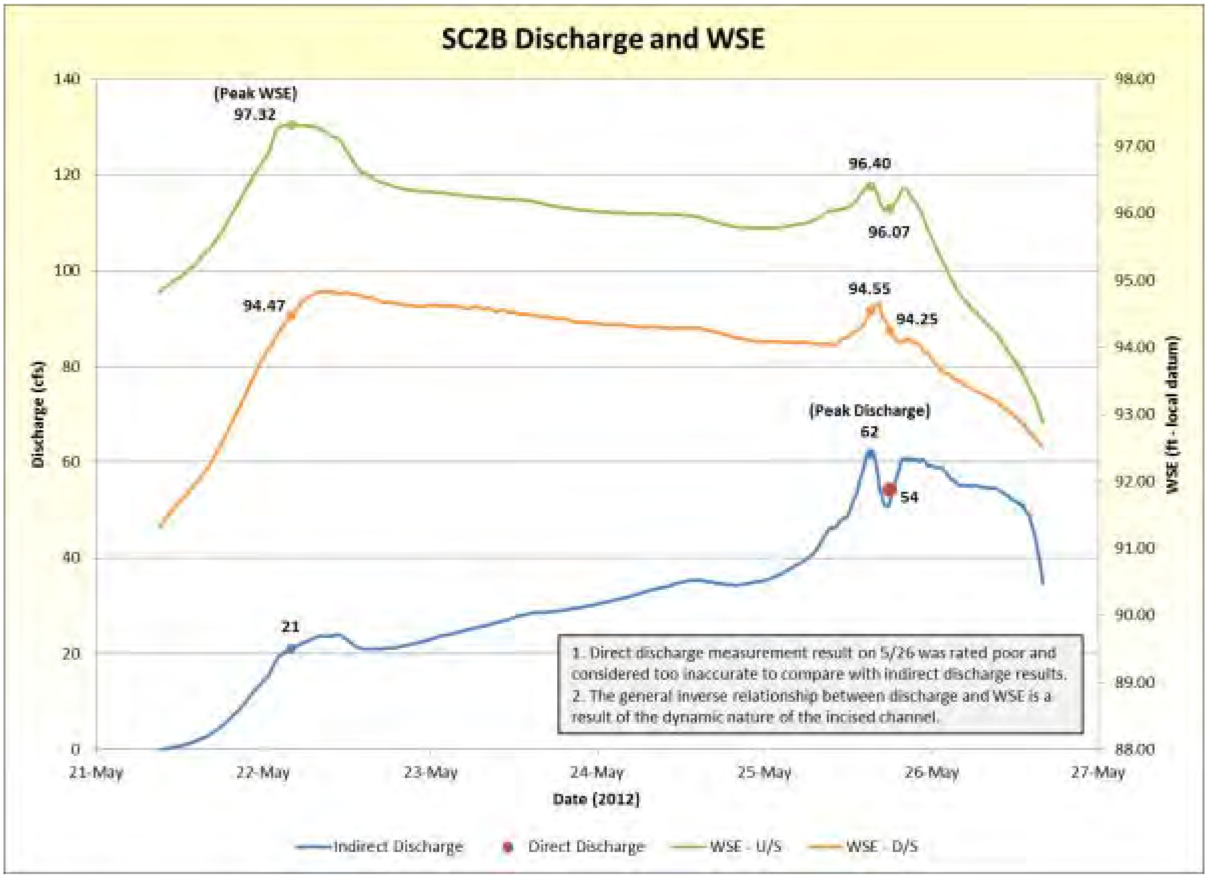
5.2.3 SADIE CREEK 2B (SC2B)

SC2B consisted of an incised channel cut through the snow pack during most of the monitoring period. The channel deepened and widened as melt progressed, and as a result the measured cross section geometry only represented the incised channel at the time of measurement. The incised channel was bordered by a zone of saturated snow. For this analysis, percolating flow through the saturated snow was considered ineffective. Energy losses in the narrow deep channel were most likely dominated by the irregularities and the porosity of the snow banks rather than the bed roughness.

Indirect discharge computations prior to May 25 used the roughness determined from the May 25 direct discharge measurement and linearly extrapolated channel geometry. Indirect discharge computations between May 25 and May 26 used a linearly interpolated roughness and channel geometry by holding the May 26 measured channel geometry and using the difference between the SC1 and SC2A discharge on May 26 as an approximate discharge for SC2B.

A comparison of direct and indirect discharge values at SC2B is shown in Graph 5.3. The dynamic nature of the incised channel at SC2B resulted in an inverse relationship between the discharge and the WSE. As snow melt progressed and discharge increased, the widening and deepening of the channel caused the WSE to decrease. The May 26 direct discharge measurement was considered too inaccurate to be included for comparison with indirect discharge results. The single velocity measurement in the widening channel resulted in an overestimate of discharge.

Peak discharge at SC2B was determined to be 62 cfs, occurring on May 25. This value was the result of indirect discharge computations based on coarse direct discharge measurements. It is presented as a first order approximation and should be evaluated in terms of conditions at the time of measurement.



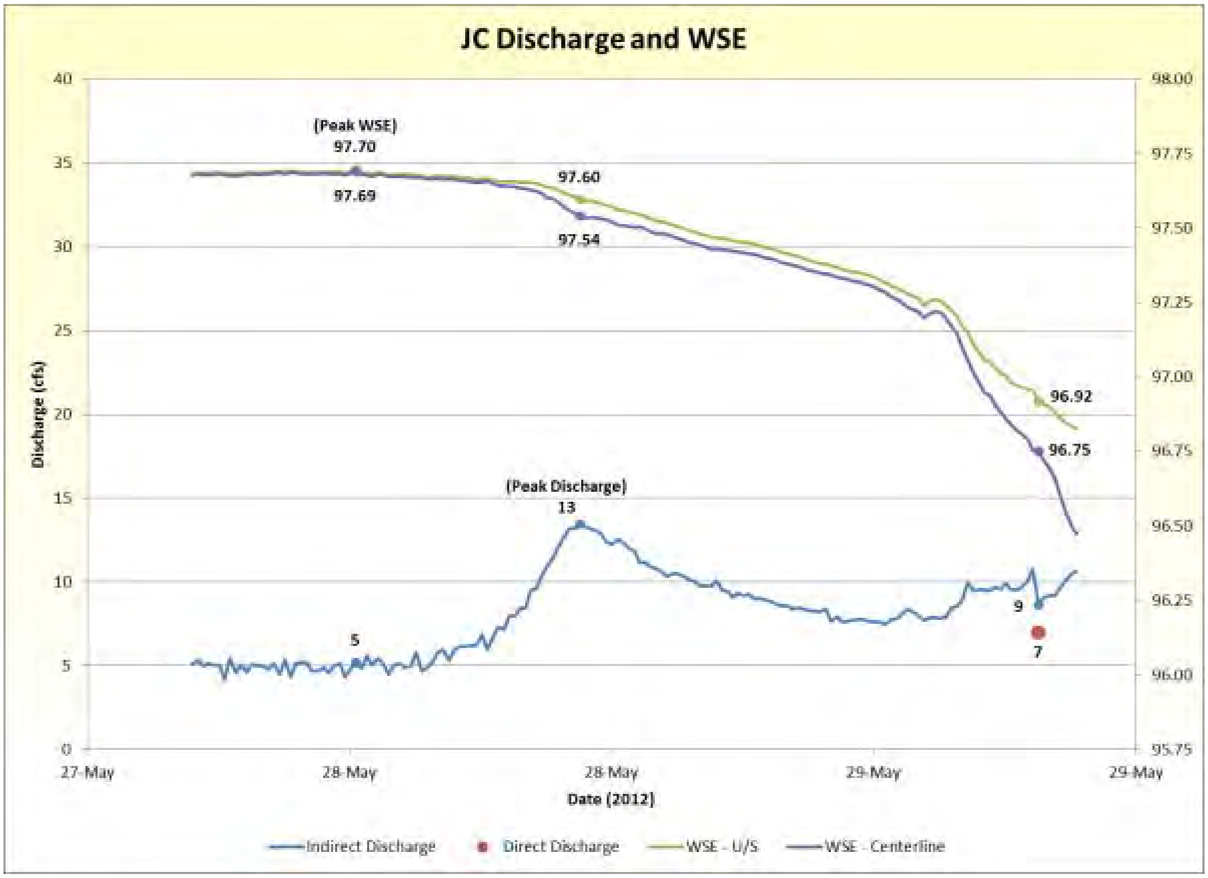
1. Direct discharge measurement result on 5/26 was rated poor and considered too inaccurate to compare with indirect discharge results.
2. The general inverse relationship between discharge and WSE is a result of the dynamic nature of the incised channel.

GRAPH 5.3: SC2B DISCHARGE AND WSE

5.2.4 UNNAMED SWALE (JC)

Flow at this location was the result of local melting and draining of ponded water in the gage vicinity. Measureable flow was only observed on May 29, and one direct discharge measurement was performed. Channel geometry and roughness from the measurement were used to calibrate the indirect discharge calculations. Discontinuous snow, ice, and vegetation were present in the channel during the direct discharge measurement. These conditions are considered representative of the swale for indirect discharge calculations.

A comparison of direct and indirect discharge values and WSE at JC is shown in Graph 5.4. Peak discharge at JC was calculated as 13 cfs, occurring on May 28.



GRAPH 5.4: JC DISCHARGE AND WSE

5.3 PEAK DISCHARGE RESULTS

Table 5.2 summarizes the results of peak discharge through all crossing locations investigated for the 2012 spring breakup study. All peak discharge values are the result of indirect calculations.

TABLE 5.2: PEAK DISCHARGE SUMMARY

Location	Date & Time	WSE[1] (ft)			Discharge[2] (cfs)	Cross-Sectional Area (ft^2)	Mean Velocity (ft/s)
		U/S	Centerline[3]	D/S			
SC1	5/22/12 4:00 PM	87.33	87.30	87.26	331	535	0.62
SC2A	5/24/12 3:15 AM	93.41	93.33	93.25	339	490	0.69
SC2B	5/25/12 3:15 PM	96.40	95.48	94.55	62	29	5.20
JC	5/28/12 5:45 PM	97.60	97.54	-	13	30	0.44

[1] Elevations are based on a local benchmark of an assumed datum; WSE at the time of peak discharge.

[2] Discharge is based on slope of WSE between U/S and D/S gages; U/S and centerline gages at JC.

[3] WSE's at SC1, SC2A, and SC2B centerline gages are averages between U/S and D/S WSE's.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Spring breakup at all crossing locations was characterized by relatively low flow. The overbanks were inundated with predominantly ineffective flow, with the majority of flow being conveyed through the thalweg of each channel. At all locations except SC2B, velocities were slow. Considering the floodwater volumes conveyed and associated top-widths of Sadie Creek, a bridge is recommended where the proposed road crosses it at both SC1 along the Upgrade Route (Option 1) and SC2A along the dismissed upper (Option 2). A culvert, or set of culverts, could convey the observed flow at SC2B along the dismissed upper Option 2, but ensuring the functionality of the intended design could be challenging for this crossing location, considering the migration of floodwaters down through the snowpack. A culvert, or set of culverts, is recommended where the proposed road crosses the unnamed swale.

The spring breakup discharge values are much lower than those estimated for Sadie Creek in the *Kotzebue to Cape Blossom Road Reconnaissance Study* (DOT&PF 2011). The study included estimated discharge values for return periods ranging from 2 years to 500 years. The 2-year flood event has an estimated discharge of 668 cfs, which is 1.97 times greater than the 2012 spring breakup peak discharge of 339 cfs. The comparison reinforces the conclusion that the 2012 spring breakup experienced low discharge.

7.0 REFERENCES

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Appendix A 2012 GAGE LOCATIONS AND VERTICAL CONTROL

2012 Gage Locations				
Gage Site	**Gage**	**Latitude (NAD83)**	**Longitude (NAD83)**	**Basis of Elevation**
Sadie Creek 1				
Upstream	SC1.U-A1	N 66.81750°	W 162.50974°	SC1
	SC1.U-A	N 66.81760°	W 162.50997°	
	SC1.U-B	N 66.81762°	W 162.51004°	
	SC1.U-C	N 66.81764°	W 162.51007°	
	SC1.U-PT[1]	N 66.81755°	W 162.50983°	
Centerline	SC1.C-A	N 66.81709°	W 162.51267°	SC1
	SC1.C-B	N 66.81713°	W 162.51264°	
	SC1.C-C	N 66.81721°	W 162.51259°	
	SC1.C-D[2]	N 66.81726°	W 162.51257°	
Downstream	SC1.D-A	N 66.81503°	W 162.51791°	SC1
	SC1.D-B	N 66.81508°	W 162.51836°	
	SC1.D-C	N 66.81508°	W 162.51842°	
	SC1.D-D	N 66.81506°	W 162.51845°	
	SC1.D-PT[1]	N 66.81504°	W 162.51788°	
Sadie Creek 2A				
Upstream	SC2A.U-A	N 66.81342°	W 162.46252°	SC2A
	SC2A.U-B	N 66.81351°	W 162.46250°	
	SC2A.U-PT[1]	N 66.81340°	W 162.46253°	
Centerline	SC2A.C-A	N 66.81349°	W 162.46614°	SC2A
	SC2A.C-B	N 66.81361°	W 162.46599°	
	SC2A.C-C	N 66.81369°	W 162.46587°	
Downstream	SC2A.D-A1	N 66.81369°	W 162.46941°	SC2A
	SC2A.D-A	N 66.81376°	W 162.46948°	
	SC2A.D-B	N 66.81379°	W 162.46947°	
	SC2A.D-C	N 66.81382°	W 162.46950°	
	SC2A.D-PT[1]	N 66.81376°	W 162.46942°	
Sadie Creek 2B				
Upstream	SC2B.U-A[3]	N 66.82285°	W 162.46730°	SC2B
	SC2B.U-B	N 66.82286°	W 162.46731°	
Centerline	SC2B.C-A	N 66.82256°	W 162.46744°	SC2B
	SC2B.C-B	N 66.82257°	W 162.46750°	
Downstream	SC2B.D-A[3]	N 66.82226°	W 162.46753°	SC2B
	SC2B.D-B	N 66.82227°	W 162.46756°	
Unnamed Swale				
Upstream	JC.U-A[3]	N 66.85139°	W 162.54061°	JC
	JC.U-B	N 66.85141°	W 162.54073°	
Centerline	JC.C-A[3]	N 66.85154°	W 162.54006°	JC
	JC.C-B[4]	N 66.85169°	W 162.54023°	

[1] Pressure transducer on angle iron

[2] Barologger on top of gage

[3] Pressure transducer on bottom of gage

[4] Angle iron without gage

2012 Vertical Control					
Control	**Elevation[1]**	**Latitude (NAD83)**	**Longitude (NAD83)**	**Control Type**	**Reference**
JC	100.00	N 66.85173°	W 162.54024°	Rebar	Baker 2012
SC1	100.00	N 66.81744°	W 162.51260°	Rebar	Baker 2012
SC2A	100.00	N 66.81385°	W 162.46576°	Rebar	Baker 2012
SC2B	100.00	N 66.82269°	W 162.46822°	Rebar	Baker 2012

[1] Elevations are based on a local benchmark of an assumed datum.

Appendix B DISCHARGE MEASUREMENT NOTES

Baker

Discharge Measurement Notes

Date: May 24, 2012
Computed By: SMC
Checked By: WAB

Location Name: Sadie Creek 1

Party: SMC, WAB
Start: 3:40 PM
Finish: 4:50 PM

Temp: 35 °F
Weather: Foggy, 25-35mph west winds

Channel Characteristics:

Width: 291 ft
Area: 662 sq ft
Velocity: 0.13 fps
Discharge: 83 cfs

Method: 0.6 & 0.8/0.2
Number of Sections: 29
Count: various

Spin Test: - revolutions after - seconds
Meter: Price AA

Meter: 0.6 ft above bottom of weight

Weight: 30 lbs

Wading Cable Ice [✓ Boat]

[✓ Upstream] or Downstream side of bridge

GAGE READINGS			
Gage	Start	Finish	Change
U/S A-1	0.78	0.74	-0.04

GPS Data:

Left Edge of Water:	N	66 °	48 '	58.6 "
	W	162 °	30 '	37.6 "
Right Edge of Water:	N	66 °	49 '	1.2 "
	W	162 °	30 '	41.2 "

LE Floodplain: ° ' . "

RE Floodplain: ° ' . "

Measurement Rated: Excellent Good Fair [✓ Poor] based on "Descriptions"

Descriptions:

Cross Section: Good cross section, not a lot of abrupt changes in depth, snow/ice out to 40' (approx 25' past right edge of water)

Flow: Little to no flow in overbank areas both sides, waves moving u/s due to wind, capping. Meter is changing large angles due to movement of the boat and little to no flow in overbanks.

Remarks: Shallow gradient, low velocities; a 20 knot west (u/s) wind pushing boat u/s of tagline, likely affecting flow.

SC1
May 24, 2012

Angle Coeff	Distance from initial point	Section Width	Water Depth	Observed Depth	Revolution Count	Time Increment	VELOCITY			Area	Discharge
							At Point	Mean in Vertical	Adjusted for Angle Coeff		
	(ft)	(ft)	(ft)	(%)		(sec)	(fps)	(fps)	(fps)	(s.f.)	(cfs)
REW @ 3:40 PM											
--	14	3.0	0.0	--	--	--	0	0	0	0	0
--	20	8.0	1.4	0.6	0	40	0	0	0	11.2	0
--	30	10.0	1.9	0.6	0	40	0	0	0	19.0	0
--	40	10.0	2.7	0.6	0	40	0	0	0	27.0	0
--	50	10.0	2.0	0.6	0	40	0	0	0	20.0	0
--	60	10.0	2.1	0.6	0	40	0	0	0	21.0	0
--	70	10.0	2.3	0.6	0	40	0	0	0	23.0	0
--	80	10.0	2.5	0.6	0	40	0	0	0	25.0	0
--	90	10.0	3.8	0.8 0.2	0 0	40 40	0 0	0	0	38.0	0
--	100	10.0	3.6	0.8 0.2	0 0	40 40	0 0	0	0	36.0	0
--	110	10.0	4.0	0.8 0.2	0 0	40 40	0 0	0	0	40.0	0
--	120	10.0	4.1	0.8 0.2	0 0	40 40	0 0	0	0	41.0	0
--	130	10.0	3.8	0.8 0.2	0 0	40 40	0 0	0	0	38.0	0
0.99	140	10.0	3.2	0.8 0.2	5 10	60 40	0.20 0.57	0.39	0.38	32.0	12.21
0.99	150	10.0	3.1	0.8 0.2	10 15	50 40	0.46 0.84	0.65	0.65	31.0	20.00
0.99	160	10.0	3.0	0.8 0.2	7 15	40 45	0.40 0.75	0.58	0.57	30.0	17.17
0.98	170	10.0	3.3	0.8 0.2	7 10	46 40	0.35 0.57	0.46	0.45	33.0	14.91
0.96	180	10.0	2.4	0.6	7	40	0.40	0.40	0.39	24.0	9.30
0.7	190	10.0	2.5	0.6	3	70	0.11	0.11	0.08	25.0	1.97
0.7	200	10.0	1.8	0.6	3	40	0.18	0.18	0.13	18.0	2.31
0.7	210	10.0	1.6	0.6	3	90	0.09	0.09	0.06	16.0	1.02
0.94	220	10.0	1.5	0.6	3	40	0.18	0.18	0.17	15.0	2.58
0.4	230	10.0	1.5	0.6	3	60	0.13	0.13	0.05	15.0	0.77
0.4	240	10.0	1.5	0.6	3	40	0.18	0.18	0.07	15.0	1.10
--	250	10.0	1.5	0.6	0	40	0	0	0	15.0	0
--	260	10.0	1.4	0.6	0	40	0	0	0	14.0	0
--	270	10.0	1.4	0.6	0	40	0	0	0	14.0	0
--	280	17.5	1.5	0.6	0	40	0	0	0	26.3	0
--	305	12.5	0.0	--	--	--	0	0	0	0	0
LEW @ 4:50 PM											

Total Discharge: **83.34** cfs

Baker

Discharge Measurement Notes

Date: May 26, 2012
Computed By: SMC
Checked By: WAB

Location Name: Sadie Creek 1

Party: WAB, VJ   Start: 11:50 AM   Finish: 1:00 PM

Temp: 35-40 °F   Weather: Clear, Windy

Channel Characteristics:

Width: 283 ft   Area: 565 sq ft   Velocity: 0.37 fps   Discharge: 206 cfs

Method: 0.6 & 0.2/0.8   Number of Sections: 30   Count: various

Spin Test: - revolutions after - seconds   Meter: Price AA

GAGE READINGS			
Gage	Start	Finish	Change
Centerline Survey	87.46	87.38	-0.08

Meter: 0.6 ft above bottom of weight

Weight: 30 lbs

Wading Cable Ice [✓ Boat]

[✓ Upstream] or Downstream side of bridge

GPS Data:

Left Edge of Water:	N	66 °	48 '	58.6 "
	W	162 °	30 '	37.6 "
Right Edge of Water:	N	66 °	49 '	1.2 "
	W	162 °	30 '	41.2 "

LE Floodplain: ° ' . "

RE Floodplain: ° ' . "

Measurement Rated: Excellent [✓ Good] Fair Poor based on "Descriptions"

Descriptions:

Cross Section: Gradual changes in depth

Flow: Little to no flow in overbanks areas; stronger flow in the deeper, central part of the channel

Remarks: Strong wind blowing upstream; pushing boat upstream of tagline and potentially affecting flow (low velocities, shallow gradient). Grass in channel sometimes affecting flow measurements

SC1
May 26, 2012

Angle Coeff	Distance from initial point (ft)	Section Width (ft)	Water Depth (ft)	Observed Depth (%)	Revolution Count	Time Increment (sec)	VELOCITY			Area (s.f.)	Discharge (cfs)
							At Point (fps)	Mean in Vertical (fps)	Adjusted for Angle Coeff (fps)		
REW @ 11:50 AM											
--	1	4.5	0.0	--	--	--	0	0	0	0	0
0.2	10	9.5	1.3	0.6	3	45	0.16	0.16	0.03	12.4	0.41
0.75	20	10.0	1.9	0.6	5	44	0.27	0.27	0.20	19.0	3.82
0.96	30	10.0	2.2	0.6	5	55	0.22	0.22	0.21	22.0	4.61
0.92	40	10.0	1.5	0.6	3	45	0.16	0.16	0.15	15.0	2.27
0.96	50	10.0	1.7	0.6	3	40	0.18	0.18	0.18	17.0	2.99
0.99	60	10.0	1.9	0.6	7	50	0.33	0.33	0.32	19.0	6.14
1	70	10.0	2.6	0.6	10	45	0.51	0.51	0.51	26.0	13.20
1	80	10.0	3.7	0.8 0.2	10 15	45 57	0.51 0.60	0.55	0.55	37.0	20.46
1	90	10.0	3.5	0.8 0.2	10 15	53 51	0.43 0.67	0.55	0.55	35.0	19.25
0.98	100	10.0	3.8	0.8 0.2	7 15	40 55	0.40 0.62	0.51	0.50	38.0	19.04
0.98	110	10.0	3.6	0.8 0.2	10 15	40 48	0.57 0.71	0.64	0.63	36.0	22.51
0.96	120	10.0	3.4	0.8 0.2	10 15	50 55	0.46 0.62	0.54	0.52	34.0	17.59
0.98	130	10.0	3.3	0.8 0.2	10 10	44 40	0.52 0.57	0.54	0.53	33.0	17.59
0.99	140	10.0	3.2	0.8 0.2	10 10	47 40	0.49 0.57	0.53	0.52	32.0	16.73
0.96	150	10.0	3.2	0.8 0.2	10 10	53 41	0.43 0.56	0.49	0.47	32.0	15.20
0.92	160	10.0	2.7	0.6	10	47	0.49	0.49	0.45	27.0	12.09
0.9	170	10.0	2.1	0.6	7	47	0.35	0.35	0.31	21.0	6.54
0.9	180	10.0	1.4	0.6	5	46	0.26	0.26	0.23	14.0	3.24
0.9	190	10.0	1.4	0.6	3	88	0.09	0.09	0.08	14.0	1.17
0.9	200	10.0	1.2	0.6	0	40	0	0	0	12.0	0
--	210	10.0	1.0	0.6	0	40	0	0	0	10.0	0
1	220	10.0	1.0	0.6	3	90	0.09	0.09	0.09	10.0	0.91
--	230	10.0	1.0	0.6	0	40	0	0	0	10.0	0
1	240	10.0	1.0	0.6	2	100	0.06	0.06	0.06	10.0	0.62
--	250	10.0	1.0	0.6	0	40	0	0	0	10.0	0
--	260	10.0	1.0	0.6	0	40	0	0	0	10.0	0
--	270	10.0	1.0	0.6	0	40	0	0	0	10.0	0
--	280	6.8	0.5	0.6	0	40	0	0	0	3.0	0
--	283.5	1.8	0.0	--	--	--	0	0	0	0.0	0
LEW @ 1:00 PM											

Total Discharge: **206.39** cfs

Discharge Measurement Notes

Date: May 27, 2012
Computed By: SMC
Checked By: WAB

Location Name: Sadie Creek 1

Party: WAB, VJ   Start: 10:25 AM   Finish: 11:45 AM

Temp: 35-40 °F   Weather: 5-10 MPH west wind; Clear

Channel Characteristics:

Width: 273 ft   Area: 577 sq ft   Velocity: 0.38 fps   Discharge: 219 cfs

Method: 0.6 & 0.2/0.8   Number of Sections: 30   Count: various

Spin Test: - revolutions after - seconds   Meter: Price AA

Meter: 0.6 ft above bottom of weight

Weight: 30 lbs

Wading Cable Ice [✓ Boat]

[✓ Upstream] or Downstream side of bridge

GAGE READINGS			
Gage	Start	Finish	Change
Centerline Survey	87.436	87.413	-0.02

GPS Data:

Left Edge of	N	66 °	48 '	58.6 "
Water:	W	162 °	30 '	37.6 "
Right Edge of	N	66 °	49 '	1.2 "
Water:	W	162 °	30 '	41.2 "

LE Floodplain: ° ' "

RE Floodplain: ° ' "

Measurement Rated: Excellent [✓ Good] Fair Poor based on "Descriptions"

Descriptions:

Cross Section: Gradual changes in depth, bottomfast ice 12'-150' along stationing

Flow: Ripples in main channel, no flow in overbanks

Remarks: Shallow gradient, low velocities; wind blows/maintains boat u/s of tagline

SC1
May 27, 2012

Angle Coeff	Distance from initial point (ft)	Section Width (ft)	Water Depth (ft)	Observed Depth (%)	Revolution Count	Time Increment (sec)	VELOCITY			Area (s.f.)	Discharge (cfs)
							At Point (fps)	Mean in Vertical (fps)	Adjusted for Angle Coeff (fps)		
			REW @ 10:25 AM								
--	10	2.5	1.3	0.6	0	40	0	0	0	3.3	0
0.4	15	5.0	1.3	0.6	3	72	0.11	0.11	0.04	6.5	0.29
0.94	20	7.5	1.4	0.6	5	57	0.21	0.21	0.20	10.5	2.08
0.94	30	10.0	2.5	0.6	5	62	0.20	0.20	0.18	25.0	4.60
0.98	40	10.0	2.6	0.6	5	54	0.22	0.22	0.22	26.0	5.66
0.5	50	10.0	1.4	0.6	3	72	0.11	0.11	0.05	14.0	0.77
0.85	60	10.0	1.7	0.6	7	48	0.34	0.34	0.29	17.0	4.90
0.92	70	10.0	1.9	0.6	10	49	0.47	0.47	0.43	19.0	8.18
0.98	80	10.0	2.8	0.8 0.2	10	50	0.46	0.46	0.45	28.0	12.59
0.98	90	10.0	4.2	0.8 0.2	10 15	47 50	0.49 0.68	0.58	0.57	42.0	24.00
0.98	100	10.0	3.8	0.8 0.2	10 20	40 57	0.57 0.79	0.68	0.67	38.0	25.33
0.96	110	10.0	4.2	0.8 0.2	10 15	41 41	0.56 0.82	0.69	0.66	42.0	27.82
0.99	120	10.0	3.5	0.8 0.2	10 15	50 45	0.46 0.75	0.61	0.60	35.0	20.99
0.9	130	10.0	3.5	0.8 0.2	10 10	46 40	0.50 0.57	0.53	0.48	35.0	16.79
0.9	140	10.0	3.7	0.8 0.2	10 15	44 55	0.52 0.62	0.57	0.51	37.0	18.95
0.9	150	10.0	3.6	0.8 0.2	10 20	46 59	0.50 0.77	0.63	0.57	36.0	20.45
0.85	160	10.0	2.8	0.6	10	46	0.50	0.50	0.42	28.0	11.83
0.85	170	10.0	2.1	0.6	15	70	0.49	0.49	0.42	21.0	8.75
0.85	180	10.0	1.6	0.6	5	46	0.26	0.26	0.22	16.0	3.50
0.85	190	10.0	1.3	0.6	3	80	0.10	0.10	0.09	13.0	1.11
1	200	10.0	1.1	0.6	3	90	0	0	0	11.0	0
--	210	10.0	1.0	0.6	0	40	0	0	0	10.0	0
--	220	10.0	1.0	0.6	0	90	0	0	0	10.0	0
1	230	10.0	1.0	0.6	3	100	0.08	0.08	0.08	10.0	0.84
--	240	10.0	1.1	0.6	0	100	0	0	0	11.0	0
--	250	10.0	1.0	0.6	0	40	0	0	0	10.0	0
--	260	10.0	1.0	0.6	0	40	0	0	0	9.5	0
--	270	10.0	0.9	0.6	0	40	0	0	0	9.0	0
--	280	6.5	0.6	0.6	0	40	0	0	0	3.8	0
--	283	1.5	0.0	--	--	--	0	0	0	0.0	0
			LEW @ 11:45 PM								

Total Discharge: **219.42** cfs

Baker

Discharge Measurement Notes

Date: May 28, 2012
Computed By: SMC
Checked By: WAB

Location Name: Sadie Creek 1

Party: WAB, SMC, VJ Start: 10:00 AM Finish: 11:00 AM

Temp: 30 °F Weather: Overcast, patchy fog. 5-10 mph winds

Channel Characteristics:

Width: 273 ft Area: 544 sq ft Velocity: 0.34 fps Discharge: 186 cfs

Method: 0.6 & 0.2/0.8 Number of Sections: 30 Count: various

Spin Test: - revolutions after - seconds Meter: Price AA

Meter: 0.6 ft above bottom of weight

Weight: 30 lbs

Wading Cable Ice [✓ Boat]

[✓ Upstream] or Downstream side of bridge

GAGE READINGS			
Gage	Start	Finish	Change
Centerline Survey	87.103	87.099	0.00

GPS Data:

Left Edge of Water:	N	66 °	48 '	58.6 "
	W	162 °	30 '	37.6 "
Right Edge of Water:	N	66 °	49 '	1.2 "
	W	162 °	30 '	41.2 "

LE Floodplain: ° ' "

RE Floodplain: ° ' "

Measurement Rated: Excellent [✓ Good] Fair Poor based on "Descriptions"

Descriptions:

Cross Section: Gradual changes in depth, grassy toward banks, bottomfast ice in the channel

Flow: Small ripples in main channel, flow near banks is calm

Remarks: Boat is u/s of tag line due to low flow and winds.

SC1
May 28, 2012

Angle Coeff	Distance from initial point (ft)	Section Width (ft)	Water Depth (ft)	Observed Depth (%)	Revolution Count	Time Increment (sec)	VELOCITY			Area	Discharge
							At Point (fps)	Mean in Vertical (fps)	Adjusted for Angle Coeff (fps)	(s.f.)	(cfs)
REW @ 10:00 AM											
--	12	1.5	0.0	--	--	--	0	0	0	0.0	0
--	15	4.0	1.3	0.6	0	40	0	0	0	5.2	0
--	20	7.5	1.3	0.6	0	40	0	0	0	9.8	0
0.7	30	10.0	2.8	0.6	3	45	0.16	0.16	0.12	28.0	3.23
0.7	40	10.0	2.3	0.6	3	69	0.11	0.11	0.08	23.0	1.83
--	50	10.0	1.3	0.6	0	40	0	0	0	13.0	0
0.85	60	10.0	1.3	0.6	3	60	0.13	0.13	0.11	13.0	1.41
0.85	70	10.0	1.5	0.6	5	45	0.26	0.26	0.22	15.0	3.35
0.94	80	10.0	2.5	0.8 0.2	10	50	0.46	0.46	0.43	25.0	10.78
0.94	90	10.0	4.2	0.8 0.2	10 15	52 54	0.44 0.63	0.54	0.50	42.0	21.16
0.94	100	10.0	3.7	0.8 0.2	10 10	45 40	0.51 0.57	0.54	0.51	37.0	18.72
0.98	110	10.0	4.2	0.8 0.2	10 15	50 48	0.46 0.71	0.58	0.57	42.0	23.99
0.98	120	10.0	4.4	0.8 0.2	10 15	43 53	0.53 0.64	0.59	0.57	44.0	25.28
0.99	130	10.0	3.5	0.8 0.2	7 15	45 58	0.36 0.59	0.47	0.47	35.0	16.44
0.92	140	10.0	3.4	0.8 0.2	7 15	43 59	0.38 0.58	0.48	0.44	34.0	14.94
0.92	150	10.0	3.3	0.8 0.2	10 10	48 40	0.48 0.57	0.52	0.48	33.0	15.88
0.94	160	10.0	3.3	0.6	10 10	49 40	0.47 0.57	0.52	0.49	33.0	16.08
0.9	170	10.0	2.4	0.6	10	56	0.41	0.41	0.37	24.0	8.89
0.9	180	10.0	1.3	0.6	5	50	0.24	0.24	0.21	13.0	2.79
0.9	190	10.0	1.2	0.6	3	60	0.13	0.13	0.12	12.0	1.38
--	200	10.0	0.9	0.6	0	40	0	0	0	8.9	0
--	210	10.0	0.8	0.6	0	40	0	0	0	7.7	0
--	220	10.0	0.7	0.6	0	40	0	0	0	7.1	0
--	230	10.0	0.7	0.6	0	40	0	0	0	6.8	0
--	240	10.0	0.7	0.6	0	40	0	0	0	6.5	0
--	250	10.0	0.8	0.6	0	40	0	0	0	7.6	0
--	260	10.0	0.7	0.6	0	40	0	0	0	7.2	0
--	270	10.0	0.7	0.6	0	40	0	0	0	6.9	0
--	280	7.5	0.6	0.6	0	40	0	0	0	4.7	0
--	285	2.5	0.0	0.6	--	--	0	0	0	0.0	0
LEW @ 11:00 PM											

Total Discharge: **186.15** cfs

Baker

Discharge Measurement Notes

Date: May 25, 2012
Computed By: WAB
Checked By: SMC

Location Name: Sadie Creek 2A

Party: WAB, VJ   Start: 4:00 PM   Finish: 5:00 PM

Temp: 38 °F   Weather: Fog, clouds in the morning, clear in the afternoon, strong winds

Channel Characteristics:

Width: 162 ft   Area: 362 sq ft   Velocity: 0.63 fps   Discharge: 228 cfs

Method: 0.6 & 0.2/0.8   Number of Sections: 18   Count: various

Spin Test: - revolutions after - seconds   Meter: Price AA

Meter: 0.6 ft above bottom of weight

Weight: 30 lbs

Wading Cable Ice [✓ Boat]

[✓ Upstream] or Downstream side of bridge

GAGE READINGS			
Gage	Start	Finish	Change
D/S A-1	0.38	0.38	0.00
U/S A-1	0.585	0.57	-0.02

GPS Data:

Left Edge of Water:	N	66 °	48 '	46.5 "
	W	162 °	27 '	57.8 "
Right Edge of Water:	N	66 °	48 '	48.0 "
	W	162 °	27 '	57.9 "

LE Floodplain: ° ' "

RE Floodplain: ° ' "

Measurement Rated: Excellent Good [✓ Fair] Poor based on "Descriptions"

Descriptions:

Cross Section: Gradual changes in depth

Flow:

Remarks: Shallow gradient, low velocities, boat upstream of tagline due to strong winds. Long grass near banks made positioning the flow meter difficult.

SC2A
May 25, 2012

Angle Coeff	Distance from initial point (ft)	Section Width (ft)	Water Depth (ft)	Observed Depth (%)	Revolution Count	Time Increment (sec)	VELOCITY			Area (s.f.)	Discharge (cfs)
							At Point (fps)	Mean in Vertical (fps)	Adjusted for Angle Coeff (fps)		
REW @ 4:00PM											
--	25	5.0	0.0	--	--	--	0	0	0	0	0
0.97	35	10.0	1.6	0.6	5	47	0.25	0.25	0.24	16.0	3.92
1	45	10.0	1.8	0.6	5	44	0.27	0.27	0.27	18.0	4.83
1	55	10.0	1.7	0.6	5	43	0.27	0.27	0.27	17.0	4.66
1	65	10.0	1.9	0.6	5	48	0.25	0.25	0.25	19.0	4.70
0.99	75	10.0	2.0	0.6	7	42	0.39	0.39	0.38	20.0	7.63
1	85	10.0	2.2	0.6	10	56	0.41	0.41	0.41	22.0	9.05
1	95	10.0	2.9	0.6	20	54	0.83	0.83	0.83	29.0	24.20
1	105	10.0	3.7	0.8 0.2	20 20	44 40	1.02 1.12	1.07	1.07	37.0	39.59
1	115	10.0	3.8	0.8 0.2	20 25	45 51	1.00 1.10	1.05	1.05	38.0	39.83
0.99	125	10.0	3.6	0.8 0.2	20 20	48 41	0.94 1.09	1.01	1.00	36.0	36.17
0.98	135	10.0	2.9	0.8 0.2	15	40	0.84	0.84	0.83	29.0	24.00
0.97	145	10.0	2.6	0.8 0.2	15	53	0.64	0.64	0.62	26.0	16.19
0.85	155	10.0	2.0	0.8 0.2	10	40	0.57	0.57	0.48	20.0	9.67
0.4	165	10.0	1.6	0.8 0.2	7	42	0.39	0.39	0.15	16.0	2.47
0.3	175	10.0	1.6	0.8 0.2	3	40	0.18	0.18	0.05	16.0	0.88
--	185	10.0	0.3	0.6	0	40	0	0	0	3.3	0
--	187	6.0	0.0	--	--	--	0	0	0	0	0
LEW @ 5:00 PM											

Total Discharge: **227.79** cfs

Baker

Discharge Measurement Notes

Date: May 26, 2012
Computed By: SMC
Checked By: WAB

Location Name: Sadie Creek 2A

Party: WAB, VJ   Start: 2:00 PM   Finish: 3:00 PM

Temp: 38 °F   Weather: Clear and sunny, scattered clouds, windy

Channel Characteristics:

Width: 158 ft   Area: 342 sq ft   Velocity: 0.46 fps   Discharge: 158 cfs

Method: 0.6 & 0.2/0.8   Number of Sections: 17   Count: various

Spin Test: - revolutions after - seconds   Meter: Price AA

Meter: 0.6 ft above bottom of weight

Weight: 30 lbs

Wading Cable Ice [✓ Boat]

[✓ Upstream] or Downstream side of bridge

GAGE READINGS			
Gage	Start	Finish	Change
D/S A-1	0.455	0.430	-0.03
U/S A-1	0.223	0.220	0.00

GPS Data:

Left Edge of	N	66 °	48 '	46.5 "
Water:	W	162 °	27 '	57.8 "
Right Edge of	N	66 °	48 '	48.0 "
Water:	W	162 °	27 '	57.9 "

LE Floodplain: ° ' "

RE Floodplain: ° ' "

Measurement Rated: Excellent [✓ Good] Fair Poor based on "Descriptions"

Descriptions:

Cross Section: Gradual changes in depth

Flow:

Remarks: Boat upstream of tagline due to strong winds, low velocities, shallow gradient.

SC2A
May 26, 2012

							VELOCITY				
Angle Coeff	Distance from initial point (ft)	Section Width (ft)	Water Depth (ft)	Observed Depth (%)	Revolution Count	Time Increment (sec)	At Point (fps)	Mean in Vertical (fps)	Adjusted for Angle Coeff (fps)	Area (s.f.)	Discharge (cfs)
REW @ 2:00PM											
--	1.7	4.2	0.0	--	--	--	0	0	0	0	0
0.3	10	9.2	1.2	0.6	3.0	40.0	0.18	0.18	0.05	11.0	0.60
0.7	20	10.0	1.5	0.6	3.0	53.0	0.14	0.14	0.10	15.0	1.50
0.9	30	10.0	1.7	0.6	5.0	80.0	0.16	0.16	0.14	17.0	2.38
0.9	40	10.0	1.8	0.6	3.0	60.0	0.13	0.13	0.12	18.0	2.07
1	50	10.0	1.8	0.6	3.0	41.0	0.18	0.18	0.18	18.0	3.22
0.99	60	10.0	2.1	0.6	7.0	46.0	0.35	0.35	0.35	21.0	7.35
1	70	10.0	2.9	0.6	15.0	52.0	0.65	0.65	0.65	29.0	18.96
1	80	10.0	3.7	0.8 0.2	15 20	57 44	0.60 1.02	0.81	0.81	37.0	29.93
1	90	10.0	3.8	0.8 0.2	15 20	52 50	0.65 0.90	0.78	0.78	38.0	29.52
1	100	10.0	3.5	0.8 0.2	20 20	70 52	0.65 0.87	0.76	0.76	35.0	26.49
1	110	10.0	2.8	0.6	15.0	43.0	0.79	0.79	0.79	28.0	22.03
1	120	10.0	2.3	0.6	10.0	47.0	0.49	0.49	0.49	23.0	11.20
0.99	130	10.0	1.9	0.6	5.0	90.0	0.14	0.14	0.14	19.0	2.64
--	140	10.0	1.8	0.6	0.0	40.0	0	0	0	18.0	0
--	150	10.0	1.5	0.6	0.0	40.0	0	0	0	15.0	0
--	160	5.0	0.0	--	--	--	0	0	0	0	0
LEW @ 3:00 PM											

Total Discharge: **157.89** cfs

Baker

Discharge Measurement Notes

Date: May 27, 2012
Computed By: SMC
Checked By: WAB

Location Name: Sadie Creek 2A

Party: SMC, WAB, VJ   Start: 12:50 PM   Finish: 3:00 PM

Temp: °F   Weather: 10-15 MPH wind, clear

Channel Characteristics:

Width: 162 ft   Area: 369 sq ft   Velocity: 0.62 fps   Discharge: 227 cfs

Method: 0.6 & 0.2/0.8   Number of Sections: 34   Count: various

Spin Test: - revolutions after - seconds   Meter: Price AA

Meter: 0.6 ft above bottom of weight

Weight: 30 lbs

Wading Cable Ice [✓ Boat]

[✓ Upstream] or Downstream side of bridge

GAGE READINGS			
Gage	Start	Finish	Change
Centerline Survey	92.637	92.677	0.04

GPS Data:

Left Edge of	N	66 °	48 '	46.5 "
Water:	W	162 °	27 '	57.8 "
Right Edge of	N	66 °	48 '	48.0 "
Water:	W	162 °	27 '	57.9 "

LE Floodplain: ° ' "

RE Floodplain: ° ' "

Measurement Rated: Excellent Good [✓ Fair] Poor based on "Descriptions"

Descriptions:

Cross Section: Gradual changes in depth

Flow: Waves/ripples in main channel

Remarks: Wind 10-15 MPH pushed boat upstream side of tagline

SC2A
May 27, 2012

Angle Coeff	Distance from initial point (ft)	Section Width (ft)	Water Depth (ft)	Observed Depth (%)	Revolution Count	Time Increment (sec)	VELOCITY			Area (s.f.)	Discharge (cfs)
							At Point (fps)	Mean in Vertical (fps)	Adjusted for Angle Coeff (fps)		
			REW @ 12:50PM								
--	25	2.5	0.0	--	--	--	0	0	0	0	0
--	30	5.0	0.6	0.6	0	40	0	0	0	0	0
0.6	35	5.0	1.0	0.6	3	78	0.10	0.10	0.06	5.0	0.31
--	40	5.0	1.6	0.6	0	40	0	0	0	8.0	0
0.85	45	5.0	1.6	0.6	5	75	0.16	0.16	0.14	8.0	1.12
0.85	50	5.0	1.4	0.6	3	135	0.07	0.07	0.06	7.0	0.40
--	55	5.0	1.6	0.6	0	40	0	0	0	8.0	0
--	60	5.0	1.5	0.6	0	40	0	0	0	7.5	0
--	65	5.0	1.5	0.6	0	40	0	0	0	7.5	0
--	70	5.0	1.6	0.6	0	40	0	0	0	8.0	0
--	75	5.0	1.8	0.6	0	40	0	0	0	9.0	0
0.9	80	5.0	2.4	0.6	5	60	0.20	0.20	0.18	12.0	2.18
0.9	85	5.0	2.4	0.6	7	43	0.38	0.38	0.34	12.0	4.07
0.9	90	5.0	2.7	0.6	10	41	0.56	0.56	0.50	13.5	6.75
0.94	95	5.0	3.4	0.8 0.2	15 15	42 49	0.81 0.69	0.75	0.70	17.0	11.97
0.98	100	5.0	4.1	0.8 0.2	15 25	41 48	0.82 1.17	1.00	0.98	20.5	20.00
0.99	105	5.0	4.1	0.8 0.2	20 25	45 42	1.00 1.33	1.16	1.15	20.5	23.62
0.99	110	5.0	4.2	0.8 0.2	20 30	45 50	1.00 1.34	1.17	1.16	21.0	24.31
0.99	115	5.0	4.5	0.8 0.2	15 25	40 43	0.84 1.30	1.07	1.06	22.5	23.88
1	120	5.0	4.2	0.8 0.2	20 25	43 44	1.04 1.27	1.16	1.16	21.0	24.30
0.99	125	5.0	3.8	0.8 0.2	20 25	45 45	1.00 1.24	1.12	1.11	19.0	21.07
0.98	130	5.0	3.6	0.8 0.2	20 25	47 48	0.96 1.17	1.06	1.04	18.0	18.72
0.98	135	5.0	3.4	0.8 0.2	15 20	40 41	0.84 1.09	0.97	0.95	17.0	16.14
0.98	140	5.0	3.1	0.8 0.2	20 20	57 41	0.79 1.09	0.94	0.92	15.5	14.31
0.99	145	5.0	2.6	0.6	15	54	0.63	0.63	0.62	13.0	8.11
0.99	150	5.0	2.1	0.6	7	43	0.38	0.38	0.37	10.5	3.92
0.85	155	5.0	2.1	0.6	3	49	0.15	0.15	0.13	10.5	1.36
0.7	160	5.0	1.8	0.6	2	55	0.10	0.10	0.07	9.0	0.62
--	165	5.0	1.6	0.6	0	40	0	0	0	8.0	0
--	170	5.0	1.6	0.6	0	40	0	0	0	8.0	0
--	175	5.0	1.3	0.6	0	40	0	0	0	6.5	0
--	180	5.0	1.0	0.6	0	40	0	0	0	4.8	0
--	185	3.5	0.4	0.6	0	40	0	0	0	1.4	0
--	187	1.0	0.0	--	--	--	0	0	0	0.0	0
			LEW @ 3:00 PM								

Total Discharge: **227.15** cfs

Discharge Measurement Notes

Date: May 28, 2012
Computed By: SMC
Checked By: WAB

Location Name: Sadie Creek 2A

Party: WAB, SMC, VJ   Start: 11:55 AM   Finish: 12:35 PM

Temp: 30 °F   Weather: Overcast and foggy to clear, 10-15 mph west winds

Channel Characteristics:

Width: 159 ft   Area: 335 sq ft   Velocity: 0.49 fps   Discharge: 165 cfs

Method: 0.6 & 0.2/0.8   Number of Sections: 22   Count: various

Spin Test: - revolutions after - seconds   Meter: Price AA

GAGE READINGS			
Gage	Start	Finish	Change
Centerline Survey	92.185	92.157	0.03

Meter: 0.6 ft above bottom of weight

Weight: 30 lbs

Wading Cable Ice [✓ Boat]

[✓ Upstream] or Downstream side of bridge

GPS Data:

Left Edge of	N	66 °	48 '	46.5 "
Water:	W	162 °	27 '	57.8 "
Right Edge of	N	66 °	48 '	48.0 "
Water:	W	162 °	27 '	57.9 "

LE Floodplain: ° ' "

RE Floodplain: ° ' "

Measurement Rated: Excellent Good [✓ Fair] Poor based on "Descriptions"

Descriptions:

Cross Section: Uniform section, gradual changes in depths

Flow: Slow and calm, few ripples in the middle of the channel, flow near banks is calm.

Remarks: Shallow gradient, low velocities as wind maintains boat position upstream of tagline

SC2A
May 28, 2012

Angle Coeff	Distance from initial point (ft)	Section Width (ft)	Water Depth (ft)	Observed Depth (%)	Revolution Count	Time Increment (sec)	VELOCITY			Area (s.f.)	Discharge (cfs)
							At Point (fps)	Mean in Vertical (fps)	Adjusted for Angle Coeff (fps)		
REW @ 11:55 AM											
--	31	4.5	0.0	--	--	--	0	0	0	0	0
--	40	9.5	1.2	0.6	0	40	0	0	0	11.4	0
--	50	10.0	1.1	0.6	0	40	0	0	0	11.0	0
--	60	10.0	1.1	0.6	0	40	0	0	0	11.0	0
--	70	10.0	1.1	0.6	0	40	0	0	0	11.0	0
--	80	12.5	2.0	0.6	0	40	0	0	0	25.0	0
--	95	10.0	1.7	0.6	0	40	0	0	0	17.0	0
0.98	100	5.0	2.5	0.6	5	44	0.27	0.27	0.26	12.5	3.29
1	105	5.0	3.4	0.8 0.2	10 10	41 47	0.56 0.49	0.52	0.52	17.0	8.86
1	110	7.5	3.8	0.8 0.2	15 20	51 46	0.67 0.98	0.82	0.82	28.5	23.41
1	120	10.0	4.5	0.8 0.2	15 20	47 44	0.72 1.02	0.87	0.87	45.0	39.18
1	130	10.0	4.1	0.8 0.2	15 20	48 42	0.71 1.07	0.89	0.89	41.0	36.38
1	140	10.0	3.6	0.8 0.2	15 20	44 49	0.77 0.92	0.84	0.84	36.0	30.37
1	150	7.5	2.8	0.6	15	44	0.77	0.77	0.77	21.0	16.16
1	155	5.0	2.4	0.6	10	62	0.37	0.37	0.37	12.0	4.48
0.94	160	5.0	1.5	0.6	7	53	0.31	0.31	0.29	7.5	2.18
0.4	165	5.0	1.5	0.6	3	40	0.18	0.18	0.07	7.5	0.55
--	170	5.0	1.3	0.6	0	40	0	0	0	6.5	0
--	175	5.0	1.3	0.6	0	40	0	0	0	6.5	0
--	180	5.0	1.0	0.6	0	40	0	0	0	5.0	0
--	185	3.5	0.8	0.6	0	40	0	0	0	2.7	0
--	187	1.0	0.0	--	--	--	0	0	0	0.0	0
LEW @ 12:35 PM											

Total Discharge: **164.85** cfs

Baker

Discharge Measurement Notes

Date: May 25, 2012
Computed By: SMC
Checked By: WAB

Location Name: Sadie Creek 2B

Party: WAB, VJ   Start: 6:00 PM   Finish: 6:05 PM

Temp: 38 °F   Weather: Clear and sunny, scattered clouds

Channel Characteristics:

Width: 5 ft   Area: 11 sq ft   Velocity: 5.17 fps   Discharge: 54 cfs

Method: Standard   Number of Sections: 1   Count: N/A

Spin Test: N/A revolutions after N/A seconds   Meter:

GAGE READINGS			
Gage	Start	Finish	Change
D/S B	1.05	1.05	0.00
Centerline B	1.36	1.36	0.00
U/S B	1.18	1.18	0.00

Meter: 0.6 ft above bottom of weight

Weight: 30 lbs

[✓ Wading] Cable Ice Boat

[✓ Upstream] or Downstream side of bridge

GPS Data:

Discharge	N	66 °	49 '	21.9 "
Location	W	162 °	25 '	2.1 "

LE Floodplain: ° ' "

RE Floodplain: ° ' "

Measurement Rated: Excellent Good [✓ Poor] based on "Descriptions"

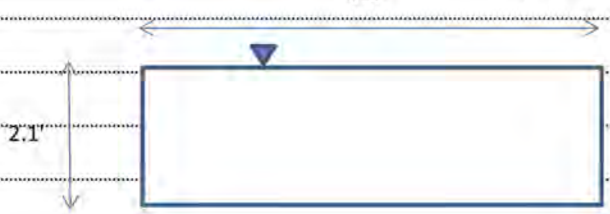
Descriptions:

Cross Section: Cross section cut in snowpack, changing quickly

Flow: Fast, strong flow through site;

Remarks: Velocity readings difficult due to condtions around site, mostly snowpack and water velocities. Cross section data is very rough and will affect the measurements.

*Approximate dimensions of channel



29 clicks X 5 revolutions/click = 145 revolutions

62 seconds

SC2B

May 25, 2012

Angle Coeff	Distance from initial point (ft)	Section Width (ft)	Water Depth (ft)	Observed Depth (%)	Revolution Count	Time Increment (sec)	VELOCITY At Point (fps)	Mean in Vertical (fps)	Adjusted for Angle Coeff (fps)	Area (s.f.)	Discharge (cfs)
REW @ 6:00PM											
1	5	5.0	2.1	0.6	145.0	62.0	5.17	5.17	5.17	10.5	54.33
LEW @ 6:05 PM											

Total Discharge: **54.33** cfs

Baker

Discharge Measurement Notes

Date: May 26, 2012
Computed By: SMC
Checked By: WAB

Location Name: Sadie Creek 2B

Party: WAB, VJ   Start: 10:40 AM   Finish: 10:45 AM

Temp: 38 °F   Weather: Clear and sunny, scattered clouds

Channel Characteristics:

Width: 6.5 ft   Area: 29 sq ft   Velocity: 5.53 fps   Discharge: 162 cfs

Method: Standard   Number of Sections: 1   Count: N/A

Spin Test: N/A revolutions after N/A seconds   Meter:

GAGE READINGS			
Gage	Start	Finish	Change
D/S A	2.22	2.22	0.00
Centerline A	2.60	2.60	0.00
U/S A	2.04	2.04	0.00

Meter: 0.6 ft above bottom of weight

Weight: 30 lbs

[✓ Wading] Cable Ice Boat

[✓ Upstream] or Downstream side of bridge

GPS Data:

Discharge	N	66 °	49 '	21.9 "
Location	W	162 °	25 '	2.1 "

LE Floodplain: ° ' . "

RE Floodplain: ° ' . "

Measurement Rated: Excellent Good [✓ Poor] based on "Descriptions"

Descriptions:

Cross Section: Cross section cut in snowpack, changing quickly

Flow: Fast, strong flow through site;

Remarks: Velocity readings difficult due to condtions around site, mostly snowpack and water velocities. Cross section data is very rough and affects the quality of the data collected.

*Approximate dimensions of channel

25 clicks X 5 revolutions/click = 145 revolutions

50 seconds

SC2B
May 26, 2012

Angle Coeff	Distance from initial point (ft)	Section Width (ft)	Water Depth (ft)	Observed Depth (%)	Revolution Count	Time Increment (sec)	VELOCITY At Point (fps)	VELOCITY Mean in Vertical (fps)	VELOCITY Adjusted for Angle Coeff (fps)	Area (s.f.)	Discharge (cfs)
REW @ 2:00PM											
1	6.5	6.5	4.5	0.6	125.0	50.0	5.53	5.53	5.53	29.3	161.75
LEW @ 3:00 PM											

Total Discharge: **161.75** cfs

Baker

Discharge Measurement Notes

Date: May 29, 2012
Computed By: SMC
Checked By: WAB

Location Name: Unnamed Swale

Party: SMC, WAB   Start: 2:45 PM   Finish: 3:30 PM

Temp: 34 °F   Weather: Clear, 15-20 MPH Northwest wind

Channel Characteristics:

Width: 19 ft   Area: 17 sq ft   Velocity: 0.41 fps   Discharge: 7 cfs

Method: 0.6   Number of Sections: 20   Count: various

Spin Test: - revolutions after - seconds   Meter: Price AA

Meter: ft above bottom of weight

Weight: lbs

[✓ Wading] Cable Ice Boat

[✓ Upstream] or Downstream side of bridge

GAGE READINGS			
Gage	Start	Finish	Change
JC.U-A	96.92	96.84	-0.08

GPS Data: JCU

Left Edge of Water: N ° ' "
W ° ' "

Right Edge of Water: N ° ' "
E ° ' "

LE Floodplain: ° ' . "

RE Floodplain: ° ' . "

Measurement Rated: Excellent Good [✓ Fair] Poor based on "Descriptions"

Descriptions:

Cross Section: Channel has heavy grass bed, small hill or thicker tuft of grass near center of cross section (Sta. 11) approximately one foot wide. Bottomfast ice is present, with degrading snowpack on the right bank.

Flow: Aside from vegetation, flow is unimpeded through cross section.

Remarks: Tall grass on left bank prevented the meter from capturing the flow, approximately 0.25 fps at Sta. 4 and 5.

JC
May 29, 2012

Angle Coeff	Distance from initial point (ft)	Section Width (ft)	Water Depth (ft)	Observed Depth (%)	Revolution Count	Time Increment (sec)	VELOCITY At Point (fps)	VELOCITY Mean in Vertical (fps)	VELOCITY Adjusted for Angle Coeff (fps)	Area (s.f.)	Discharge (cfs)
REW @ 2:45 PM											
--	0	0.5	0.0	--	--	--	0	0	0	0	0
--	1	1.0	0.3	--	--	--	0	0	0	0.3	0
--	2	1.0	0.4	--	--	--	0	0	0	0.4	0
1	3	1.0	0.7	0.6	0	40	0	0	0	0.7	0
1	4	1.0	0.9	0.6	0	40	0.25 est.	0.25	0.25	0.9	0.23
1	5	1.0	1.0	0.6	0	40	0.25 est.	0.25	0.25	1.0	0.25
1	6	1.0	1.0	0.6	5	48	0.25	0.25	0.25	1.0	0.25
1	7	1.0	1.1	0.6	3	43	0.17	0.17	0.17	1.1	0.19
1	8	1.0	1.1	0.6	7	50	0.33	0.33	0.33	1.1	0.36
1	9	1.0	1.2	0.6	5	70	0.18	0.18	0.18	1.2	0.21
0.98	10	1.0	1.2	0.6	7	43	0.38	0.38	0.37	1.2	0.44
1	11	1.0	0.0	0.6	0	40	0.00	0.00	0.00	0.0	0.00
1	12	1.0	1.2	0.6	5	41	0.29	0.29	0.29	1.2	0.34
1	13	1.0	1.1	0.6	20	42	1.07	1.07	1.07	1.1	1.17
1	14	1.0	1.2	0.6	15	57	0.60	0.60	0.60	1.2	0.72
1	15	1.0	1.3	0.6	7	52	0.31	0.31	0.31	1.3	0.41
1	16	1.0	1.1	0.6	15	54	0.63	0.63	0.63	1.1	0.69
1	17	1.0	1.1	0.6	15	50	0.68	0.68	0.68	1.1	0.75
1	18	1.0	1.0	0.6	20	47	0.96	0.96	0.96	1.0	0.96
0.94	19	0.5	1.0	0.6	7	40	0.40	0.40	0.38	0.5	0.19
LEW @ 3:30 PM											

Total Discharge: **7.15** cfs

Appendix E Scoping

PI Documentation Index

Pre-Scoping Correspondence

From: Tom Okleasik [mailto:TOkleasik@NWABOR.ORG]
Sent: Monday, February 06, 2012 1:34 PM
To: Johnston, Christopher F (DOT); Jason Jessup; Derek Martin; jeff.hadley@qira.org; Chuck Greene; Grant Hildreth, City Planner; elizabeth.moore@nana.com
Cc: Anderson, Ryan (DOT); Campbell, Bruce W (DOT); Bredlie, Phoebe R (DOT); Karczmarczyk, Paul F (DOT); Christianson, Derek M
Subject: RE: Cape Blossom Road FHWA telecon followup

Kia ora,

Sorry I missed the meeting, but glad to see the follow-up and steps to move forward.

Can include in the project update during the joint Borough-City of Kotzebue planning commission meeting scheduled for March 22 – attached is the draft agenda.

Ukallaysaaq
Planning Director, NWAB
tokleasik@nwabor.org
907-442-2500 x 109

From: Johnston, Christopher F (DOT) [mailto:chris.johnston@alaska.gov]
Sent: Tuesday, January 31, 2012 4:19 PM
To: Jason Jessup; Derek Martin; jeff.hadley@qira.org; Chuck Greene; Tom Okleasik; Grant Hildreth, City Planner; elizabeth.moore@nana.com
Cc: Anderson, Ryan (DOT); Campbell, Bruce W (DOT); Bredlie, Phoebe R (DOT); Karczmarczyk, Paul F (DOT); Christianson, Derek M
Subject: Cape Blossom Road FHWA telecon followup

Thank you all for your participation in this afternoon's meeting. Attached is the draft purpose and need we discussed.

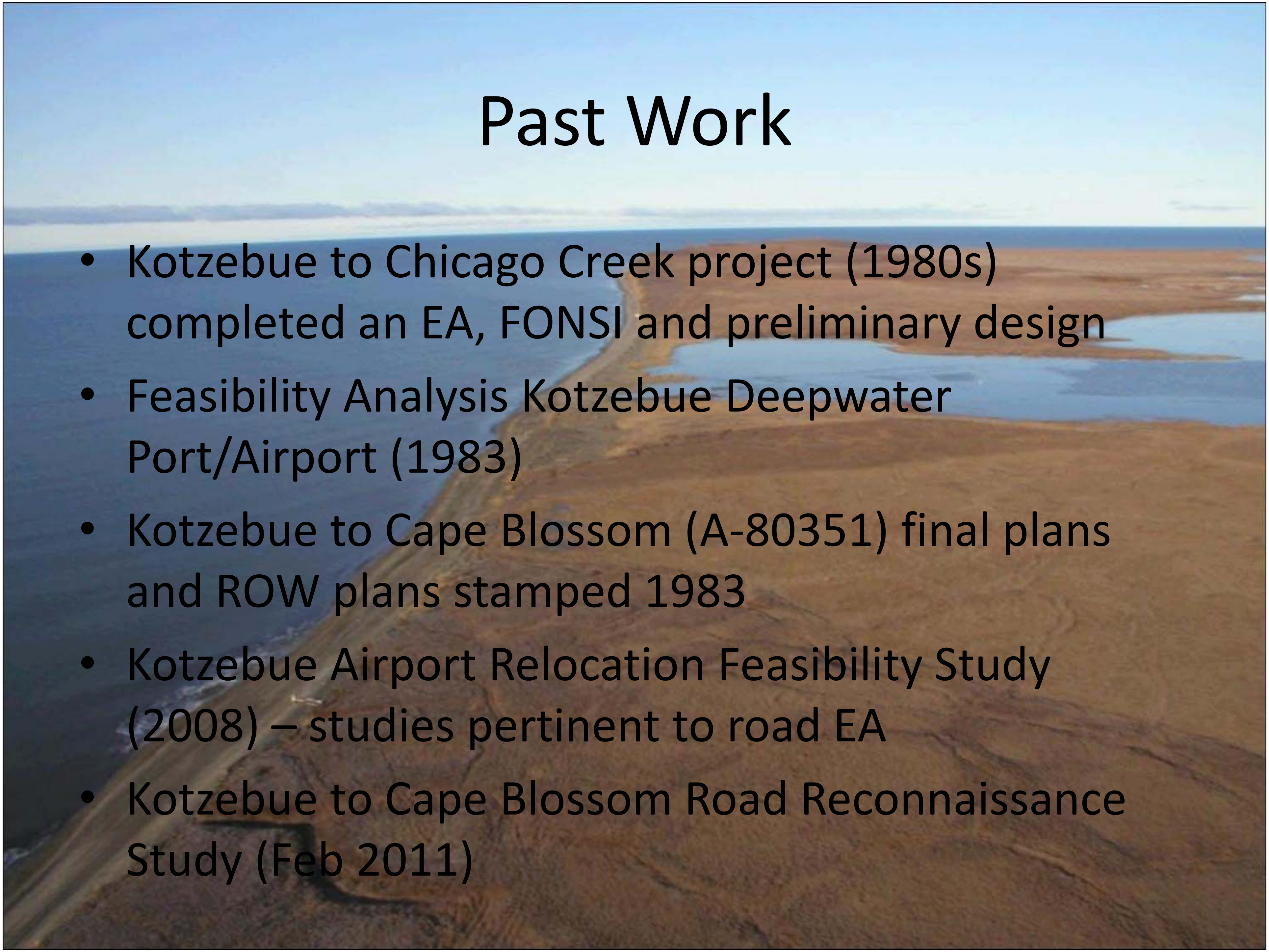
Christopher Johnston, P.E. | **Northern Region Aviation** | **Alaska Department of Transportation**
2301 Peger Road Fairbanks, AK 99709 | ☎: 907.451.2322 | 🖷: 907.451.5126 | ✉: chris.johnston@alaska.gov

Kotzebue to Cape Blossom Road

Project Update

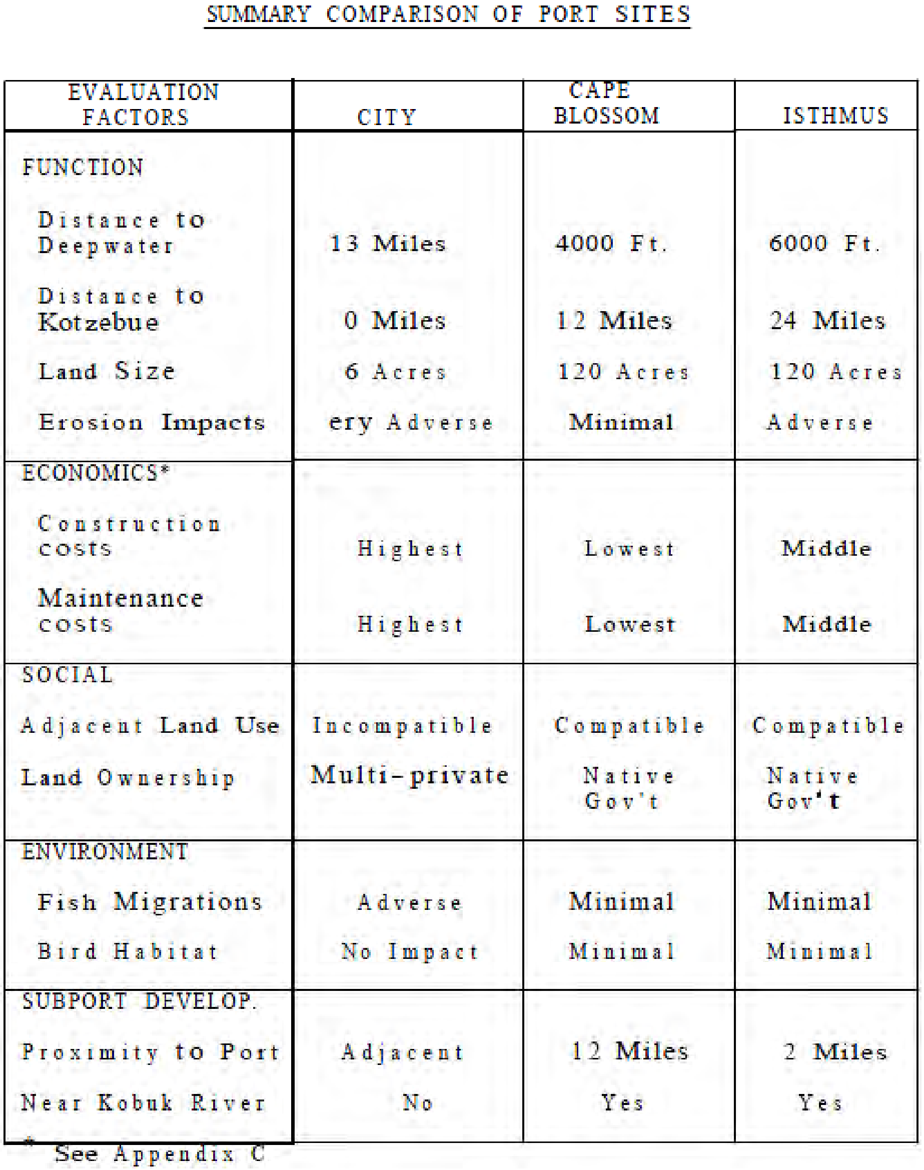
January 31, 2012

Past Work



- Kotzebue to Chicago Creek project (1980s) completed an EA, FONSI and preliminary design
- Feasibility Analysis Kotzebue Deepwater Port/Airport (1983)
- Kotzebue to Cape Blossom (A-80351) final plans and ROW plans stamped 1983
- Kotzebue Airport Relocation Feasibility Study (2008) – studies pertinent to road EA
- Kotzebue to Cape Blossom Road Reconnaissance Study (Feb 2011)

Feasibility Analysis Kotzebue Deepwater Port/Airport (1983)

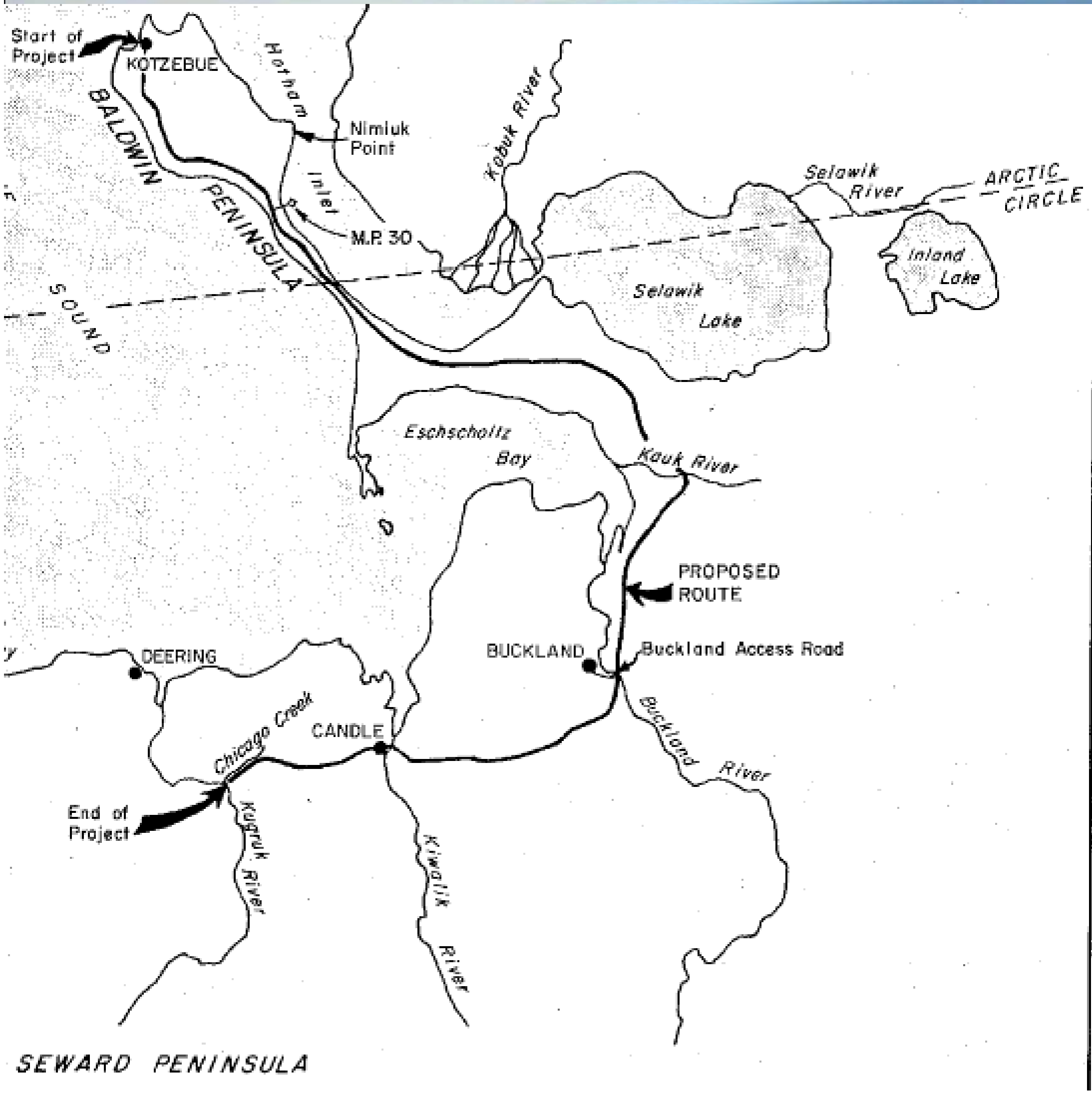


SUMMARY COMPARISON OF PORT SITES

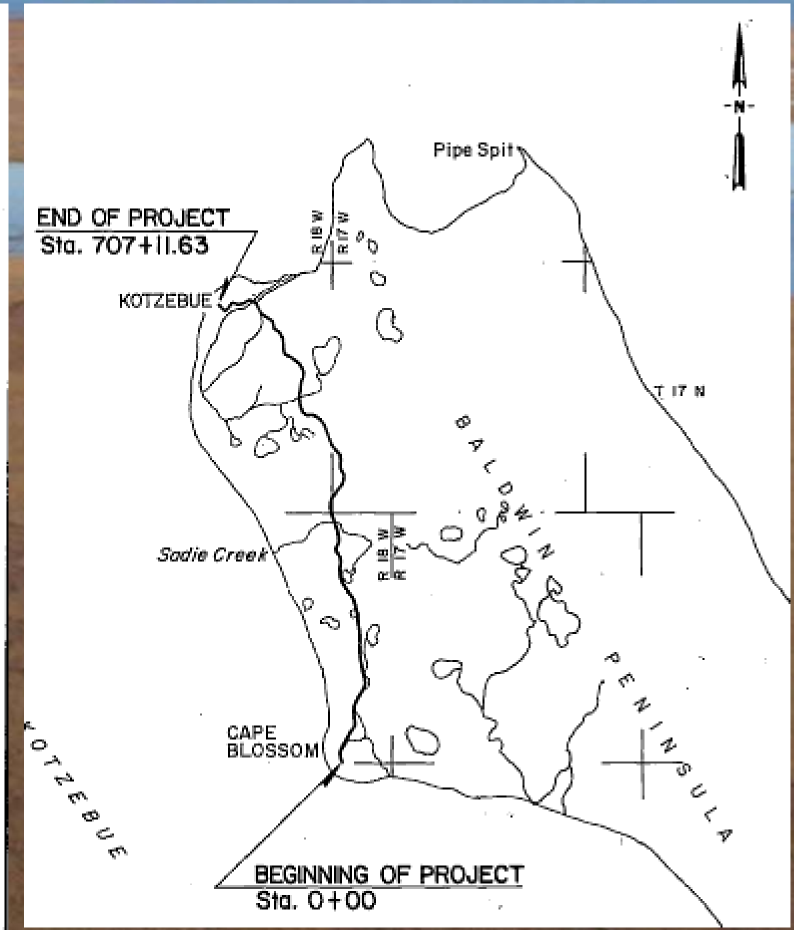
EVALUATION FACTORS	CITY	CAPE BLOSSOM	ISTHMUS
FUNCTION			
Distance to Deepwater	13 Miles	4000 Ft.	6000 Ft.
Distance to Kotzebue	0 Miles	12 Miles	24 Miles
Land Size	6 Acres	120 Acres	120 Acres
Erosion Impacts	ery Adverse	Minimal	Adverse
ECONOMICS*			
Construction costs	Highest	Lowest	Middle
Maintenance costs	Highest	Lowest	Middle
SOCIAL			
Adjacent Land Use	Incompatible	Compatible	Compatible
Land Ownership	Multi-private	Native Gov't	Native Gov't
ENVIRONMENT			
Fish Migrations	Adverse	Minimal	Minimal
Bird Habitat	No Impact	Minimal	Minimal
SUBPORT DEVELOP.			
Proximity to Port	Adjacent	12 Miles	2 Miles
Near Kobuk River	No	Yes	Yes

* See Appendix C

Figure from 1982 EA



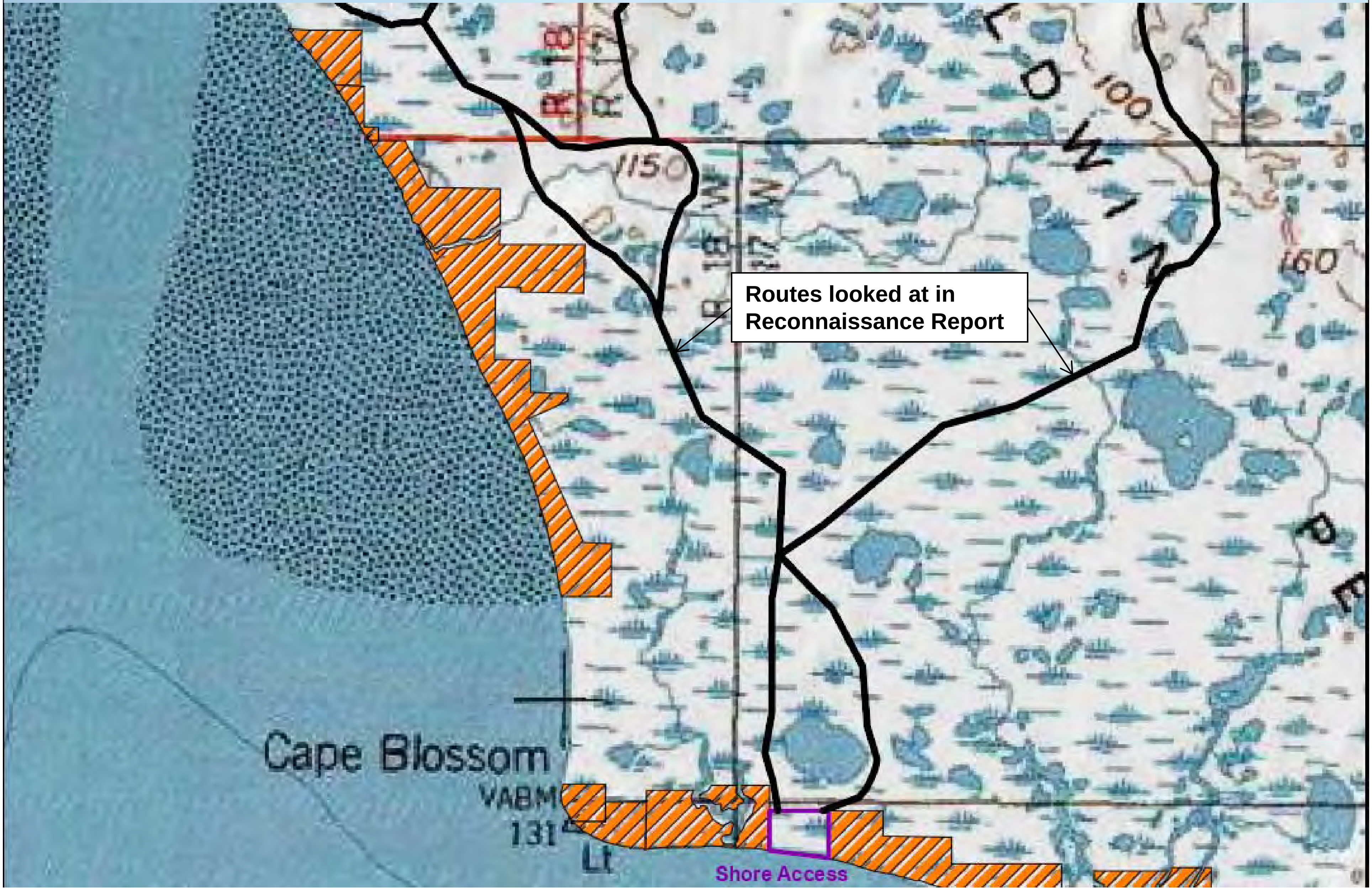
Vicinity Map from 1983 plan set



Local Government Resolutions

- All local governments have passed resolutions supporting a road to Cape Blossom.
  - City of Kotzebue: Resolution No. 02-19 (2001)
  - Kikiktagruk Inupiat Corporation of Kotzebue: Resolution No. 03-23 (2003)
  - Northwest Arctic Borough: Resolution 03-05 (2003)
  - NANA Regional Corporation, Inc.: Resolution 2003-03 (2003)
  - Northwest Arctic Borough and City of Kotzebue Joint Planning Commissions: Resolution JPC-10-01 (2010)

Native Allotments

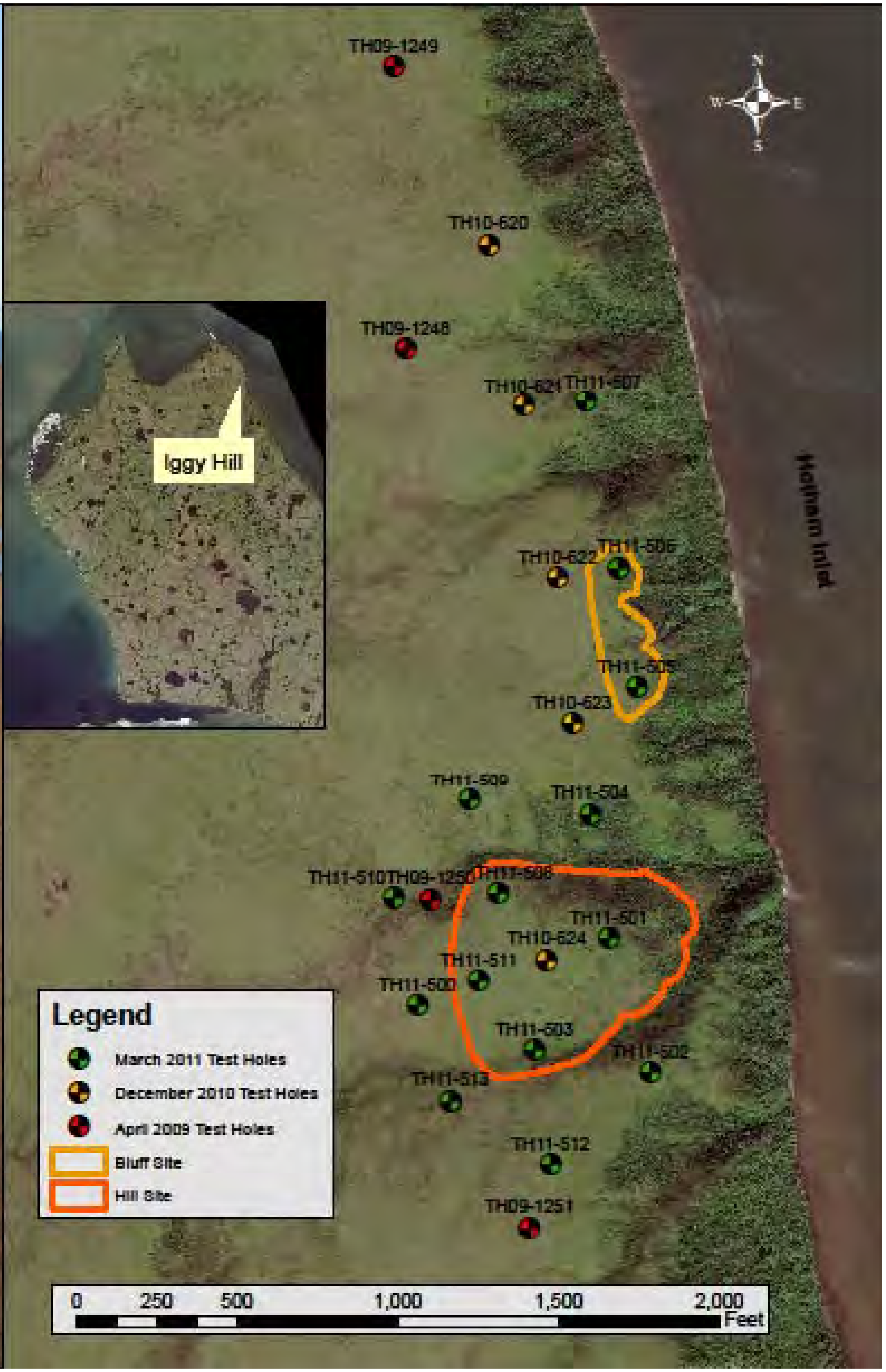


Routes looked at in Reconnaissance Report

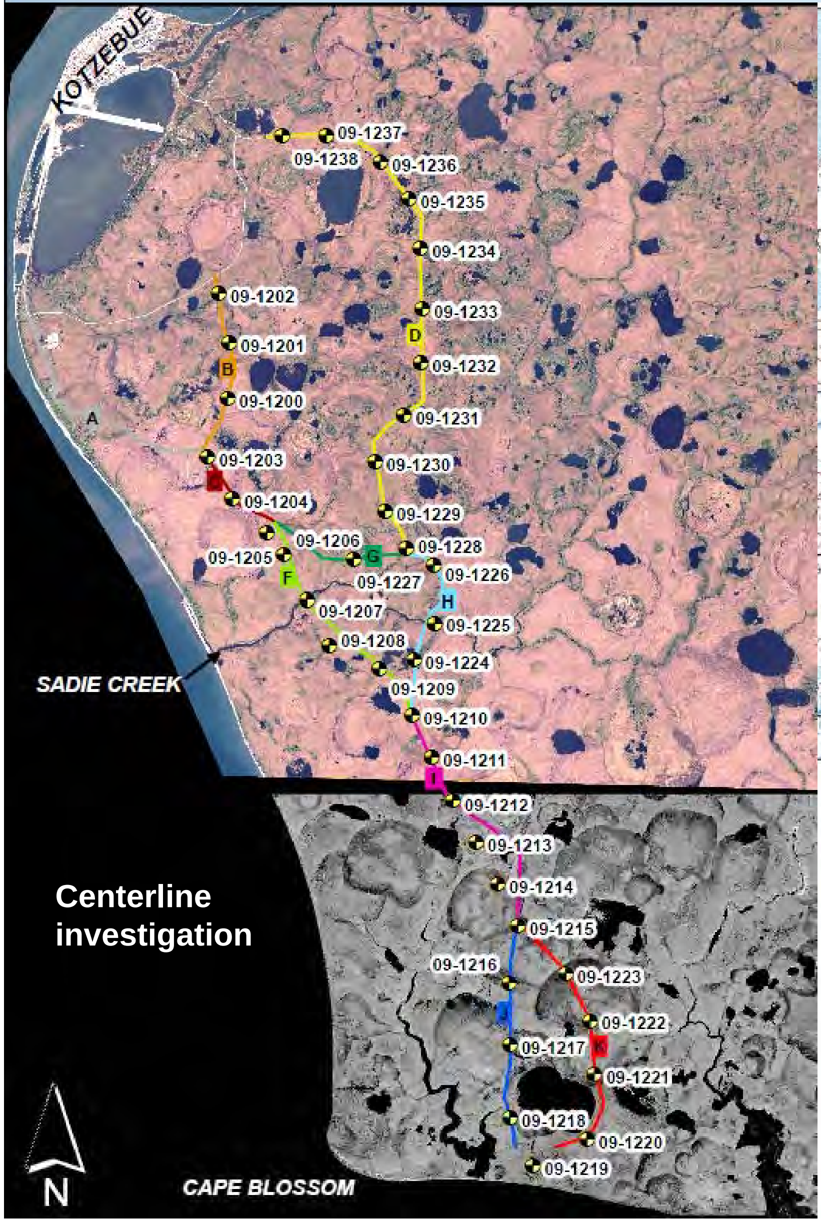
Geotechnical Investigation

- Found gravel material at Iggy Hill
  - Drilled site in December 2010 and March 2011
  - At least ½ million cubic yard of material based on preliminary investigation
  - Substantial silt overburden ranging from 11 to 50 ft thick

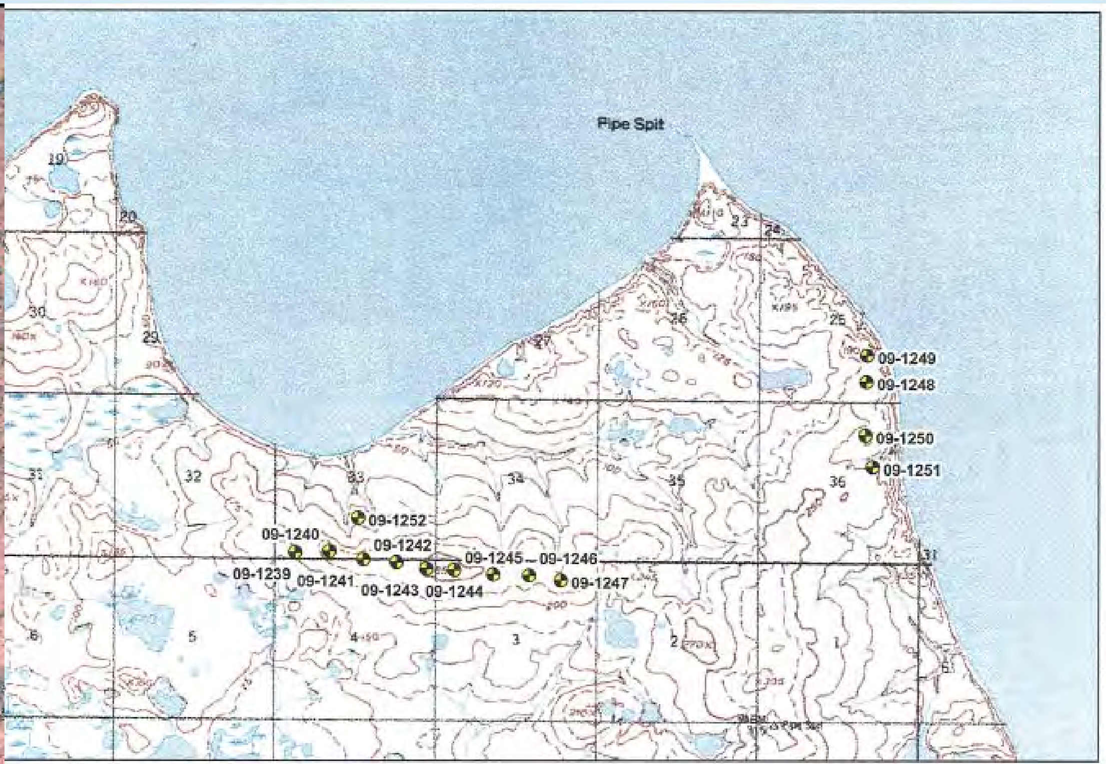
- Past Geo-tech investigations:
  - 39 bore holes along possible routes (April 2009)
  - Material site investigations along routes and Pipe Spit (April 2009)
  - Offshore at Cape Blossom (March-April 2010)

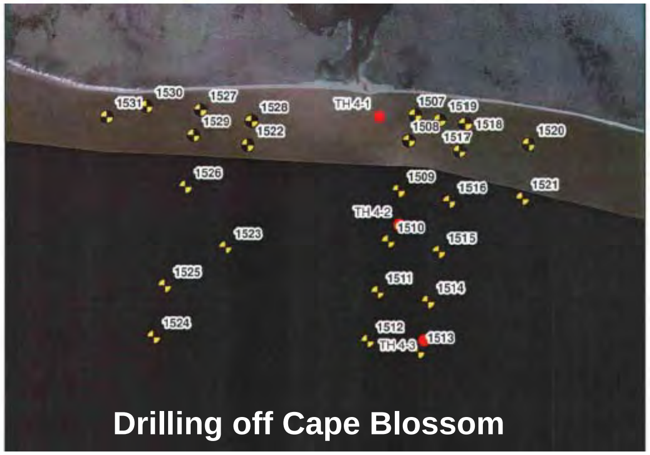


Geotechnical Investigation

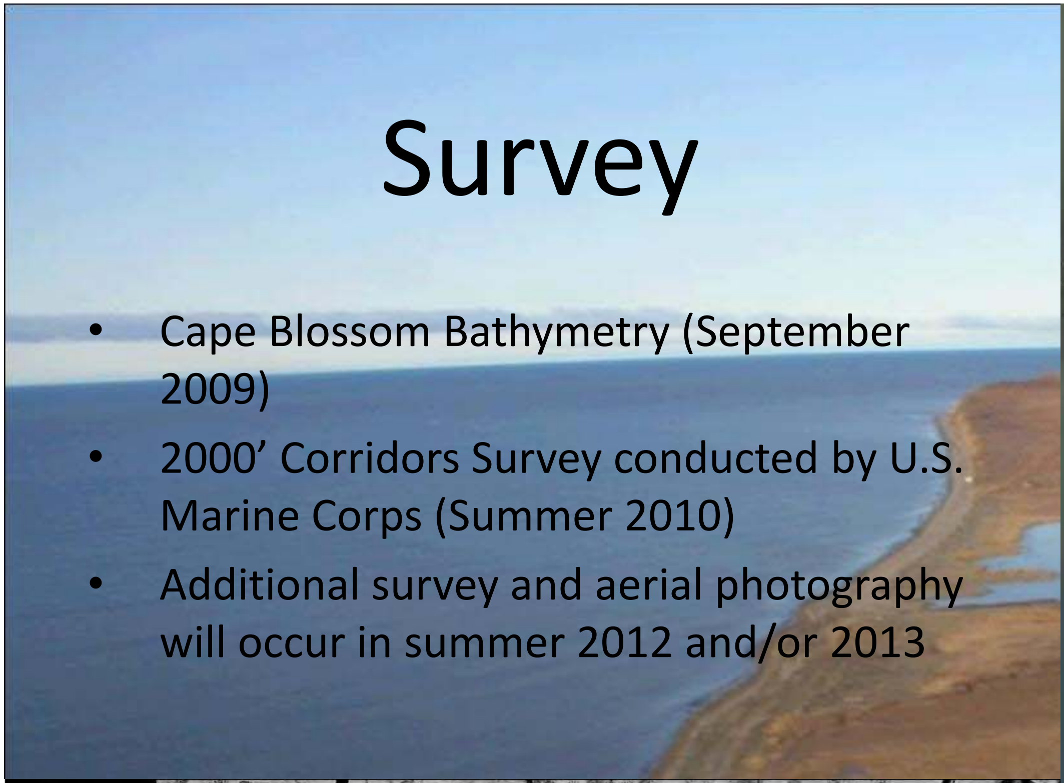


Centerline investigation



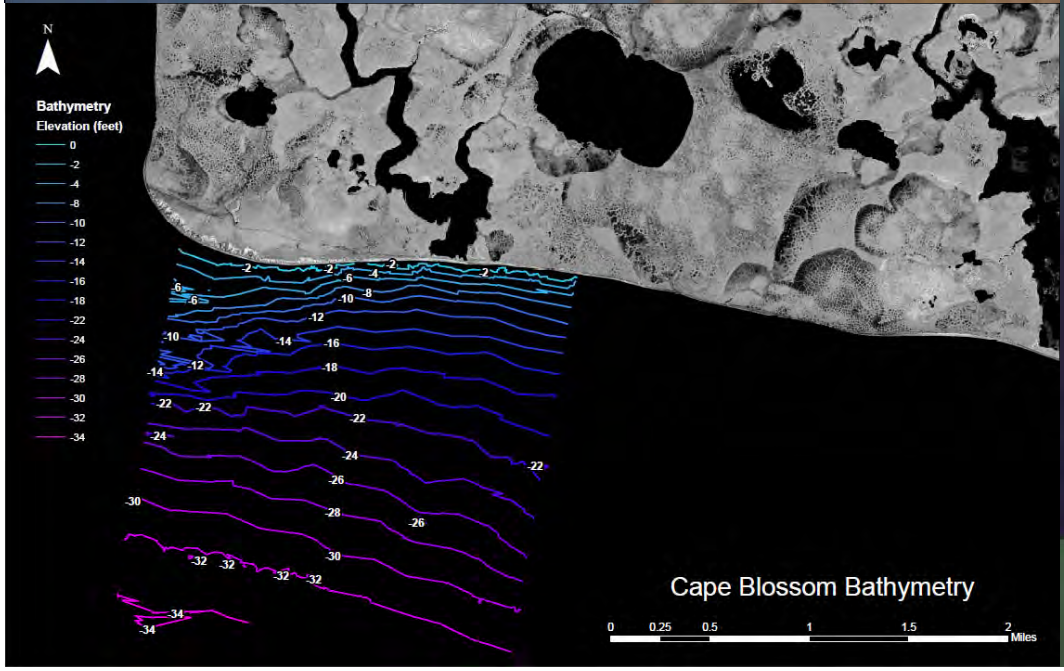


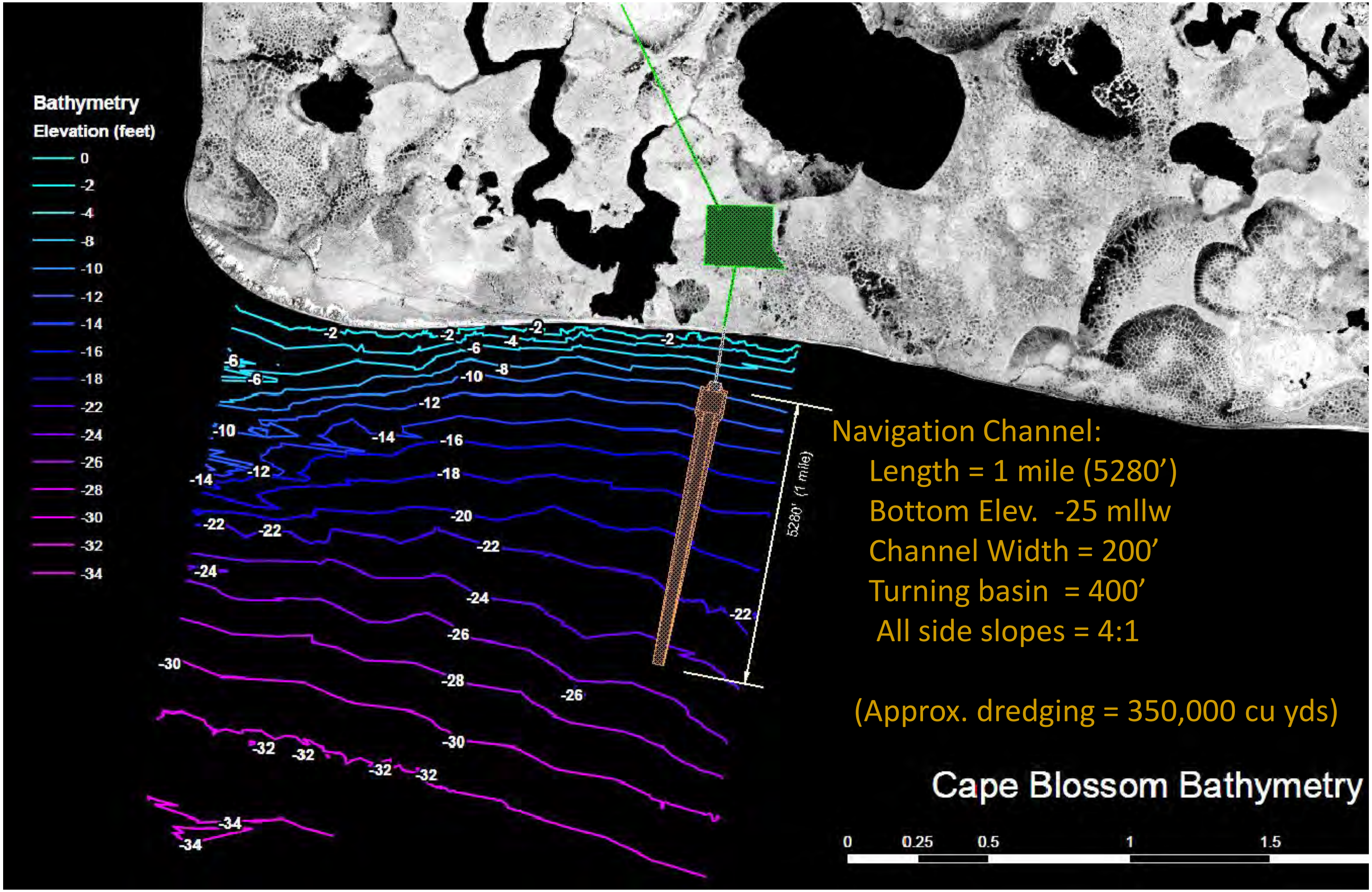
Drilling off Cape Blossom



Survey

- Cape Blossom Bathymetry (September 2009)
- 2000’ Corridors Survey conducted by U.S. Marine Corps (Summer 2010)
- Additional survey and aerial photography will occur in summer 2012 and/or 2013





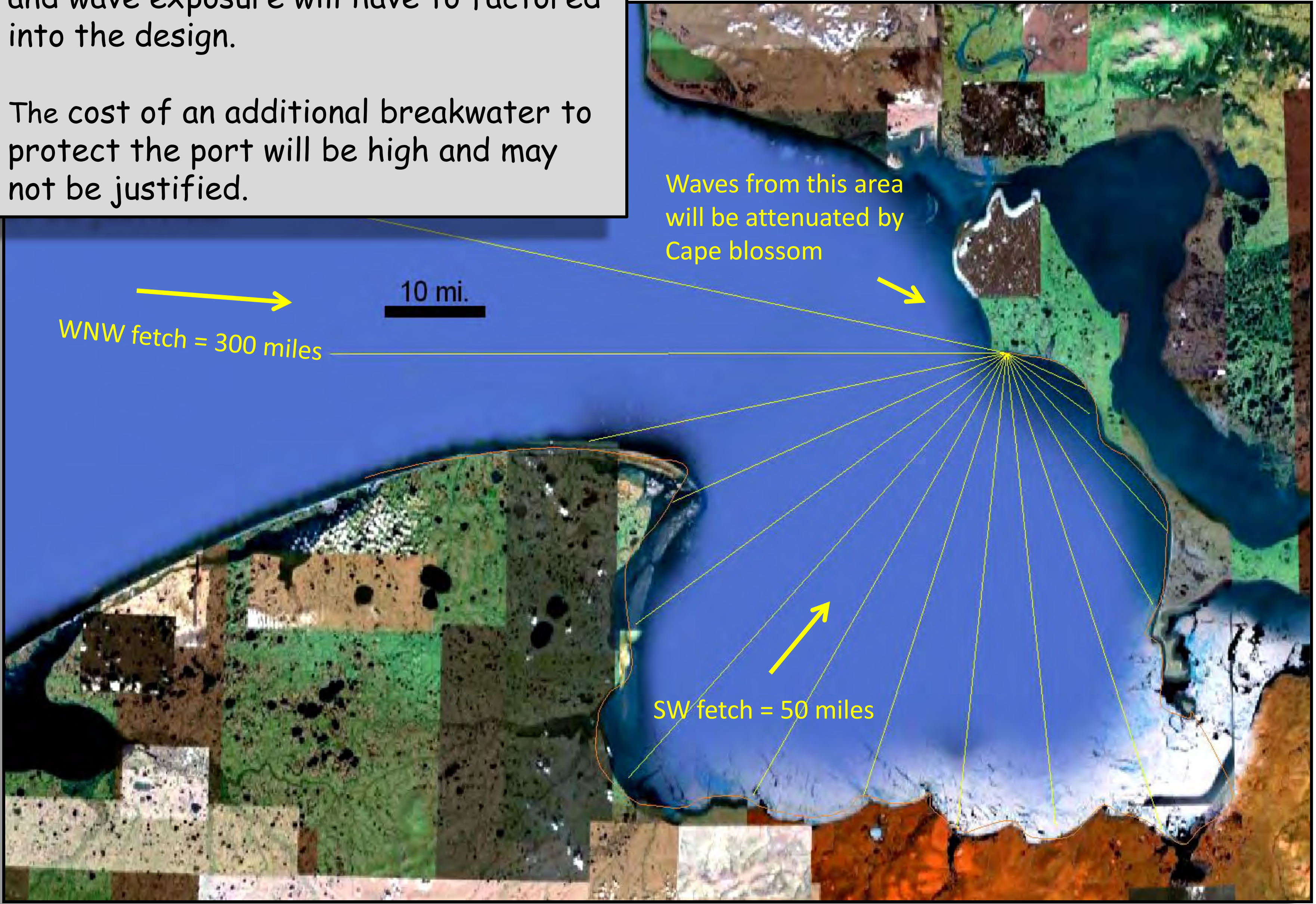
Navigation Channel:
Length = 1 mile (5280')
Bottom Elev. -25 mllw
Channel Width = 200'
Turning basin = 400'
All side slopes = 4:1

(Approx. dredging = 350,000 cu yds)

Cape Blossom Bathymetry

Cape Blossom is only partially protected and wave exposure will have to factored into the design.

The cost of an additional breakwater to protect the port will be high and may not be justified.



- Dock can extend offshore roughly 500 feet to about the 8 to 10 foot contour.
- Channel can be dredged to accommodate vessel of desired draft (a channel with a bottom elevation of -25 will need to be roughly one mile in length.
- Use of cellular pier foundations allows access along shore and minimal impact on coastal processes and fish migration.

Photo and rendering by Harvey N. Smith, P.E. NTS

- Uplands should be set back from the shoreline at least 500 feet
- Requires roughly 10 to 20 acres for fuel and container storage
- Use of cellular pier foundations allows access along shore and minimal impact on coastal processes and fish migration.

Photo and rendering by Harvey N. Smith, P.E. *NTS*

Next Steps

- Environmental Document work; Michael Baker Jr., Inc. is under contract
- Complete Economic Study started by Northern Economics, Inc.
- Sadie Creek hydrologic studies during spring 2012
- Work with the City to complete an IRT application

Project Timeline

- Summer 2012 – Field Work
- Winter 2013 – Complete Environmental Document
- Summer 2013 – Complete design, permits & ROW acquisition
- Fall 2014 – Award construction contract

Scoping Letters

Kotzebue to Cape Blossom road
Project No: 76844/NCPD-0002(204)

Agency Scoping Distribution List

Affiliation/ Organization	First Name	Last Name	Title	Organization	Address 1	City	State	ZIP	Phone	Email
STATE	First Name	Last Name	Title	Organization	Address 1	City	State	ZIP	Phone	Email
State	Margaret	Hansen	Local Government Specialist	Department of Commerce, Community & Economic Development	211 Cushman Street	Fairbanks	AK	99701-4639	907 442-3696	Margaret.Hansen@alaska.gov
State	Scott	Ruby	Director, Div. of Community and Regional Affairs	Department of Commerce, Community & Economic Development, Division of Community and Regional Affairs	550 W. 7th Ave., Suite 1770	Anchorage	AK	99501-3569	907-269-4569	scott.ruby@alaska.gov
State	Wanetta Jo	Ayers	Director, Div. of Economic Development	Department of Commerce, Community & Economic Development, Division of Economic Dev	550 West 7th Avenue, Ste 1770	Anchorage	AK	99501-3569	907-269-4048	wanetta.ayers@alaska.gov
State	Lynn	Kent	Division Director	Department of Environmental Conservation, Division of Water	555 Cordova Street	Anchorage	AK	99501	907-269-6281	lynn.kent@alaska.gov
State	Jim	Dau	Wildlife Biologist	Department of Fish and Game	240 5th Avenue	Kotzebue	AK	99752	907-442-1711	jim.dau@alaska.gov
State	James	Magdanz	Subsistence Resource Specialist III	Department of Fish and Game	PO Box 689	Kotzebue	AK	99752-0689	(907) 442-1713	james.magdanz@alaska.gov
State	William	Morris	Regional Director, Division of Habitat	Department of Fish and Game	1300 College Road	Fairbanks	AK	99701-1551	907-459-7282	william.morris@alaska.gov
State	Judith	**Bittner**	Chief, Office of History & Archaeology, and State Historic Preservation Officer	Department of Natural Resources	550 West 7th Avenue, Suite 1310	Anchorage	AK	99503-5921	907-269-8715	judy.bittner@alaska.gov
State	Alan	Depew	Office of History & Archaeology	Department of Natural Resources	550 West 7th Avenue, Suite 1310	Anchorage	AK	99503-5921	907-269-8713	alan.depew@alaska.gov
State	Dave	McMahan	Office of History & Archaeology	Department of Natural Resources	550 West 7th Avenue, Suite 1310	Anchorage	AK	99503-5921	907-269-8723	dave.mcmahan@alaska.gov
State	Ryan F.	Anderson	Northern Region Design Group Chief	DOT&PF	2301 Peger Road	Fairbanks	AK	99701		ryan.anderson@alaska.gov
State	Meadow	Bailey	Public Information Officer	DOT&PF	2301 Peger Road	Fairbanks	AK	99701	907-451-2240	meadow.bailey@alaska.gov
State	Ethan	Birkholz	Northern Region Chief of Planning and Support Services	DOT&PF	2301 Peger Road	Fairbanks	AK	99701		ethan.birkholz@alaska.gov
State	Janet	Brown	Preconstruction Engineer	DOT&PF	2301 Peger Road	Fairbanks	AK	99701	907-451-2276	janet.brown1@alaska.gov
State	Bruce	Campbell	Northern Region Environmental Coordinator	DOT&PF	2301 Peger Road	Fairbanks	AK	99709	907-451-2238	bruce.campbell@alaska.gov
State	Brenda	Hewitt	Special Asst to the Commissioner	DOT&PF	PO Box 112500	Juneau	AK	99811-2500	907-465-4772	brenda.hewitt@alaska.gov
`	First Name	Last Name	Title	Organization	Address 1	City	State	ZIP	Phone	Email
Federal	Eugene	**Virden**	Acting Alaska Regional Director	Bureau of Indian Affairs	PO Box 25520	Juneau	AK	99802	907-586-7177	
Federal	Frank	**Hays**	Superintendent	National Park Service	PO Box 1029	Kotzebue	AK	99752	907-442-8301	frank.hays@nps.gov

Kotzebue to Cape Blossom road
Project No: 76844/NCPD-0002(204)

Agency Scoping Distribution List

Federal	Jim	**Helfinstine**	Waterways Mgt. & Navigation Safety Branch, Office of Aids to Navigation, Bridge Permit Administrator	U.S Coast Guard	PO Box 25517	Juneau	AK	99802	907-463-2268	jhelfinstine@cgalaska.uscg.mil
Federal	Jennifer	**Curtis**		U.S. Environmental Protection Agency	222 West 7th Ave., Suite #19	Anchorage	AK	99513-7588	907-271-6324	Curtis.Jennifer@epa.gov
Federal	LeeAnne	**Ayres**	Selawik National Wildlife Refuge Manager	U.S. Fish and Wildlife Service	160 2nd Avenue PO Box 270 MS 565	Kotzebue	AK	99752	907 442-3799	selawik@fws.gov
Federal	Jewel	**Bennett**	CPA branch chief	U.S. Fish and Wildlife Service	101 12th Avenue, Box 19, Room 110	Fairbanks	AK	99701-6267		jewel_bennett@fws.gov
Federal	Matthew	**Eagleton**	Alaska Region Habitat Conservation Division	National Marine Fisheries Service	PO Box 43 222 W 7th Avenue, Rm 517	Anchorage	AK	99513-7577		
Federal	Robyn M.	**Burk**		611 ASG/CC	9480 Pease Ave., Suite 123	JBER	AK	99506-2101		

STATE OF ALASKA

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

NORTHERN REGION PRECONSTRUCTION

SEAN PARNELL, GOVERNOR

2301 PEGER ROAD
FAIRBANKS, ALASKA 99709-5399
TELEPHONE: (907) 451-2322
TDD: (907) 451-2363
FAX: (907) 451-5126

April 9, 2012

Re: Kotzebue to Cape Blossom Road
Project No: 76844/NCPD-0002(204)
Scoping Letter Requesting Comments

Department of Natural Resources
Chief, Office of Historic & Archiology,
And State Historic Preservation Officer
Judith Bitner
550 W. 7th Ave., Suite 1310
Anchorage, AK 99503-5921

Dear Ms. Bitner:

We are, in cooperation with the Alaska Division of the Federal Highway Administration (FHWA), seeking formal public and agency comments on the proposed road from Kotzebue to Cape Blossom. Please see the attached figure for the project location and the route alternatives currently being considered.

To support preparation of the environmental documentation necessary for the project in accordance with the National Environmental Policy Act (NEPA), we respectfully request that you identify any concerns or issues the proposed road project may present to you or your agency. Your input will help provide us with the necessary guidance to develop and design a proposed final project that avoids or minimizes as many potential adverse impacts as possible. You are also encouraged to attend a public scoping meeting to be held at the Northwest Arctic Borough (NWAB) chambers on May 10th, 2012 at 9:00 a.m. Additional scoping meetings may be held elsewhere in the project area upon request. In order to schedule any additional meetings, we ask that you provide your request to me no later than April 30, 2012.

Purpose and Need

The *purpose* of the Cape Blossom Road project is to improve access and enhance travel safety between Kotzebue and the shoreline near Cape Blossom while also complying with relevant federal legislation and incorporating elements of local government resolutions. The *need* for the project is to establish an all-season transportation link to the City of Kotzebue from a barge landing site at Cape Blossom. In addition, it will provide improved access to existing subsistence and recreation areas located on public and private land.

The proposed road project is consistent with local transportation and land use planning initiatives under consideration. It complies with the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Public Law 109-59; SAFETEA-LU) legislation, is consistent with the DOT&PF Northwest Alaska Transportation Plan, and helps facilitate resolutions passed by the NWAB, City of Kotzebue, Kikiktagruk Inupiat Corporation (KIC), and Nana Regional Corporation.

Proposed Action

In February 2011, DOT&PF completed the *Kotzebue to Cape Blossom Road - Reconnaissance Study*. Four alignment alternatives, all of which avoid Native allotments, were identified in that study as warranting further consideration. The length of the proposed, unpaved road varies with each alignment with the shortest alignment alternative 10.3 miles in length and the longest nearly twice as long at 20.3 miles. However, all alignment alternatives propose the following improvements in common:

- Roadway width of 24 feet
- Minimum 3:1 shoulder side slopes (4:1 in areas of snow drift)
- 24-inch diameter culverts placed for cross-drainage where appropriate
- 8-foot minimum embankment elevation at roadway centerline

A bridge or multi-culvert structure would be required to cross Sadie Creek.

A project website has been developed (http://dot.alaska.gov/nreg/capeblossomroad) to present project information, receive public comments, and provide access to associated documents including the February 2011 *Kotzebue to Cape Blossom Road - Reconnaissance Study*.

In order to help us move the best project proposal forward into final design and environmental documentation, we respectfully request you provide your comments, concerns or questions to DOT&PF by May 31, 2012. Your comments may be submitted by e-mail to: chris.johnston@alaska.gov, or by regular mail to:

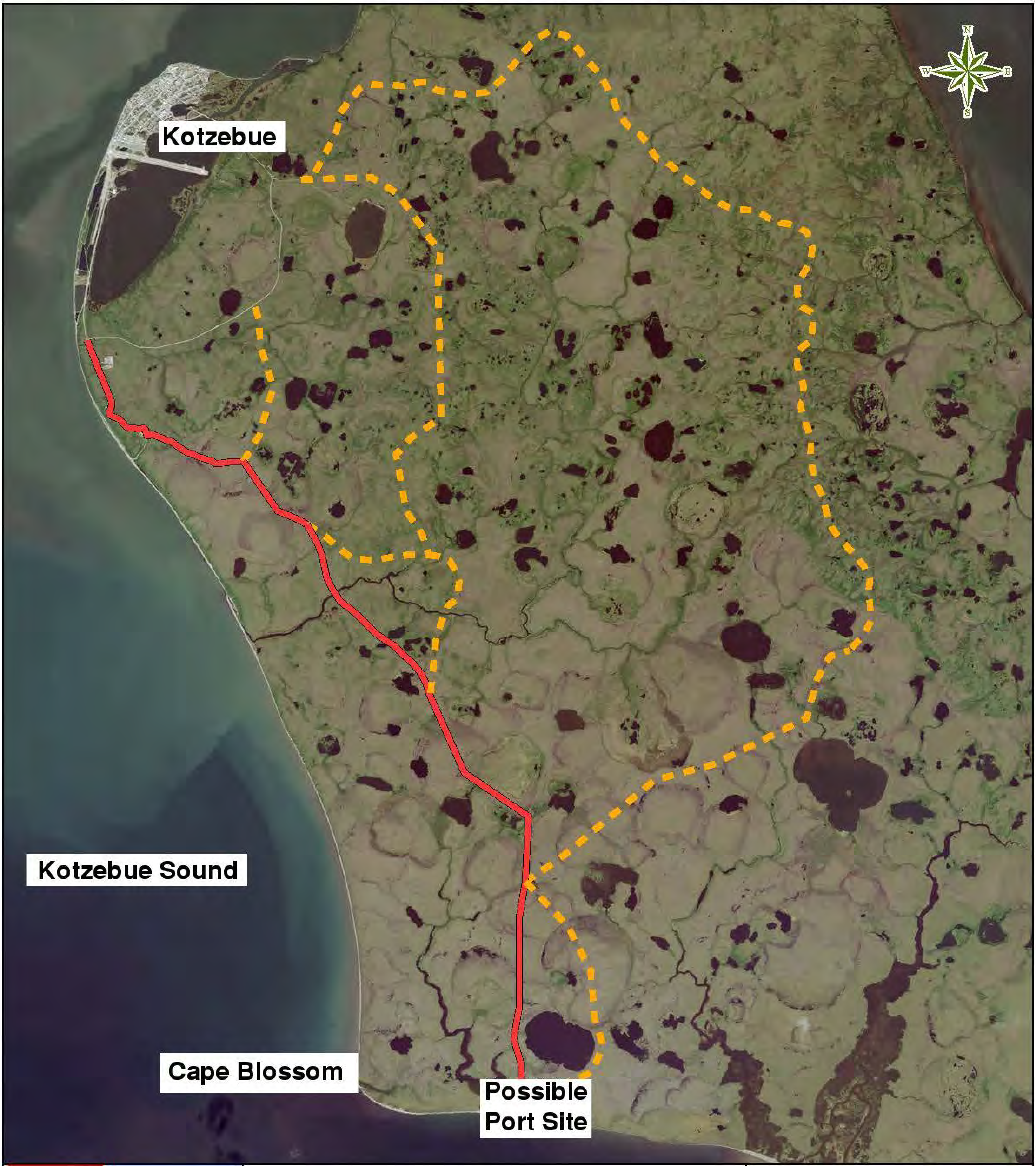
DOT&PF
Design and Aviation
Attn: Christopher Johnston, P.E.
2301 Peger Road
Fairbanks, AK 99701

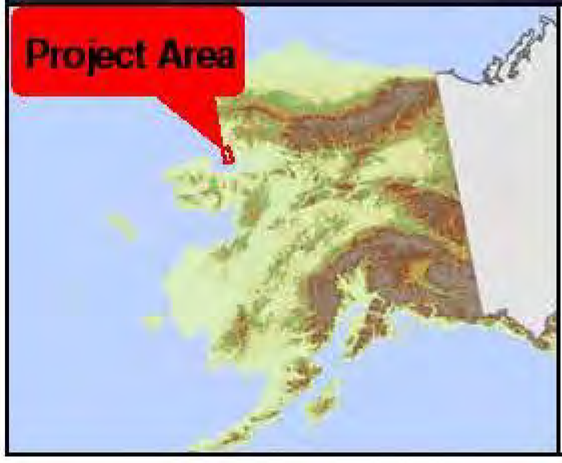
Additionally, oral or written comments may be submitted at public scoping meetings for the project.

We look forward to your assistance and input, and if you have any questions about the proposed project, please don't hesitate to contact me at (907) 451-2322.

Sincerely,

Christopher Johnston, P.E.
Project Manager/ Engineering Manager
Northern Region, DOT&PF





Kotzebue to Cape Blossom Road
Environmental Documentation
Project Number: NCPD-0002(204)/76884

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Legend

— Proposed Alternative

- - - Other Alternatives

Kotzebue to Cape Blossom Road
Project No: 76844/NCPD-002(204)

Tribal Scoping Distribution List

Affiliation/Organization	First Name	Last Name	Title	Organization	Address 1	City	State	ZIP	Phone	Email
TRIBAL CONTACT										
Village of Ambler	Shield	**Downey Jr.**	President	Native Village of Ambler	PO Box 47	Ambler	AK	99786	907-445-2196	shidow@att.net
Village of Kivalina	Millie	**Hawley**	President	Native Village of Kivalina	PO Box 50051	Kivalina	AK	99750	907-645-2153	kivalina@aitc.org
Village of Kobuk	Rosaline	**Ward**	President	Native Village of Kobuk	PO Box 51039	Kobuk	AK	99751	907-948-2007	eking@maniilaq.org
Village of Kotzebue	Jeff	**Hadley**	Executive Director	Native Village of Kotzebue	PO Box 296	Kotzebue	AK	99752	907-442-3467	info@kotzebueira.org
Village of Noatak	Michael	**Sherman, Sr.**	President	Native Village of Noatak	PO Box 89	Noatak	AK	99761	907-485-2173	herbert.walton@nautaaq.org
Village of Selawik	**Clyde**	**Ramoth Sr.**	President	Native Village of Selawik	PO Box 59	Selawik	AK	99770	907-484-2165	
Village of Shungnak	**Glenn**	**Douglas**	President	Native Village of Shungnak	PO Box 95	Shungnak	AK	99773	907-437-2314	tribeclerk@issingnak.org
Noorvik Native Com.	Joshua	**Melton**	Vice President	Noorvik Native Community	PO Box 209	Noorvik	AK	99763	907-636-2144	
Native Village of Buckland	Floyd H.	**Ticket**	President	Native Village of Buckland	PO Box 67	Buckland	AK	99727	907-494-2171	erweber@maniilaq.org
Native Village of Deering	Alvin	**Iyatunguk, Sr.**	President	Native Village of Deering	PO Box 36089	Deering	AK	99736	907-363-2138	rmoto@maniilaq.org
ANCSA CORPORATIONS (VILLAGE AND REGIONAL)	First Name	Last Name	Title	Organization	Address 1	City	State	ZIP	Phone	Email
ANCSA Village Corp.	Cole	**Schaeffer**	CEO	Kikiktagruk Inupiat Corporation	PO Box 1050	Kotzebue	AK	99752	907-442-3165	
ANCSA Regional Corp.	Ian	**Erlich**	CEO/President	Maniilaq Association	PO Box 256, #733 2nd Avenue	Kotzebue	AK	99752		
ANCSA Regional Corp.	Marie	**Greene**	President/CEO	NANA Regional Corporation	PO Box 49	Kotzebue	AK	99572	907-442-3301	marie.greene@nana.com

STATE OF ALASKA

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

NORTHERN REGION PRECONSTRUCTION

SEAN PARNELL, GOVERNOR

2301 PEGER ROAD
FAIRBANKS, ALASKA 99709-5399
TELEPHONE: (907) 451-2322
TDD: (907) 451-2363
FAX: (907) 451-5126

April 9, 2012

Re: Kotzebue to Cape Blossom Road
Project No: 76844/NCPD-0002(204)
Scoping Letter Requesting Comments

Native Village of Buckland
President Floyd H. Ticket
P.O. Box 67
Buckland, AK 99727

Dear President Ticket:

We are, in cooperation with the Alaska Division of the Federal Highway Administration (FHWA), seeking formal public and agency comments on the proposed road from Kotzebue to Cape Blossom. Please see the attached figure for the project location and the route alternatives currently being considered.

To support preparation of the environmental documentation necessary for the project in accordance with the National Environmental Policy Act (NEPA), we respectfully request that you identify any concerns or issues the proposed road project may present to you or your agency. Your input will help provide us with the necessary guidance to develop and design a proposed final project that avoids or minimizes as many potential adverse impacts as possible. You are also encouraged to attend a public scoping meeting to be held at the Northwest Arctic Borough (NWAB) chambers on May 10th, 2012 at 9:00 a.m. Additional scoping meetings may be held elsewhere in the project area upon request. In order to schedule any additional meetings, we ask that you provide your request to me no later than April 30, 2012.

Purpose and Need

The *purpose* of the Cape Blossom Road project is to improve access and enhance travel safety between Kotzebue and the shoreline near Cape Blossom while also complying with relevant federal legislation and incorporating elements of local government resolutions. The *need* for the project is to establish an all-season transportation link to the City of Kotzebue from a barge landing site at Cape Blossom. In addition, it will provide improved access to existing subsistence and recreation areas located on public and private land.

The proposed road project is consistent with local transportation and land use planning initiatives under consideration. It complies with the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Public Law 109-59; SAFETEA-LU) legislation, is consistent with the DOT&PF Northwest Alaska Transportation Plan, and helps facilitate resolutions passed by the NWAB, City of Kotzebue, Kikiktagruk Inupiat Corporation (KIC), and Nana Regional Corporation.

Proposed Action

In February 2011, DOT&PF completed the *Kotzebue to Cape Blossom Road - Reconnaissance Study*. Four alignment alternatives, all of which avoid Native allotments, were identified in that study as warranting further consideration. The length of the proposed, unpaved road varies with each alignment with the shortest alignment alternative 10.3 miles in length and the longest nearly twice as long at 20.3 miles. However, all alignment alternatives propose the following improvements in common:

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- 8-foot minimum embankment elevation at roadway centerline

A bridge or multi-culvert structure would be required to cross Sadie Creek.

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In order to help us move the best project proposal forward into final design and environmental documentation, we respectfully request you provide your comments, concerns or questions to DOT&PF by May 31, 2012. Your comments may be submitted by e-mail to: chris.johnston@alaska.gov, or by regular mail to:

DOT&PF
Design and Aviation
Attn: Christopher Johnston, P.E.
2301 Peger Road
Fairbanks, AK 99701

Additionally, oral or written comments may be submitted at public scoping meetings for the project.

We look forward to your assistance and input, and if you have any questions about the proposed project, please don't hesitate to contact me at (907) 451-2322.

Sincerely,

Christopher Johnston, P.E.
Project Manager/ Engineering Manager
Northern Region, DOT&PF

Kotzebue to Cape Blossom Road
Environmental Documentation
Project Number: NCPD-0002(204)/76884

Legend

- 🟥 Proposed Alternative
- ▪ ▪ ▪ Other Alternatives

Kotzebue to Cape Blossom Road
Project No. 76844/NCPD-0002(204)

City and Other Scoping Distribution List

Affiliation/Organization	First Name	Last Name	Title	Organization	Address 1	City	State	ZIP	Phone	Email
CITY CONTACT	First Name	Last Name	Title	Organization	Address 1	City	State	ZIP	Phone	Email
City Contact	The Honorable Morgan	**Johnson**	Mayor	City of Ambler	PO Box 9	Ambler	AK	99773	907-445-2122	cityofamblerak@yahoo.com
City Contact	Tim	**Gavin**	Mayor	City of Buckland	PO Box 49	Buckland	AK	99727	907-494-2121	city_of_buckland@yahoo.com
City Contact	Roland	**Moto, Sr.**	Mayor	City of Deering	PO Box 49	Deering	AK	99736	907-363-2136	cityofdeering@yahoo.com
City Contact	Brad	**Reich**	Mayor	City of Kiana	PO Box 150	Kiana	AK	99749	907-475-2136	cityclerk@katyaaq.org
City Contact	Thomas	**Hanifan**	Mayor	City of Kivalina	PO Box 50079	Kivalina	AK	99750	907-645-2137	kivalinacity@aol.com
City Contact	The Honorable Elmer	**Ward**	Mayor	City of Kobuk	PO Box 51020	Kobuk	AK	99751	907-948-2217	kobukcity@yahoo.com
City Contact	Eugene	**Smith**	Mayor	City of Kotzebue	PO Box 46	Kotzebue	AK	99752	907-442-3401	lgreene@kotzebue.org
City Contact	Robert	**Wells**		City of Noorvik	PO Box 146	Noorvik	AK	99763	907-636-2100	city ofnoorvik@gmail.com
City Contact	Nora	**Raymond**	Mayor	City of Selawik	PO Box 99	Selawik	AK	99770	907-484-2132	city_of_selawik@hotmail.com
City Contact	The Honorable Levi	**Cleveland**	Mayor	City of Shungnak	PO Box 59	Shungnak	AK	99773	907-437-2161	beverly_griest25@hotmail.com
BOROUGH CONTACTS	First Name	Last Name	Title	Organization	Address 1	City	State	ZIP	Phone	Email
Northwest Arctic Borough	Siikauraq Martha	**Whiting**	Mayor	Northwest Arctic Borough	PO Box 1110	Kotzebue	AK	99752	907-442-2500 x101	mwhiting@nwabor.org

STATE OF ALASKA

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

NORTHERN REGION PRECONSTRUCTION

SEAN PARNELL, GOVERNOR

2301 PEGER ROAD
FAIRBANKS, ALASKA 99709-5399
TELEPHONE: (907) 451-2322
TDD: (907) 451-2363
FAX: (907) 451-5126

April 9, 2012

Re: Kotzebue to Cape Blossom Road
Project No: 76844/NCPD-0002(204)
Scoping Letter Requesting Comments

City of Ambler
The Honorable Morgan Johnson
P.O. Box 9
Ambler, AK 99773

Dear Mayor Johnson:

We are, in cooperation with the Alaska Division of the Federal Highway Administration (FHWA), seeking formal public and agency comments on the proposed road from Kotzebue to Cape Blossom. Please see the attached figure for the project location and the route alternatives currently being considered.

To support preparation of the environmental documentation necessary for the project in accordance with the National Environmental Policy Act (NEPA), we respectfully request that you identify any concerns or issues the proposed road project may present to you or your agency. Your input will help provide us with the necessary guidance to develop and design a proposed final project that avoids or minimizes as many potential adverse impacts as possible. You are also encouraged to attend a public scoping meeting to be held at the Northwest Arctic Borough (NWAB) chambers on May 10th, 2012 at 9:00 a.m. Additional scoping meetings may be held elsewhere in the project area upon request. In order to schedule any additional meetings, we ask that you provide your request to me no later than April 30, 2012.

Purpose and Need

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Proposed Action

In February 2011, DOT&PF completed the *Kotzebue to Cape Blossom Road - Reconnaissance Study*. Four alignment alternatives, all of which avoid Native allotments, were identified in that study as warranting further consideration. The length of the proposed, unpaved road varies with each alignment with the shortest alignment alternative 10.3 miles in length and the longest nearly twice as long at 20.3 miles. However, all alignment alternatives propose the following improvements in common:

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In order to help us move the best project proposal forward into final design and environmental documentation, we respectfully request you provide your comments, concerns or questions to DOT&PF by May 31, 2012. Your comments may be submitted by e-mail to: chris.johnston@alaska.gov, or by regular mail to:

DOT&PF
Design and Aviation
Attn: Christopher Johnston, P.E.
2301 Peger Road
Fairbanks, AK 99701

Additionally, oral or written comments may be submitted at public scoping meetings for the project.

We look forward to your assistance and input, and if you have any questions about the proposed project, please don't hesitate to contact me at (907) 451-2322.

Sincerely,

Christopher Johnston, P.E.
Project Manager/ Engineering Manager
Northern Region, DOT&PF

Kotzebue to Cape Blossom Road
Environmental Documentation
Project Number: NCPD-0002(204)/76884

From: Karczmarczyk, Paul F (DOT) [mailto:paul.karczmarczyk@alaska.gov]
Sent: Tuesday, April 10, 2012 12:41 PM
Cc: Johnston, Christopher F (DOT); Christianson, Derek M; Karczmarczyk, Paul F (DOT)
Subject: Scoping for DOT&PF Kotzebue to Cape Blossom Road Project (#76844)

Dear Kotzebue to Cape Blossom Project Stakeholder:

The Alaska Department of Transportation and Public Facilities (DOT&PF), in cooperation with the Alaska Division of the Federal Highway Administration (FHWA), is seeking formal public and agency comments on the proposed road from Kotzebue to Cape Blossom. Please see the attached figure for the project location and the route alternatives currently being considered.

This email is a follow-up to hard-copy letters mailed April 09, 2012 to your respective agencies and organizations. To support preparation of the environmental documentation necessary for the project in accordance with the National Environmental Policy Act (NEPA), we respectfully request that you identify any concerns or issues the proposed road project may present to you, or your agency or organization. Your input will help provide us with the necessary guidance to develop and design a proposed final project that avoids or minimizes as many potential adverse impacts as possible. You are also encouraged to attend a public scoping meeting to be held at the Northwest Arctic Borough (NWAB) chambers on May 10th, 2012 at 9:00 a.m. Additional scoping meetings may be held elsewhere in the project area upon request. In order to schedule any additional meetings, we ask that you provide your request to the Project Manager, Christopher Johnston, no later than April 30, 2012.

Purpose and Need
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Proposed Action
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alignment alternative 10.3 miles in length and the longest nearly twice as long at 20.3 miles. However, all alignment alternatives propose the following improvements in common:

- Roadway width of 24 feet
- Minimum 3:1 shoulder side slopes (4:1 in areas of snow drift)
- 24-inch diameter culverts placed for cross-drainage where appropriate
- 8-foot minimum embankment elevation at roadway centerline

A bridge or multi-culvert structure would be required to cross Sadie Creek.

A project website has been developed at (http://dot.alaska.gov/nreg/capeblossomroad) to present project information, receive public comments, and provide access to associated documents including the February 2011 *Kotzebue to Cape Blossom Road - Reconnaissance Study*.

In order to help us move the best project proposal forward into final design and environmental documentation, we respectfully request you provide your comments, concerns or questions to DOT&PF by May 31, 2012. Your comments may be submitted by e-mail to: chris.johnston@alaska.gov, or by regular mail to:

DOT&PF
Attn: Christopher Johnston, P.E.
2301 Peger Road
Fairbanks, AK 99701

Additionally, oral or written comments may be submitted at public scoping meetings for the project.

We look forward to your assistance and input, and if you have any questions about the proposed project, please don't hesitate to contact Project Manager Christopher Johnston
or me as noted below.

Sincerely,

Paul Karczmarczyk, CWB®
Environmental Impact Analyst
(907) 451-2288
paul.karczmarczyk@alaska.gov

Christopher Johnston, P.E.
Project Manager
(907) 451-2322
chris.johnston@alaska.gov

Mailing Address: 2301 Peger Road
Fairbanks, AK 99709

Kotzebue to Cape Blossom Road
Environmental Documentation
Project Number: NCPD-0002(204)/76884

Scoping Responses

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
REGULATORY DIVISION
P.O. BOX 6898, CEPOA-RD
JBER, ALASKA 99506-0898

REPLY TO
ATTENTION OF:

APR 18 2012

Regulatory Division
POA-2012-272

Alaska Department of Transportation and Public Facilities
Attention: Mr. Christopher Johnston
2301 Peger Road
Fairbanks, Alaska 99709

Dear Mr. Johnston:

This letter is in response to your April 9, 2012, request for comments on the ADOT&PF Kotzebue to Cape Blossom Road Project (#76844). The propose work is to provide an all-season access between Kotzebue and the shoreline near Cape Blossom. The project has been assigned number POA-2012-272, Kotzebue Sound, and should be referred to in all correspondence with us.

Base on our review of the information you provided, we have determined that several components of your proposed project will require Department of the Army permit authorization. The placement of any fill material in wetlands requires a Corps permit. The placement of any fill material in the river requires a Corps permit.

The above areas contain waters of the U.S., including wetlands, under the Corps' regulatory jurisdiction. Therefore, DA authorization is required if you propose to place dredged and/or fill material into waters of the U.S., including wetlands and/or perform work in navigable waters of the U.S. Nothing in this letter excuses you from compliance with other Federal, State, or local statutes, ordinances, or regulations.

Section 404 of the Clean Water Act requires that a DA permit be obtained for the placement or discharge of dredged and/or fill material into waters of the U.S., including jurisdictional wetlands (33 U.S.C. 1344). The Corps defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Section 10 of the Rivers and Harbors Act of 1899 requires that a DA permit be obtained for structures or work in or affecting navigable waters of the U.S. (33 U.S.C. 403). Section 10 waters are those waters subject to the ebb and flow of the tide shoreward to the mean high water mark, and/or other waters identified by the Alaska District.

Following are some general comments regarding the proposed work and issues related to the project permitting:

a. When applying for a DA permit, you will be required to submit a statement describing how impacts to wetlands or other waters of the U.S. would be avoided and minimized.

b. You must also explain how the unavoidable impacts would be compensated for or explain why compensatory mitigation would not be necessary.

The quality of the application plans cannot be over emphasized. Clear concise plans, void of extraneous lines, should be avoided.

We appreciate your efforts to involve the Corps of Engineers early in the project development process. For additional information, please contact me via email at Allan.G.Skinner@usace.army.mil, by mail at the address above, by phone at (907) 753-2797, or toll free from within Alaska at (800) 478-2712.

Sincerely,

Victor Ross

Allan G. Skinner
Regulatory Specialist

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Fairbanks Fish and Wildlife Field Office
101 12th Avenue, Room 110
Fairbanks, Alaska 99701
May 30, 2012

Alaska Department of Transportation and Public Facilities
Attn: Christopher Johnston, P.E.
2301 Peger Road
Fairbanks, AK 99701

Re: Kotzebue to Cape Blossom Road
Project Number 76844

Dear Mr. Johnston:

The U.S. Fish and Wildlife Service has reviewed the referenced proposed project to construct a new road from Kotzebue to Cape Blossom, Alaska. This work would include constructing from 10.3 to 20.3 miles of new roadway with a 24-foot top width, 3:1 minimum shoulder side slopes, 24-inch diameter culverts for cross-drainage, and an 8-foot minimum embankment at the roadway centerline. One or two bridges or multi-culvert structures would be required to cross Sadie Creek. Wetland fill requirements for the four proposed most direct routes range from about 104 to 243 acres.

Threatened and Endangered Species: Three species listed as threatened under the Endangered Species Act (ESA) may occur in the project area: Spectacled eiders (*Somateria fischeri*), Alaska-breeding Steller's eiders (*Polysticta stelleri*), and polar bears (*Ursus maritimus*). Spectacled and Steller's eiders migrate through marine waters in western Alaska and may occur in coastal habitats in the project area. However, neither species nests on the Baldwin Peninsula. Polar bears occupy sea ice and coastal habitats in the Kotzebue Sound region. The Baldwin Peninsula is not designated as polar bear critical habitat; however; project activities that occur within adjacent marine habitats could potentially affect designated sea ice habitat. Yellow-billed loons (*Gavia adamsii*) and Pacific walruses (*Odobenus rosemarus divergens*), both listed as candidate species under the ESA, may also occur in the project area. Since the project occurs within the range of listed species, the applicant should contact Ted Swem at 907-456-0441 or *ted_swem@fws.gov* regarding potential required consultations pursuant to section 7 of the ESA. We also recommend contacting Craig Perham (907-786-3810; *craig_perham@fws.gov*) with the USFWS Alaska Region Marine Mammal Management office to address potential effects to polar bears and Pacific walruses under the Marine Mammal Protection Act.

Recommendations: The Service appreciates the additional information provided in the February 2011 Kotzebue to Cape Blossom Road – Reconnaissance Study (*http://dot.alaska.gov/nreg/capeblossomroad/documents.shtml*). This additional information allows us to better understand the project area and the construction options. We offer the following recommendations to help avoid and minimize adverse impacts to fish and wildlife habitat from the proposed project.

Wetlands: In addition to the higher-value salt marshes, mud flats, coastal wetlands, and wetlands associated with Sadie Creek identified in the Reconnaissance Study, the Service also considers scrub-shrub wetlands, such as low willow shrub tundra, to be higher-value wetlands. Similar to the Seward Peninsula, shrub thickets on the Baldwin Peninsula tend to be uncommon, yet highly productive for many bird species. Swanson et al. (1985) found that tall shrubs in the drainageways of the Seward Peninsula represent less than 5% of the total habitat, which is likely a reasonable estimate for the low willow shrub tundra on the Baldwin Peninsula. Kessel (1989) found that medium shrubs form an important and unique avian habitat, and they are the most productive habitat on the Seward Peninsula. We recommend ADOT&PF seek ways to avoid or minimize adverse impacts to these higher-value habitats, including shrub thickets that may not be classified as wetlands by the Clean Water Act.

Road Alignment: The Service prefers the most direct route from Kotzebue to Cape Blossom that will have the least impact on higher-value wetlands and required new road construction. The proposed alternative (Route ‘A’) appears to meet our preference. The first segment of Route ‘A’ (Segment ‘A’) already exists, so this route would require 2.3-miles less new road construction. By our estimate from Table 8 of the Reconnaissance Study, Route ‘A’ would require 8.9 miles of new road. This route, however, crosses Sadie Creek at the widest proposed crossing. Figure 2 in Appendix E suggests this crossing may require placing fill on the higher-value floodplain wetlands for constructing an embankment to a bridge or culvert. We recommend spanning this crossing with a bridge, not a culvert, from the higher ground on one side of Sadie Creek to the higher ground on the other side of the Creek to avoid placing fill on these higher-value wetlands and to maintain floodplain integrity under the road crossing. If this cannot be accomplished, then we recommend a road alignment using Segments ‘G’ and ‘H’ to cross Sadie Creek further upstream where Figures 6 and 10 in Appendix E suggests it would be easier to construct bridges beginning and ending on the higher ground on either side of Sadie Creek and its tributary.

We do not recommend the longest proposed alternative (Route ‘E’). Besides impacting over twice the wetlands as Route ‘A’, Route ‘E’ passes through higher-value wildlife habitat (Tina Moran, Deputy Refuge Manager, Selawik National Wildlife Refuge, personal communication 5/25/12).

In addition to considering fish passage and water conveyance at stream crossings, we recommend the design criteria also focus on protecting stream health by maintaining riparian, floodplain and tidal (if present) processes. Road crossings should not only meet the now widely recognized needs of fish passage, but crossings should also allow for the longitudinal connectivity of the floodplain (and estuarine if present) environment. Crossings should also ideally allow for the free passage of woody debris under the road. Floodplains are an important component of the aquatic system with many benefits beyond enhancing fish habitat. When considering the range of floodplain connectivity options (U.S. Forest Service 2008, Figure 2.5) from no connectivity (simple high discharge passage) to full functioning of all processes (full-span crossing), the Service recommends a stream simulation crossing with at least some floodplain connectivity (Figure 2.5b). Road crossings with floodplain connectivity are also less likely to generate high discharge velocities requiring extensive riprap and other problems such as debris and ice jams.

Road Footprint: The Reconnaissance Study discusses several options to reduce the road footprint in conjunction with cost savings, which the Service also considers conservation of habitat. We recognize these options, such as steeper side slopes (2:1 instead of 3:1) and constructing a one lane road with turnouts instead of a two land road may have bearing on road safety and ease of travel. However, we encourage ADOT&PF to consider these options where practicable and where safety is not compromised.

Invasive Weeds: The Service recommends implementing Best Management Practices for minimizing the introduction and proliferation of invasive species, including thoroughly washing equipment before deploying onsite. This is particularly important at sites adjacent to waterways where an introduced species could be easily transported downstream and spread throughout areas that would not otherwise be exposed to invasive species. River corridors provide an easy pathway for spreading invasive species throughout the otherwise inaccessible regions of Alaska. Unlike most of the country, Alaska’s climate and poor access to remote areas previously minimized the potential for introducing and proliferating invasive species in the state. However, these barriers are no longer as effective due to a warming climate and improved access. Special precautions are now needed to ensure protection from invasive species.

Land Clearing: Migratory bird nests, eggs or nestlings could be destroyed if work is conducted in nesting habitats during the spring and summer breeding season, which is generally May 20 through July 20 on the Baldwin Peninsula. The Migratory Bird Treaty Act prohibits the willful killing or harassment of migratory birds. The Service recommends that clearing, excavation and fill activities in potentially suitable nesting habitats be completed prior to the nesting season to avoid impacts to breeding migratory birds. If this is not possible, then other measures for avoiding impacts to breeding migratory birds should be initiated. For example, vegetated areas could be cleared prior to the nesting season. This would render the area unsuitable for breeding birds prior to their arrival and facilitate work during the breeding season without impacts to birds. However, we do not recommend large areas (greater than 5 acres) be stripped of vegetation more than one month prior to initiating work, which could result in even greater damage caused by excessive erosion.

Mitigation: Service policy regarding impacts to fish and wildlife habitat includes first avoiding, then minimizing, and finally compensating for the remaining unavoidable impacts. These impacts include direct, indirect and temporal impacts. If there are unavoidable impacts for this project, then the Service recommends compensatory mitigation for the unavoidable impacts by restoring or permanently protecting equal or higher-value wetlands nearby. The type and extent of recommended mitigation for these impacts would normally be based upon the scarcity and value of the wetland habitat impacted by the proposed project as well as any associated indirect or temporal impacts caused by the project. For the more common wetlands, like moist sedge tundra on the Baldwin Peninsula, we typically recommend lower compensation ratios. For higher-value wetlands, such as wetlands associated with watercourses and estuaries, the Service recommends a strategy of no net loss when practicable. If this is not possible, then we typically recommend higher compensation ratios. We also recommend higher compensation ratios for in-lieu fee programs and other mitigation options that protect existing wetlands rather than reclaim impaired wetlands. Protecting existing wetlands does not meet our national goal of no net loss of wetlands (i.e., no new wetlands are created or restored to offset the proposed loss of wetlands), so the higher ratio for habitat protection is intended to help offset the consequences of not meeting this goal.

Conclusion: We appreciate this opportunity for early comment. Please contact Bob Henszey (907-456-0323 or *bob_henszey@fws.gov*) should you have any questions concerning these comments.

Sincerely,

Jewel Bennett

Jewel Bennett
Branch Chief
Conservation Planning Assistance

rjh/rjh

ecc: Paul Karczmarczyk, ADOT&PF, Fairbanks
Ted Swem, USFWS, Fairbanks
Tina Moran, Selawik, NWR
Mike Holley, USACE, Anchorage
Bill Morris, ADF&G - Division of Habitat, Fairbanks
Gayle Martin, EPA, Anchorage

Literature Cited:

Kessel, B. 1989. Birds of the Seward Peninsula, Alaska: Their biogeography, seasonality, and natural history. University of Alaska Press, Fairbanks. 330 pp.

Swanson, J.D., M. Schuman, and P.C. Scorup. 1985. Range survey of the Seward Peninsula reindeer ranges, Alaska. USDA Soil Conservation Service, Anchorage, AK. 81 pp. (GIS database: *www.ak.nrcs.usda.gov/technical/soils/digitaldata.html*).

U.S. Forest Service, Stream-Simulation Working Group. 2008. Stream simulation: an ecological approach to providing passage for aquatic organisms at road-stream crossings. 0877 1801P. San Dimas Technology and Development Center, CA. *http://stream.fs.fed.us/fishxing/aop_pdfs.html*

NANA

October 26, 2012

Karen Brown - Environmental Manager
Michael Baker Jr., Inc.
1400 West Benson Boulevard, Suite 200
Anchorage, AK 99503

Re: Proposed Cape Blossom Road

Dear Ms. Brown:

This letter concerns the status of NANA's position on the proposed road easement from Kotzebue to Cape Blossom. The map of the proposed route of the road shows significant portions of land crossing NANA owned land; therefore NANA has a large stake in the planning process for the road.

NANA fully supports the plan for the Cape Blossom Road and Port Site and the most likely temporary site control avenue NANA will use to provide access will be a temporary construction easement. More long term site control will need to be established in accordance with NANA's land policies.

For the purposes of the Environmental Assessment, this letter confirms NANA's commitment to provide an easement for the Cape Blossom road. The details of the road easement however will need to be decided on at a later date and approved by the NANA Board.

Sincerely,

Walter Sampson
VP of Lands and Regional Affairs

NANA Regional Corporation, Inc. • PO Box 49, Kotzebue, Alaska, 99752 • T: (907) 442-3301, (800) 478-3301, F: (907) 442-4161 • nana.com/regional

KIC

KIKIKTAGRUK INUPIAT CORPORATION

373A Second Avenue • P.O. Box 1050 • Kotzebue, Alaska 99752
(907) 442-3165 • Fax (907) 442-2165

November 5, 2012

Karen Brown
Michael Baker, Jr., Inc.
1400 West Benson Blvd., Suite 200
Anchorage, Alaska 99503

Dear Ms. Brown:

Kikiktagruk Inupiat Corporation(KIC) owns some of the proposed road right of way to Cape Blossom and KIC is in support for the Cape Blossom Road Project.

KIC will also provide a road construction easement through KIC lands to the Alaska Department of Transportation and Public Facilities when the road route to Cape Blossom is established.

If you need anything else or have any questions, please call me or Ernie Norton at 907-442-3165.

Best wishes for the coming Holidays!

Sincerely,

Cole Schaeffer
President & CEO

cc: file

Apartment Rentals • ATV Sales & Service • Auto Parts Sales • Commercial Space Rentals • Construction Camp Services • General Contracting
Gravel Hauling • Heating Fuel Sales • Heavy Equipment Rentals • Lumber Sales • Property Development • Underground Utility Construction • Vehicle Rentals

From: Morris, William A (DFG)
To: Johnston, Christopher F (DOT)
Cc: Karczmarczyk, Paul F (DOT); Wendling, Brad R (DFG); Dau, Jim R (DFG); Scanlon, Brendan P (DFG); Ott, Alvin G (DFG)
Subject: RE: Scoping for DOT&PF Kotzebue to Cape Blossom Road Project (#76844)
Date: Thursday, May 31, 2012 8:08:43 PM

Dear Mr. Johnston,

The ADF&G Division of Habitat has reviewed the documents available for scoping of the Kotzebue to Cape Blossom Road. The divisions of Sport Fish and Wildlife Conservation also reviewed and provided input regarding the various alternatives explored by ADOT.

Generally, we believe the shorter, western-most route will have the lowest overall impact to fish and wildlife resources. The route will disturb appreciably lower quantities of wetland habitat and will require less overall gravel and gravel mining. All routes carry some potential for impacts to wildlife resources primarily from increases in human access to the area and associated local avoidance by wildlife such as caribou, moose, and bears. Depending on levels of activity along the road, there is some potential to divert caribou away from Kotzebue during their spring and fall migrations, and possibly during winter. This occurrence would not impact the Western Arctic Caribou Herd, but could impact subsistence harvest in some years. This potential could be greater if a port facility is constructed and ultimately connected to the Dalton Highway and activity levels increase appreciably. However, thousands to tens of thousands of caribou have come through the outskirts of Kotzebue on multiple occasions. Access to the area of the proposed road alternatives is already present via snowmachine and fourwheeler so, at least initially, it is likely that access and increased activity would not be significantly different post-construction than that already occurring. Localized negative effects on wildlife from these road alternatives would likely be modest and all of the alternatives could provide increased access to subsistence resources including wild game, fish and berries. The easternmost routes could provide enough increased access to achieve a reduction in the northern Baldwin Peninsula moose population through both harvest and avoidance of the area by moose, providing additional support for the more western route.

While, we believe that the western-most and shortest route is likely the least likely to have significant impacts on wildlife, it is also the route that crosses Sadie Creek. The ADF&G currently has no information on fish use of Sadie Creek; however, brief review of the topography, apparent stream gradients and stream connected lake habitat suggests the stream is likely used by anadromous and resident fish species. Division of Sport Fish biologists will attempt to conduct some preliminary sampling at Sadie Creek during summer 2012, but a systematic survey is not currently planned. It is highly likely that Sadie Creek will be nominated for inclusion in the Anadromous Waters Catalog during 2012 or 2013, based on fish sampling. Our review of the available documents regarding stream crossing designs (Bridge Hydraulics Reconnaissance Report) indicates that the bridge abutments may be well within the bankfull floodplain at Sadie Creek 1. It is likely that this bridge will ultimately need to be increased in abutment to abutment span to preserve the hydrogeomorphology of Sadie Creek. The bridge structure proposed for Sadie Creek 2a appears to more fully span the bankfull channel but also appears to be within the bankfull floodplain. Inadequate photographic documentation was available to evaluate the Sadie Creek 2b crossing. Generally, it appears the reroute of the western road route to avoid Sadie Creek 1 would provide for the highest likelihood of designing the most flow accommodating stream crossing structures for the cost and have the lowest potential to have adverse impacts on fish, fish passage and fish habitat. We are aware that everything presented in the document is very preliminary and that full designs have not been prepared. Our comments are similarly preliminary, and based solely on the level of detail available in this scoping level review.

Thank you for providing the opportunity to provide these scoping level comments on the Kotzebue to Cape Blossom Road Project. We look forward to working with the ADOT on this project in the future and welcome the opportunity to visit the road alignment and stream crossing sites with ADOT staff at some point in the future.

If you have any comments or questions regarding these comments please feel free to contact me or Brad Wendling at (907) 459-7289.

Sincerely,

Bill Morris

****
Bill Morris
Region III Regional Supervisor
Division of Habitat
Alaska Dept. of Fish and Game
1300 College Road
Fairbanks, AK 99701
Phone: (907) 459-7282
FAX: (907) 459-7303
http://www.adfg.alaska.gov/
****

From: Karczmarczyk, Paul F (DOT)
Sent: Tuesday, April 10, 2012 12:41 PM
Cc: Johnston, Christopher F (DOT); Derek.Christianson@mbakercorp.com; Karczmarczyk, Paul F (DOT)
Subject: Scoping for DOT&PF Kotzebue to Cape Blossom Road Project (#76844)

Dear Kotzebue to Cape Blossom Project Stakeholder:

The Alaska Department of Transportation and Public Facilities (DOT&PF), in cooperation with the Alaska Division of the Federal Highway Administration (FHWA), is seeking formal public and agency comments on the proposed road from Kotzebue to Cape Blossom. Please see the attached figure for the project location and the route alternatives currently being considered.

This email is a follow-up to hard-copy letters mailed April 09, 2012 to your respective agencies and organizations. To support preparation of the environmental documentation necessary for the project in accordance with the National Environmental Policy Act (NEPA), we respectfully request that you identify any concerns or issues the proposed road project may present to you, or your agency or organization. Your input will help provide us with the necessary guidance to develop and design a proposed final project that avoids or minimizes as many potential adverse impacts as possible. You are also encouraged to attend a public scoping meeting to be held at the Northwest Arctic Borough (NWAB) chambers on May 10th, 2012 at 9:00 a.m. Additional scoping meetings may be held elsewhere in the project area upon request. In order to schedule any additional meetings, we ask that you provide your request to the Project Manager, Christopher Johnston, no later than April 30, 2012.

Purpose and Need

The *purpose* of the Cape Blossom Road project is to improve access and enhance travel safety between Kotzebue and the shoreline near Cape Blossom, while also complying with relevant federal legislation and incorporating elements of local government resolutions. The *need* for the project is to establish an all-season transportation link to the City of Kotzebue from a barge landing site at Cape Blossom. In addition, it will provide improved access to existing subsistence and recreation areas located on public and private land.

The proposed road project is consistent with local transportation and land use planning initiatives under consideration. It complies with the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Public Law 109-59; SAFETEA-LU) legislation, is consistent with the DOT&PF Northwest Alaska Transportation Plan, and helps facilitate resolutions passed by the NWAB, City of Kotzebue, Kikiktagruk Inupiat Corporation (KIC), and Nana Regional Corporation.

Proposed Action

In February 2011, DOT&PF completed the *Kotzebue to Cape Blossom Road - Reconnaissance Study*. Four alignment alternatives, all of which avoid Native allotments, were identified in that study as warranting further consideration. The length of the proposed, unpaved road varies with each alignment with the shortest alignment alternative 10.3 miles in length and the longest nearly twice as long at 20.3 miles. However, all alignment alternatives propose the following improvements in common:

- Roadway width of 24 feet
- Minimum 3:1 shoulder side slopes (4:1 in areas of snow drift)
- 24-inch diameter culverts placed for cross-drainage where appropriate
- 8-foot minimum embankment elevation at roadway centerline

A bridge or multi-culvert structure would be required to cross Sadie Creek.

A project website has been developed at (http://dot.alaska.gov/nreg/capeblossomroad) to present project information, receive public comments, and provide access to associated documents including the February 2011 *Kotzebue to Cape Blossom Road - Reconnaissance Study*.

In order to help us move the best project proposal forward into final design and environmental documentation, we respectfully request you provide your comments, concerns or questions to DOT&PF by May 31, 2012. Your comments may be submitted by e-mail to: chris.johnston@alaska.gov, or by regular mail to:

DOT&PF

Attn: Christopher Johnston, P.E.
2301 Peger Road
Fairbanks, AK 99701

Additionally, oral or written comments may be submitted at public scoping meetings for the project.

We look forward to your assistance and input, and if you have any questions about the proposed project, please don't hesitate to contact Project Manager Christopher Johnston
or me as noted below.

Sincerely,

Paul Karczmarczyk, CWB®	Christopher Johnston, P.E.
Environmental Impact Analyst	Project Manager
(907) 451-2288	(907) 451-2322
paul.karczmarczyk@alaska.gov	chris.johnston@alaska.gov

Mailing Address: 2301 Peger Road
Fairbanks, AK 99709

"Get Alaska Moving through service and infrastructure."

Public Meeting Outreach

The Arctic Sounder

CASE/PO/AIO:
AD# or identifier:

REMIT TO:

Alaska Media, LLC
P.O. Box 241582
Anchorage, AK 99524
Ph: (907) 770-0836
Fax (907) 770-0822

INVOICE(S):

AFFIDAVIT OF PUBLICATION

UNITED STATES OF AMERICA
STATE OF ALASKA, THIRD DISTRICT
BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC THIS DAY PERSONALLY APPEARED **Shelly Tomlinson** WHO, BEING FIRST DULY SWORN, ACCORDING TO LAW, SAYS THAT S/HE IS **Administrative Assistant** OF **The Arctic Sounder** PUBLISHED AT **500 W. International Airport Rd. Ste F. Anchorage, AK 99518**, IN SAID THIRD DISTRICT AND STATE OF ALASKA AND THAT THE ADVERTISEMENT, OF WHICH THE ANNEXED OR ATTACHED IS A TRUE COPY, WHICH WAS PUBLISHED IN SAID PUBLICATION MAY 3, 2012 AND THEREAFTER FOR A TOTAL OF 1 CONSECUTIVE ISSUE(S), THE LAST PUBLICATION APPEARING ON MAY 3, 2012.

Shelly Tomlinson
Administrative Assistant

SUBSCRIBED AND SWORN BEFORE ME THIS
22nd day of May 2012

NOTARY PUBLIC STATE OF ALASKA
MY COMMISSION EXPIRES ON
4/16/2016

DENISE L. OLIN
My Commission Expires: April 16, 2016

ATTACH PROOF OF PUBLICATION HERE

See page attached

The Arctic Sounder

REMIT TO:

Alaska Media, LLC
P.O. Box 241582
Anchorage, AK 99524
Ph: **(907) 770-0836**
Fax **(907) 770-0822**

CASE/PO/AIO:
AD# or identifier:
Kotzebue to Cape Blossom Rd

INVOICE(S):

AFFIDAVIT OF PUBLICATION

UNITED STATES OF AMERICA STATE OF ALASKA, THIRD DISTRICT BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC THIS DAY PERSONALLY APPEARED **John Woodbury** WHO, BEING FIRST DULY SWORN, ACCORDING TO LAW, SAYS THAT HE IS **Publisher** OF **The Arctic Sounder** PUBLISHED AT **6921 Brayton Drive, Anchorage, AK 99507**, IN SAID THIRD DISTRICT AND STATE OF ALASKA AND THAT THE ADVERTISEMENT, OF WHICH THE ANNEXED OR ATTACHED IS A TRUE COPY, WHICH WAS PUBLISHED IN SAID PUBLICATION 5/10/12 AND THEREAFTER FOR A TOTAL OF 1 CONSECUTIVE ISSUE(S), THE LAST PUBLICATION APPEARING ON 5/10/12.

John Woodbury
Publisher
SUBSCRIBED AND SWORN BEFORE ME THIS 3rd day of Dec

Melissa Thayne
NOTARY PUBLIC STATE OF ALASKA
MY COMMISSION EXPIRES ON October 26th 2016

STATE OF ALASKA
NOTARY PUBLIC
Melissa Thayne
My Commission Expires: October 26, 2016

ATTACH PROOF OF PUBLICATION HERE

Please see attached copy.

Tsunami debris hits Alaska beaches

FISH FACTOR
Laine Welch

Soccer balls…motorcycles…reminders of the massive tsunami in Japan a year ago are now appearing along Alaska's coastlines.

"It's safe to say that tsunami debris is here," said Merrick Burden, director of the Juneau-based Marine Conservation Alliance Foundation.

Since January, the alliance has been tracking where and the kinds of debris that is coming ashore, and whether it is radioactive (none so far), at Kodiak, Yakutat, Sitka and Craig where the wreckage was first likely to hit.

"What we're finding are wind-driven objects like buoys, Styrofoam, and large containers, some of which contain materials that are potentially toxic," Burden said. "We're finding drums full of things that we don't know what they are yet. So we're looking at a potential large scale environmental problem, and what we're dealing with now is just the start of it."

Debris has been found in every area they've looked, Burden said, and mysterious sludge is washing up on some beaches, apparently from opened containers. Just days ago, an enormous amount of floating debris was spotted off the southern reaches of Prince William Sound, making national headlines. But the worst is yet to come.

"Next year is when we expect the larger debris that is driven by currents rather than wind," he cautioned. "That should be comprised of entirely different types of materials, and it might even follow a different trajectory through the water and end up in different locations."

"Part of the problem is that we don't know what we're dealing with, and it looks bad. It's obviously tragic, and it looks like it's a pretty major environmental hazard as well," Burden added.

Some references are being made to the 1989 Exxon Valdez oil spill, saying the impacts of tsunami debris could be worse and more widespread.

"We are dealing with something that will be scattered across the majority of the Alaska coastline as it sweeps across Southeast, through the Gulf, out to the Aleutians and spits up into the Bering Sea. And it looks like some of these containers and canisters contain toxic materials that may be hazardous to human health. There is sludge washing up on some of these beaches, and we can't know what it's comprised of, but it's near a container that was recently opened."

Alaska mariners, fishermen, pilots and beachcombers can play an important role in tracking the oncoming tsunami debris.

"Let us know about the debris you're finding – where it is, what it is comprised of, take a photo, and send to us," Burden urged. "We are also sharing the information with NOAA and we're all just trying to get a better understanding of what's out there and what's coming."

Get more info at www.mcafoundation.org. Tsunami debris sightings can be reported via Facebook at SeaAlliance/Restoring our Shores. Get a free laminated tracking program flier at adminmca@ak.net

MARINE TRADES MOVE ALASKA - With 82 percent of Alaska's communities unreachable by roads, water is the way to go. Businesses that serve the marine industry, including ports and harbors, are a lifeline for coastal communities. State economic specialists want to highlight the importance of the marine trade sector across Alaska, and the jobs it provides, which are often overlooked.

"Research shows that about 80 percent of new jobs are created by existing businesses in a community, rather than businesses attracted to a community. Our goal is to try and retain and expand existing businesses, and doing so is a surer economic development bet than recruiting new ones from other places," said specialist Kevin O'Sullivan at the Division of Economic Development.

To identify the challenges facing businesses, as well as future opportunities, the department needs to get input from Alaskans via an online Business Retention and Expansion questionnaire on how local marine businesses are faring.

"Ship building and repair businesses, seafood processors, all modes of transportation, marine vendors, such as welders or automotive folks, marine construction, anyone dealing with logistics or fuel, ports and harbors and the infrastructure associated with that, and the marine professional services we forget about — engineers, banks, insurance companies, accountants…," O'Sullivan explained.

A survey targeting fishermen will follow in the fall, he added, along with follow ups over the years to track any trends.

"It is valuable to look at results over time because the information will show not only how well businesses are doing, but where the businesses are shifting and relocating to, and why that might be occurring, and the reasons for that might be important," he said.

"We hope through efforts like this it will become clear how vital and valuable this overlooked and very much under promoted economic sector is to the state's economy and to the people who work in these places," O'Sullivan said.

http://www.surveymonkey.com/s

ALASKA MARINE TRADE BUSINESSES QUESTIONNAIRE: Comments wanted on observer program - The public has until June 18 to comment on the proposed rule for the restructured observer program set to start up January 2013. The new program will change how observers are placed on fishing boats, paid for, and for the first time, they will be aboard the halibut longline fleet and on vessels less than 60 feet.

People affected by the new rules can really help shape the new program, said Martin Loefflad, director of the Fisheries Monitoring and Analysis Division of the North Pacific Fishery Observer Program at the Alaska Fisheries Science Center in Seattle.

"It is really helpful when people read the rule very carefully and think of how it is going to impact them, rather than saying 'I like it or don't like it'," Loefflad said. "Give us some concrete suggestions on how we can improve the language to make it work better. That really helps us because the final rule will be adjusted based on public comments. It's the people who are out there who will be impacted that can help us create it to work at the start."

NOAA Fisheries also is seeking a contractor to oversee observer training and deployment to shore side debriefings.

Find both the proposed rule for the restructured observer program and the statement of work for a contractor at http://www.alaskafisheries.noaa.gov/

■ See Page 15, FISH FACTOR

PUBLIC NOTICE: Kotzebue Electric Association Inc. Notice of Proposed Tariff Changes Electric Service Schedule Residential, Small Commercial and Large Commercial.

The proposed Tariff changes are referred to as "Rate Simplification" is intended to reduce the number of billing blocks for the kWh Charge. The tariff changes also establish an "Energy Charge" for each rate class. The utility has performed a rate review and desires to simplify the rate structure for its consumers. It is the intent of the proposed changes to remain cost neutral from the existing rate structure to the proposed structure. The existing and proposed rates are shown below:

Existing Residential & Small Commercial Rate Structure

Block 1	50 kWh	@	41.44 cents/kWh
Block 2	50 kWh	@	35.77 cents/kWh
Block 3	9,900 kWh	@	23.72 cents/kWh
Block 4	999,999 kWh	@	22.30 cents/kWh

Proposed Residential Rate Structure

Block 1	up to 999,999 kWh	@	17.21 cents/kWh
Monthly Energy Charge		@	$15.00

Proposed Small Commercial Rate Structure

Block 1	up to 999,999 kWh	@	16.91 cents/kWh
Monthly Energy Charge		@	$25.00

Existing Large Commercial Rate Structure

Demand Charge:			$2.84 per kW
First	10,000 kWh	@	24.43 cents/kWh
Over	10,000 kWh	@	22.01 cents/kWh

Proposed Large Commercial Rate Structure

Demand Charge:			$5.00 per kW
Block 1	up to 999,999 kWh	@	15.55 cents/kWh
Monthly Energy Charge		@	$75.00

The proposed Tariff change was announced at the KEA Annual meeting of the membership. There will be a Public Hearing at the May 8th and June 13th KEA monthly board meeting. The proposed effective date of the tariff changes is July 20th, 2012

All parties interested in this matter may obtain information with respect directly from Kotzebue Electric Association Inc. 245 4th Street (physical) P.O. Box 44 (mail), (907) 442-3491 (phone)

5/10-17

Kotzebue to Cape Blossom Road

DOT&PF Project No. 76844/NCPD-0002(204)

PUBLIC OPEN HOUSES

KOTZEBUE: Thursday, May 10, 2012
Refreshments and sign in at 9:00 am
Presentation & public comments 9:30 a.m. to Noon.
Northwest Arctic Borough Assembly Chambers, Kotzebue

BUCKLAND: Thursday, May 10, 2012
Refreshments and sign in at 7:00 p.m.
Presentation & public comments 7:15 p.m. to 9:00 p.m.
City Hall, Buckland

The Alaska Department of Transportation and Public Facilities (DOT), in cooperation with the Federal Highway Administration (FHWA), is preparing an Environmental Assessment (EA) in support of a proposed road from Kotzebue to Cape Blossom on the Baldwin Peninsula. The road would improve access and enhance safety between Kotzebue and the shoreline near Cape Blossom. The project will utilize federal funding, and must fully comply with the National Environmental Policy Act (NEPA) and other federal, state, and local regulations.

To support preparation of environmental documentation for the project, DOT&PF would like to hear from you about concerns or issues the proposed road project may present to you or your agency. Your input will help guide development of a project design that avoids or minimizes as many potential adverse impacts as possible.

To share your thoughts on the project, we encourage you to attend either of two public scoping meetings to be held. The first will be at the Northwest Arctic Borough (NWAB) chambers on May 10th, 2012 at 9:00 a.m.; and the second at the Buckland City Hall later that same day, at 7:00 p.m. The DOT&PF project team will be on hand to present project information, listen to public input, and answer any questions you may have. Refreshments will be provided.

If you're unable to make either meeting, but wish to provide comments on the project, you can access the project website at: http://dot.alaska.gov/nreg/capeblossomroad/, or you may send written comments by letter or email to the project manager as noted below.

For more information contact:
Christopher Johnston, P.E., Project Manager
Alaska Department of Transportation & Public Facilities
Northern Region
2301 Peger Road, Fairbanks, AK 99709
Ph: (907) 451-2322
E-mail: chris.johnston@alaska.gov

website: http://dot.alaska.gov/nreg/capeblossomroad/

Kotzebue to Cape Blossom Road

DOT&PF Project No. 76844/NCPD-0002(204)

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Ph: (907) 451-2322
E-mail: chris.johnston@alaska.gov

website: http://dot.alaska.gov/nreg/capeblossomroad/

From: Joann Mitchell <j.mitchell@brooks-alaska.com>
Subject: Arctic Sounder Display Ad (Cape Blossom Rd)
Date: April 24, 2012 10:35:11 AM AKDT
To: Denise Olin <dolin@reportalaska.com>
Cc: Anne Brooks <a.brooks@brooks-alaska.com>

1 Attachment, 1.2 MB

Hi Denise--

We would like the attached ad placed in the Sounder on May 3 and May 10. It should be a 1/4 page ad and black and white. Let me know if you have problems with the ad.

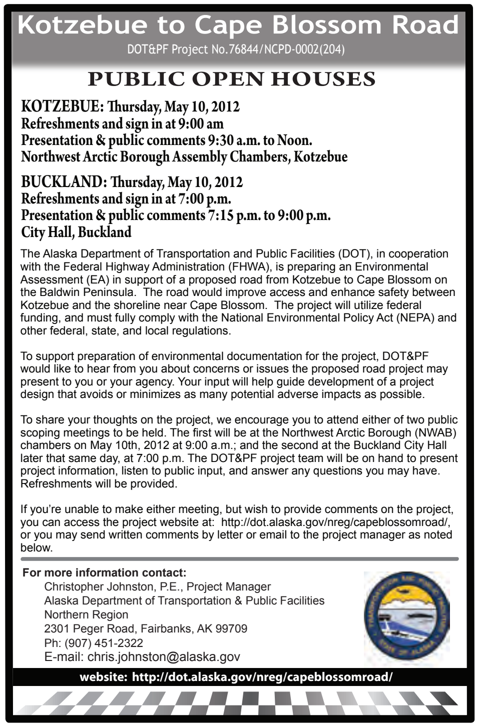
We will also need an affidavit of publication.

Can you invoice us for the ad at the address below?

Thanks!

Joann Mitchell, P.E.

Brooks & Associates
301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: j.mitchell@brooks-alaska.com
Tel: 907-272-1877
Fax: 907-743-6087
Toll Free: 866-535-1877



Kotzebue to Cape Blossom Road

DOT&PF Project No.76844/NCPD-0002(204)

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Northern Region
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Ph: (907) 451-2322
E-mail: chris.johnston@alaska.gov

website: http://dot.alaska.gov/nreg/capeblossomroad/

Brooks & Associates
Community Building through Conversations & Collaboration

FAX COVER SHEET

DATE:	April 30, 2012
B&A JOB NO./NAME:	3949.01 Cape Blossom
TO:	KIC
FAX NUMBER:	907.442.2165
# OF PAGES (including this cover page)	2
FROM:	Anne Brooks

[ ] Hand Deliver [X] Fax [ ] by U.S. Mail [ ] by Overnight Courier [ ] Pick Up

Attached are the following:

No.	Description	Date
1	Flyer for upcoming Public Meeting	4/30/12/

These are transmitted as checked below:

[ ] For approval
[ ] For your use
[ ] As requested

[ ] Approved as submitted
[ ] Approved as noted
[ ] Returned for corrections

[ ] Resubmit ____ copies for approval
[ ] Submit ____ copies for distribution
[ ] For review and comment

[ ] ____________________

REMARKS:

I am working to get the word out about meetings in Kotzebue (May 10) and Buckland (May 10) regarding the proposed Kotzebue to Cape Blossom Road. Please share the attached flyer with your internal and external stakeholders and let them know of this opportunity for their voices to be heard.

You make give me a call if you have any questions or comments.

Thank you,

Anne Brooks

Alaska Department of Transportation and Public Facilities

Kotzebue to Cape Blossom Road

Public and Agency Scoping Meetings

State Project No. 76884

To support preparation of required environmental documentation for the project, DOT&PF wants to hear from you about concerns or issues the proposed road project may present to you or your agency. Your input is important, and will help guide development of a project design that avoids or minimizes potentially adverse impacts. We encourage you to attend public scoping meetings to be held at:

***Kotzebue* – Northwest Arctic Borough Assembly Chambers**
Thursday, May 10, 2012
Refreshments/sign-in: 9:00 a.m.
Presentation & public input: 9:30 a.m. - noon

***Buckland* – Buckland City Hall**
Friday, May 11, 2012 (Note date change)
Refreshments/sign-in: 12:00 Noon
Presentation & public input: 12:15 p.m. – 2:00 p.m.

For more information contact:
Christopher Johnston, P.E., Project Manager
DOT&PF; 2301 Peger Road, Fairbanks, AK 99709
Ph: (907) 451-2322

From: MAILER-DAEMON
Subject: Undelivered Mail Returned to Sender
Date: April 30, 2012 11:05:34 AM AKDT
To: <a.brooks@brooks-alaska.com>

This is the mail system at host mail27-va3-R.bigfish.com.

I'm sorry to have to inform you that your message could not
be delivered to one or more recipients. It's attached below.

For further assistance, please send mail to postmaster.

If you do so, please include this problem report. You can
delete your own text from the attached returned message.

                   The mail system

```
<sshroyerbeaver@nana.com>: host 209.112.162.37[209.112.162.37] said: 554 5.4.6
   Hop count exceeded - possible mail loop (in reply to end of DATA command)
Reporting-MTA: dns; mail27-va3-R.bigfish.com
X-Postfix-Queue-ID: F12C8260294
X-Postfix-Sender: rfc822; a.brooks@brooks-alaska.com
Arrival-Date: Mon, 30 Apr 2012 19:05:27 +0000 (UTC)

Final-Recipient: rfc822; sshroyerbeaver@nana.com
Original-Recipient: rfc822;sshroyerbeaver@nana.com
Action: failed
Status: 5.4.6
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Diagnostic-Code: smtp; 554 5.4.6 Hop count exceeded - possible mail loop
Return-Path: <a.brooks@brooks-alaska.com>
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X-BigFish: Vvps2(zzc85fh62a3Izz1202hz70kz8275bhz2dh793h87h2a8h839hd25he5bh)
X-Forefront-Antispam-Report: CIP:209.112.162.36;KIP:(null);UIP:(null);IPV:NLI;H:mail.nana.com;RD:smtp.nana.com;EFVD:NLI
X-FB-DOMAIN-IP-MATCH: fail
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        for <sshroyerbeaver@nana.com>; Mon, 30 Apr 2012 19:05:24 +0000 (UTC)
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(UTC)
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(UTC)
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(UTC)
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(UTC)
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Apr 2012 18:48:07 +0000 (UTC)
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(UTC)
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(10.3.87.111) with Microsoft SMTP Server id 14.1.225.23; Mon, 30 Apr 2012
18:47:59 +0000
Received: from [192.168.2.62] ([69.178.8.253]) by msgmmp-2.gci.net (Sun Java
System Messaging Server 6.2-3.03 (built Jun 27 2005)) with ESMTPA id
<0M3B003XR2VW7J20@msgmmp-2.gci.net> for sshroyerbeaver@nana.com; Mon, 30 Apr
2012 10:47:59 -0800 (AKDT)
Date: Mon, 30 Apr 2012 10:47:55 -0800
From: Anne Brooks <a.brooks@brooks-alaska.com>
Subject: Kotzebue to Cape Blossom Road
To: <lcommack@inutek.net>, <akleah1070@hotmail.com>,
        <isabelle.booth@maniilaq.org>, <percy.ballot@maniilaq.org>,
        <raymondstoney@inutek.net>, Sandy Schroyer-Beaver <sshroyerbeaver@nana.com>,
        <robertaurorakids@hotmail.com>, <cpcannon2006@yahoo.com>,
        <emerson.moto@maniilaq.org>, <nellie.greist@maniilaq.org>,
        <johnettacleveland@hotmail.com>, <shidow@att.net>
Message-ID: <FD013E9D-8F36-4A34-A380-F24D2A89141B@brooks-alaska.com>
MIME-Version: 1.0
X-Mailer: Apple Mail (2.1084)
Content-Type: multipart/alternative;
        boundary="Boundary_(ID_II9GNfereuFz/JJSh/WrVQ)"
X-OriginatorOrg: nana.com
```

From: Darlene Hadley <DHadley@nwabor.org>
Subject: RE: Kotzebue to Cape Blossom road
Date: April 30, 2012 10:11:08 AM AKDT
To: Anne Brooks <a.brooks@brooks-alaska.com>

Forwarded to the City of Buckland, Mayor and Tribe *admin* , an will post in a couple of prominent places.
Darlene Hadley

From: Anne Brooks [a.brooks@brooks-alaska.com]
Sent: Monday, April 30, 2012 10:04 AM
To: Darlene Hadley
Cc: Joann Mitchell
Subject: Kotzebue to Cape Blossom road

Darlene --

I've attached a flyer about upcoming meetings in Kotzebue and Buckland regarding the Kotzebue to Cape Blossom Road project. Are you the appropriate person for me to request that these get sent to the other communities within the Northwest Arctic Borough? I did send to Tom Okleasik. We will make a distribution, but sometimes it works well to come from someone with the borough.

We would request that these get posted at a prominent place in each community.

Thanks very much.

From: "Hansen, Margaret A (CED)" <margaret.hansen@alaska.gov>
Subject: RE: Kotzebue to Cape Blossom Road Project -- Upcoming Meeting, May 10, 2012
Date: April 30, 2012 1:02:08 PM AKDT
To: Anne Brooks <a.brooks@brooks-alaska.com>

Hi Anne. I have posted it here at NANA and will other places as well like the school district office. Sorry to say I have scheduled a trip to one of my villages so will not be able to attend in Kotzebue but I will be in Buckland so will be a ble to attend that one.

Margaret

From: Anne Brooks [mailto:a.brooks@brooks-alaska.com]
Sent: Mon 4/30/2012 10:53 AM
To: gadams@nwiha.com; cmcconnell@nwarctic.org; dannyegak@yahoo.com; tarruq46@yahoo.com; daisy.lambert@maniilaq.org; wkarmun@otz.net; Hansen, Margaret A (CED); c.harris@maniilaq.org
Subject: Kotzebue to Cape Blossom Road Project -- Upcoming Meeting, May 10, 2012

I have attached a flyer about upcoming meetings in Kotzebue and Buckland regarding a proposed road from Kotzebue to Cape Blossom.

I am hoping you will be able to help us get the word out about this meeting by circulating the flyer within Native Village of Kotzebue organization and by posting it in prominent places around Kotzebue

From: "Hansen, Margaret A (CED)" <margaret.hansen@alaska.gov>
Subject: RE: Kotzebue to Cape Blossom Road Project -- Upcoming Meeting, May 10, 2012
Date: April 30, 2012 3:51:02 PM AKDT
To: Anne Brooks <a.brooks@brooks-alaska.com>

Did you know that is their graduation night at 7:00, I believe everyone goes to the graduations?

Margaret

From: Anne Brooks [mailto:a.brooks@brooks-alaska.com]
Sent: Mon 4/30/2012 10:53 AM
To: gadams@nwiha.com; cmcconnell@nwarctic.org; dannyegak@yahoo.com; tarruq46@yahoo.com; daisy.lambert@maniilaq.org; wkarmun@otz.net; Hansen, Margaret A (CED); c.harris@maniilaq.org
Subject: Kotzebue to Cape Blossom Road Project -- Upcoming Meeting, May 10, 2012

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I am hoping you will be able to help us get the word out about this meeting by circulating the flyer within Native Village of Kotzebue organization and by posting it in prominent places around Kotzebue

From: "KOTZ Messages" <message@kotz.org>
Subject: Re: Kotzebue to Cape Blossom Road
Date: April 30, 2012 11:04:08 AM AKDT
To: "Anne Brooks" <a.brooks@brooks-alaska.com>

Cannot open attachment.....

> ----- Original Message -----
> **From:** Anne Brooks
> **To:** message@kotz.org ; rhensley@kotz.org
> **Sent:** Monday, April 30, 2012 10:59 AM
> **Subject:** Kotzebue to Cape Blossom Road
>
> I've attached a flyer about an upcoming meeting in Kotzebue regarding the proposed road from Kotzebue to Cape Blossom. Please add information about this meeting to your program. Let me know if you need any additional information.
>
> Thanks for your assistance in getting the word out about this meeting. More detail on the project is available on the project web site at:
> http://dot.alaska.gov/nreg/capeblossomroad/
>
> ---
>
> M. Anne Brooks P.E.
> Brooks & Associates
> 301 West Northern Lights Blvd, Suite 440
> Anchorage, AK 99503
> E-mail: a.brooks@brooks-alaska.com
> Tel: 907-272-1877
> Toll Free: 866-535-1877
>
> **Please consider the environment before printing this e-mail**
>
> ---

I've attached a flyer about an upcoming meeting in Kotzebue regarding the proposed road from Kotzebue to Cape Blossom. Please add information about this meeting to your program. Let me know if you need any additional information.

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Anchorage, AK 99503
E-mail: a.brooks@brooks-alaska.com
Tel: 907-272-1877
Toll Free: 866-535-1877

Please consider the environment before printing this e-mail

From: Anne Brooks <a.brooks@brooks-alaska.com>
Subject: Re: Kotzebue to Cape Blossom road
Date: April 30, 2012 10:19:07 AM AKDT
To: Darlene Hadley <DHadley@nwabor.org>
Cc: Joann Mitchell <J.mitchell@brooks-alaska.com>

Thanks Darlene. We appreciate your assistance.

Anne

M. Anne Brooks P.E.
Brooks & Associates
301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: a.brooks@brooks-alaska.com
Tel: 907-272-1877
Toll Free: 866-535-1877

On Apr 30, 2012, at 10:11 AM, Darlene Hadley wrote:

Forwarded to the City of Buckland, Mayor and Tribe *admin* , an will post in a couple of prominent places.
Darlene Hadley

From: Anne Brooks [a.brooks@brooks-alaska.com]
Sent: Monday, April 30, 2012 10:04 AM
To: Darlene Hadley
Cc: Joann Mitchell
Subject: Kotzebue to Cape Blossom road

Darlene --

I've attached a flyer about upcoming meetings in Kotzebue and Buckland regarding the Kotzebue to Cape Blossom Road project. Are you the appropriate person for me to request that these get sent to the other communities within the Northwest Arctic Borough? I did send to Tom Okleasik. We will make a distribution, but sometimes it works well to come from someone with the borough.

We would request that these get posted at a prominent place in each community.

Thanks very much.

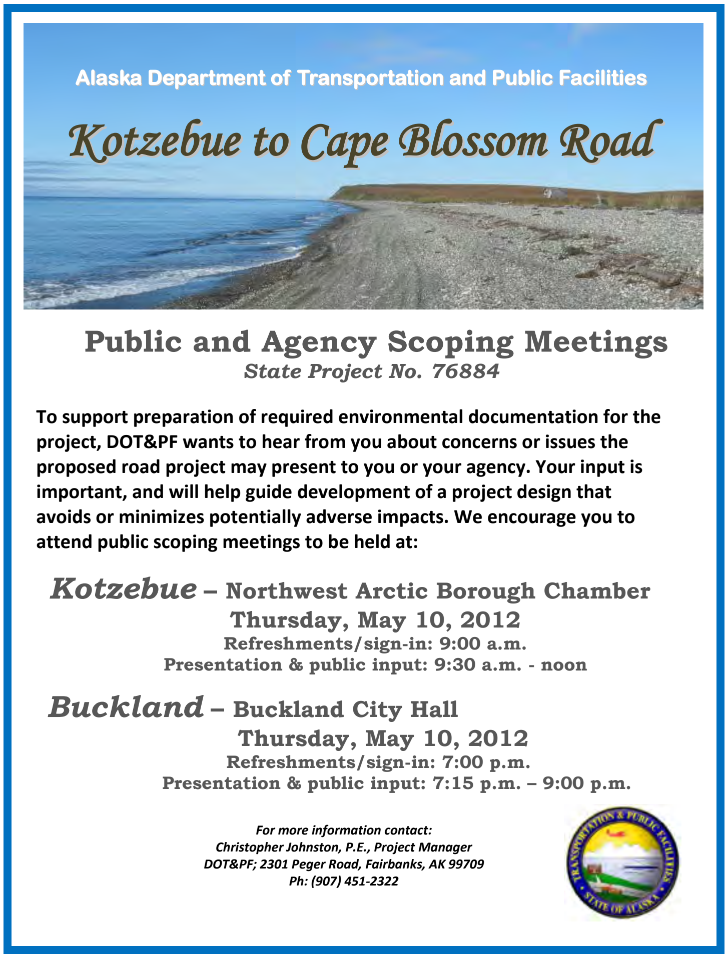
From: Anne Brooks <a.brooks@brooks-alaska.com>
Subject: Kotzebue to Cape Blossom Road
Date: April 30, 2012 10:49:49 AM AKDT
To: info@kea.coop

1 Attachment, 152 KB

Hi Kotzebue Electric Association

I have attached a flyer about upcoming meetings in Kotzebue and Buckland regarding a proposed road from Kotzebue to Cape Blossom.

I am hoping you will be able to help us get the word out about this meeting by circulating the flyer within your organization and by posting it in prominent places within the Northwest Arctic Borough communities you serve



Alaska Department of Transportation and Public Facilities

Kotzebue to Cape Blossom Road

Public and Agency Scoping Meetings

State Project No. 76884

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Thursday, May 10, 2012
Refreshments/sign-in: 9:00 a.m.
Presentation & public input: 9:30 a.m. - noon

Buckland **– Buckland City Hall**
Thursday, May 10, 2012
Refreshments/sign-in: 7:00 p.m.
Presentation & public input: 7:15 p.m. – 9:00 p.m.

For more information contact:
Christopher Johnston, P.E., Project Manager
DOT&PF; 2301 Peger Road, Fairbanks, AK 99709
Ph: (907) 451-2322

.

If you have any questions, please let us know.

M. Anne Brooks P.E.
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301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: a.brooks@brooks-alaska.com
Tel: 907-272-1877
Toll Free: 866-535-1877

From: Joann Mitchell <J.mitchell@brooks-alaska.com>
Subject: Kotzebue to Cape Blossom Road
Date: April 30, 2012 12:34:48 PM AKDT
To: info@kotzebueira.org
Cc: Anne Brooks <a.brooks@brooks-alaska.com>

1 Attachment, 153 KB

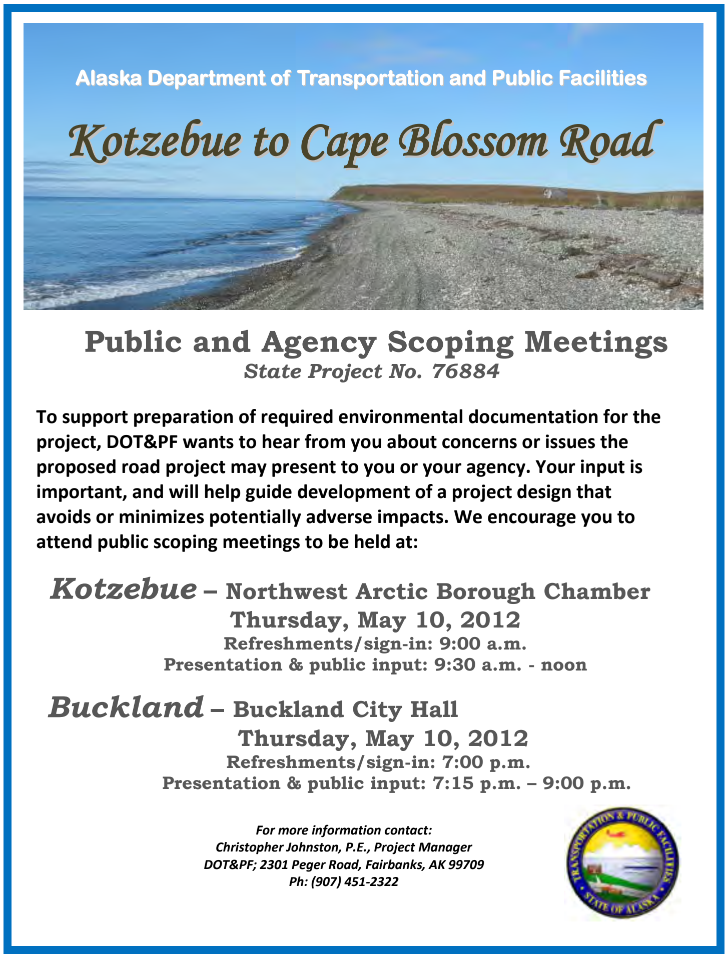
We are working to get the word out about meetings in Kotzebue (May 10) and Buckland (May 10) regarding the proposed Kotzebue to Cape Blossom Road. Please share the attached flyer with your internal and external stakeholders and let them know of this opportunity for their voices to be heard.

Feel free to forward this flyer within your organization and to other interested folks. You make give me or Anne Brooks a call if you have any questions or comments.

Joann Mitchell, P.E.

Brooks & Associates
301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: j.mitchell@brooks-alaska.com
Tel: 907-272-1877
Fax: 907-743-6087
Toll Free: 866-535-1877

Please consider the environment before printing this e-mail



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Refreshments/sign-in: 7:00 p.m.
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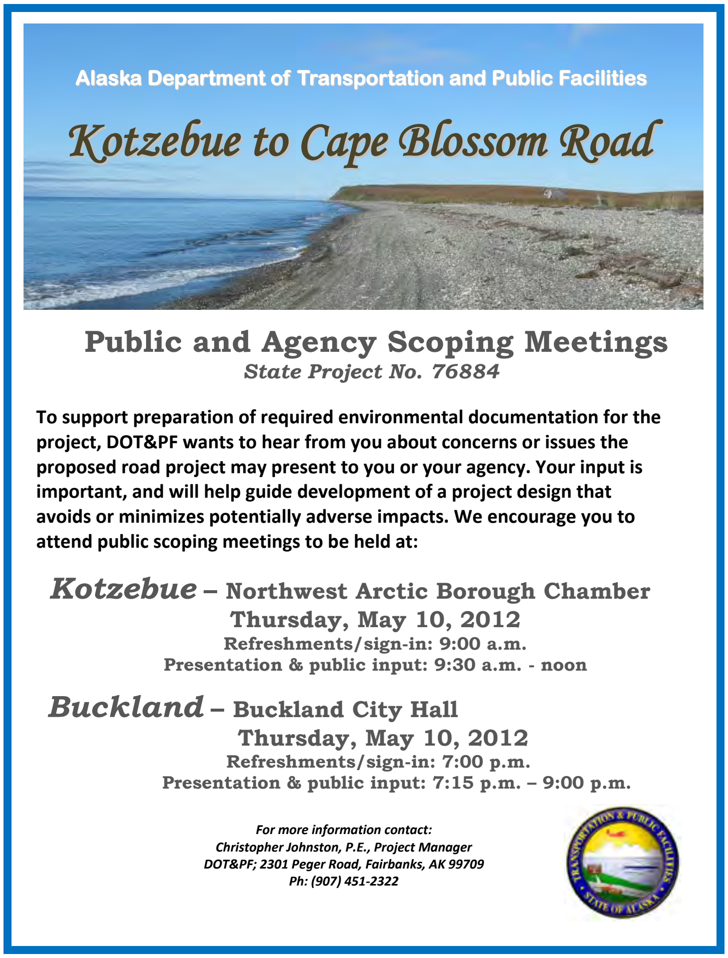
Christopher Johnston, P.E., Project Manager
DOT&PF; 2301 Peger Road, Fairbanks, AK 99709
Ph: (907) 451-2322

From: Anne Brooks <a.brooks@brooks-alaska.com>
Subject: Re: Kotzebue to Cape Blossom Road
Date: April 30, 2012 11:15:01 AM AKDT
To: KOTZ Messages <message@kotz.org>

1 Attachment, 152 KB

It is a pdf. You should be able to open with Adobe Acrobat. I've reattached so we can try again.

Anne



Alaska Department of Transportation and Public Facilities

Kotzebue to Cape Blossom Road

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DOT&PF; 2301 Peger Road, Fairbanks, AK 99709
Ph: (907) 451-2322

On Apr 30, 2012, at 11:04 AM, KOTZ Messages wrote:

Cannot open attachment.....

> ----- Original Message -----
> **From:** Anne Brooks
> **To:** message@kotz.org ; rhensley@kotz.org
> **Sent:** Monday, April 30, 2012 10:59 AM
> **Subject:** Kotzebue to Cape Blossom Road
>
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> ---
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> M. Anne Brooks P.E.

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301 West Northern Lights Blvd, Suite 440
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E-mail: a.brooks@brooks-alaska.com
Tel: 907-272-1877
Toll Free: 866-535-1877

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Tel: 907-272-1877
Toll Free: 866-535-1877

Please consider the environment before printing this e-mail

From: Anne Brooks <a.brooks@brooks-alaska.com>
Subject: Kotzebue to Cape Blossom Road Project -- Upcoming Meeting, May 10, 2012
Date: April 30, 2012 10:53:23 AM AKDT
To: gadams@nwiha.com, cmcconnell@nwarctic.org, dannyegak@yahoo.com, tarruq46@yahoo.com, daisy.lambert@maniilaq.org, wkarmun@otz.net, margaret.hansen@alaska.gov, c.harris@maniilaq.org

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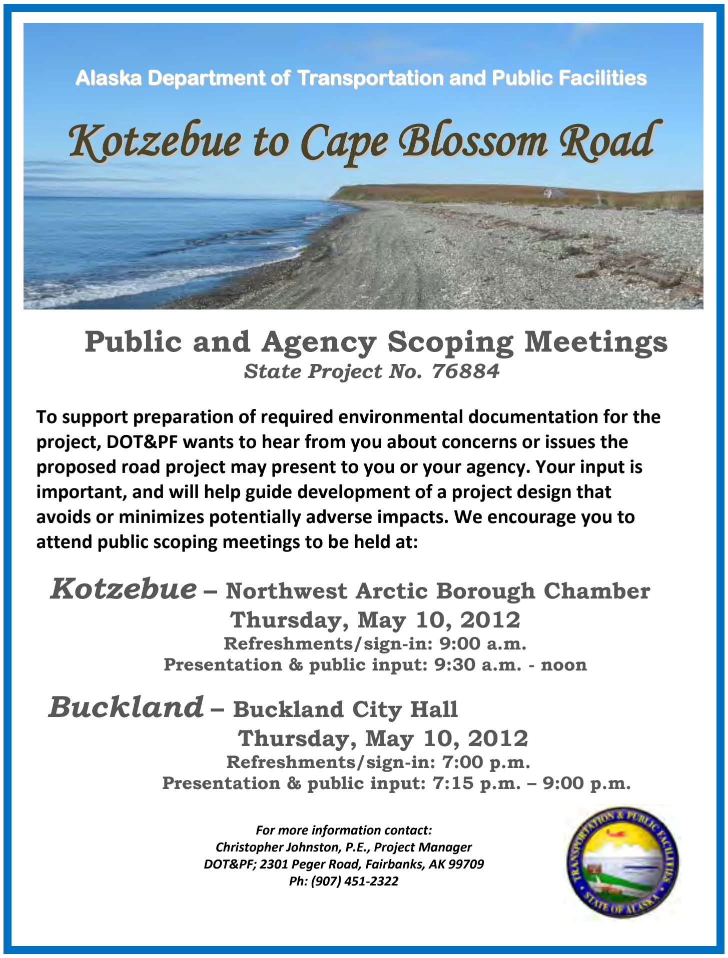

Alaska Department of Transportation and Public Facilities

Kotzebue to Cape Blossom Road

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Tel: 907-272-1877
Toll Free: 866-535-1877

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From: Anne Brooks <a.brooks@brooks-alaska.com>
Subject: Kotzebue to Cape Blossom Road
Date: April 30, 2012 10:59:20 AM AKDT
To: message@kotz.org, rhensley@kotz.org

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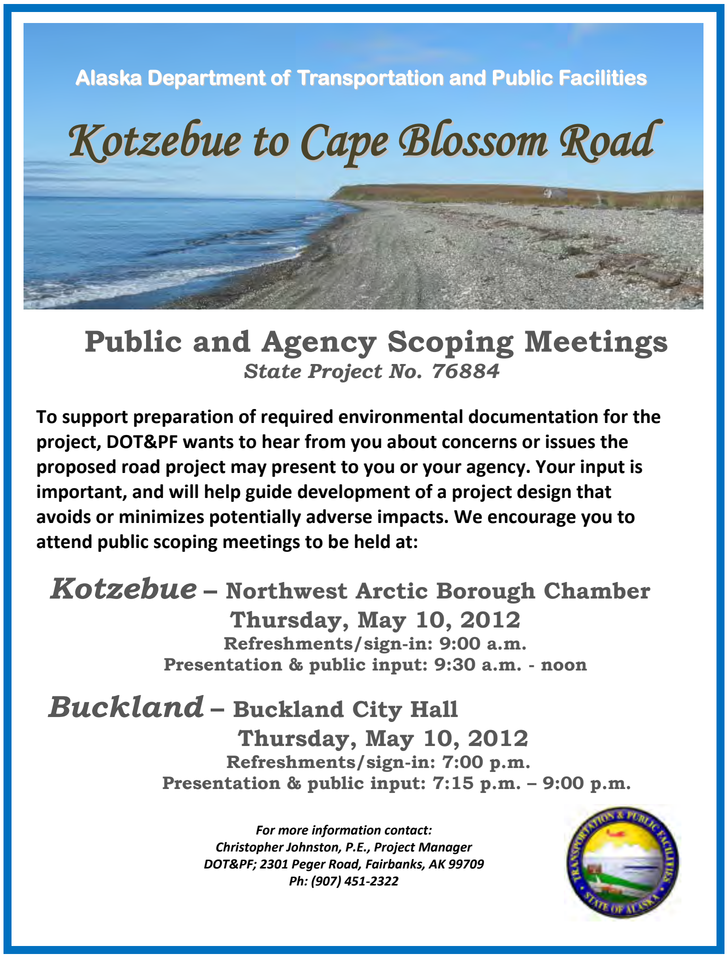

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301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: a.brooks@brooks-alaska.com
Tel: 907-272-1877
Toll Free: 866-535-1877

From: Anne Brooks <a.brooks@brooks-alaska.com>
Subject: Kotzebue to Cape Blossom Road
Date: April 30, 2012 10:47:55 AM AKDT
To: lcommack@inutek.net, akleah1070@hotmail.com, isabelle.booth@maniilaq.org, percy.ballot@maniilaq.org, raymondstoney@inutek.net, Sandy Schroyer-Beaver <sshroyerbeaver@nana.com>, robertaurorakids@hotmail.com, cpcannon2006@yahoo.com, emerson.moto@maniilaq.org, nellie.greist@maniilaq.org, johnettacleveland@hotmail.com, shidow@att.net

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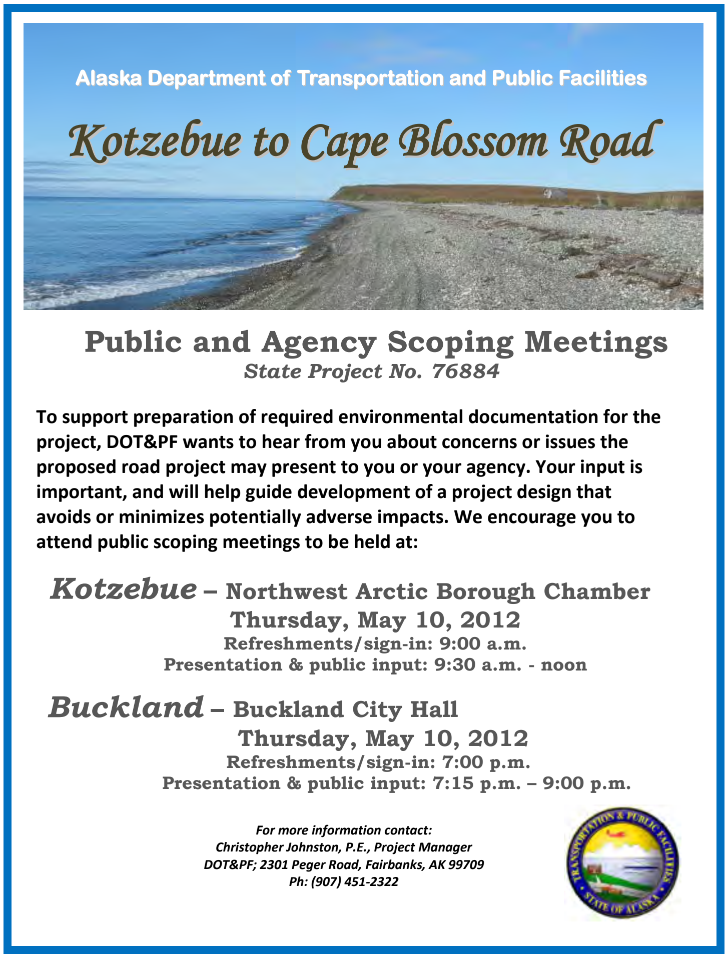
I have attached a flyer about upcoming meetings in Kotzebue and Buckland regarding a proposed road from Kotzebue to Cape Blossom.

I am hoping you will be able to help us get the word out about this meeting by circulating the flyer within the Maniilaq organization and by posting it in prominent places within the Northwest Arctic Borough communities.

If you have any questions, please let us know.



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M. Anne Brooks P.E., Public Involvement Coordinator
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301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: a.brooks@brooks-alaska.com
Tel: 907-272-1877
Toll Free: 866-535-1877

From: Anne Brooks <a.brooks@brooks-alaska.com>
Subject: Kotzebue to Cape Blossom Road
Date: April 30, 2012 10:33:53 AM AKDT
To: lands@nana.com, shareholderrelations@nana.com, news@nana.com, administration@nana.com, shelly.wozniak@nana.com
Cc: Joann Mitchell <J.mitchell@brooks-alaska.com>

1 Attachment, 152 KB

All

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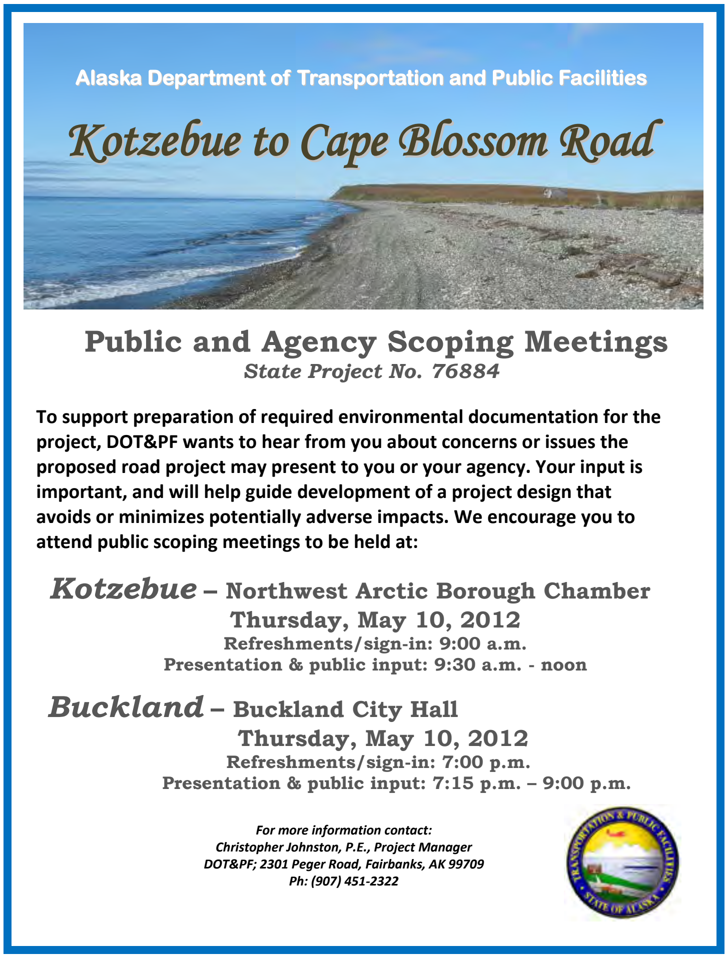

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From: Anne Brooks <a.brooks@brooks-alaska.com>
Subject: Kotzebue to Cape Blossom road
Date: April 30, 2012 10:04:23 AM AKDT
To: dhadley@nwabor.org
Cc: Joann Mitchell <J.mitchell@brooks-alaska.com>

1 Attachment, 152 KB

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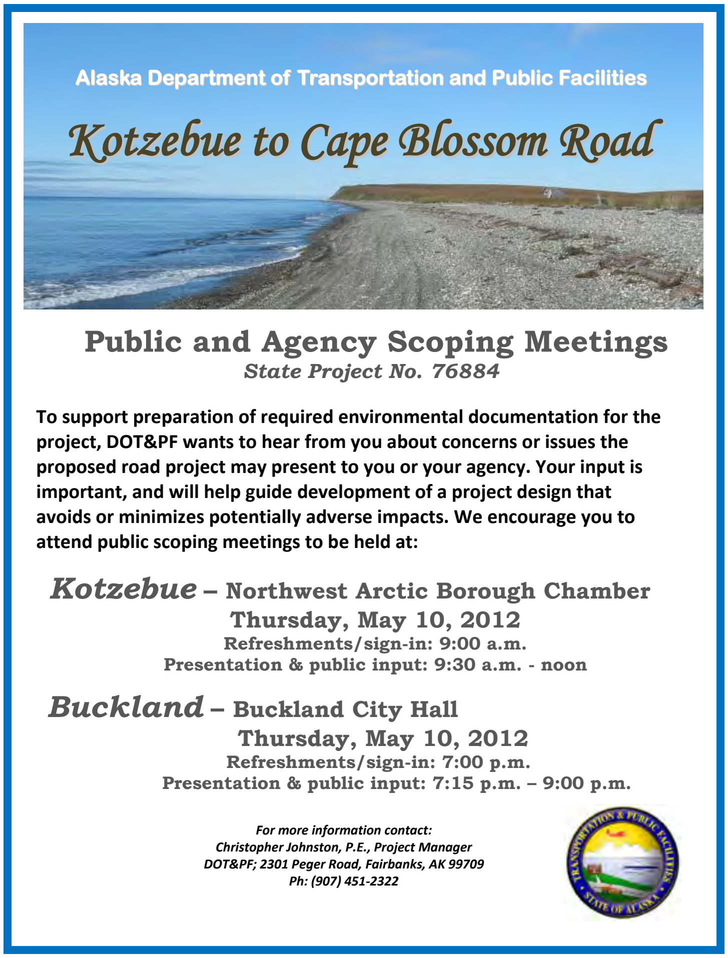

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Toll Free: 866-535-1877

From: Anne Brooks <a.brooks@brooks-alaska.com>
Subject: Kotzebue to Cape Blossom Road
Date: April 30, 2012 10:00:23 AM AKDT
To: tokleasik@nwabor.org

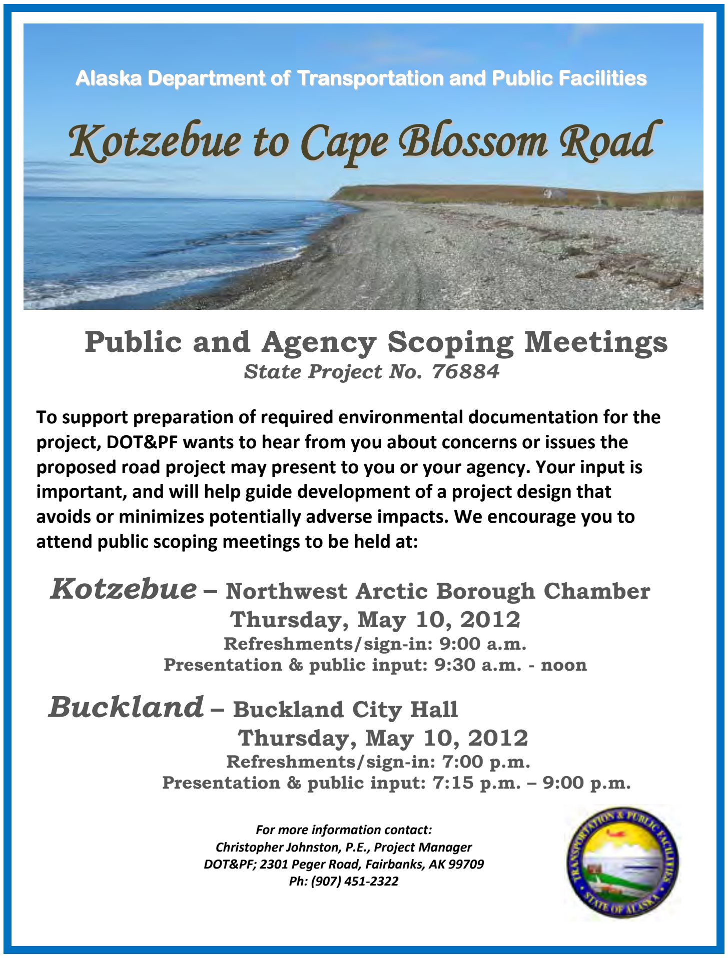
1 Attachment, 152 KB

Kia ora Tom

I am attaching a one page flyer announcing the May 10th meetings in Kotzebue and Buckland for the Cape Blossom Road project. May I impose on you to forward to within the borough and post on the Borough's bulletin board. We hope the promise of pizza will bring folks to the meeting. We really want to hear from residents within the region about the project.

I will be sending this to the City, NANA, KIC Maniilaq, KOTZ radio, and others. Let me know if you think of others who should be able to help us get the word out.

Thanks a bunch.



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Brooks & Associates
Community Building through Conversations & Collaboration

FAX COVER SHEET

DATE: April 30, 2012
B&A JOB NO./NAME: 3949.01 Cape Blossom
TO: Maniilaq
FAX NUMBER: 907.442.7830
 # OF PAGES (including this cover page) 2

FROM: Anne Brooks

[ ] Hand Deliver [X] Fax [ ] by U.S. Mail [ ] by Overnight Courier [ ] Pick Up

Attached are the following:

No.	Description	Date
1	Flyer for upcoming Public Meeting	4/30/12/

These are transmitted as checked below:

[ ] For approval
[ ] For your use
[ ] As requested

[ ] Approved as submitted
[ ] Approved as noted
[ ] Returned for corrections

[ ] Resubmit ____ copies for approval
[ ] Submit ____ copies for distribution
[ ] For review and comment

[ ] ____

REMARKS:

I am working to get the word out about meetings in Kotzebue (May 10) and Buckland (May 10) regarding the proposed Kotzebue to Cape Blossom Road. Please share the attached flyer with your internal and external stakeholders and let them know of this opportunity for their voices to be heard.

You make give me a call if you have any questions or comments.

Thank you,

Anne Brooks

Alaska Department of Transportation and Public Facilities

Kotzebue to Cape Blossom Road

Public and Agency Scoping Meetings

State Project No. 76884

To support preparation of required environmental documentation for the project, DOT&PF wants to hear from you about concerns or issues the proposed road project may present to you or your agency. Your input is important, and will help guide development of a project design that avoids or minimizes potentially adverse impacts. We encourage you to attend public scoping meetings to be held at:

Kotzebue **– Northwest Arctic Borough Chamber**

Thursday, May 10, 2012

Refreshments/sign-in: 9:00 a.m.

Presentation & public input: 9:30 a.m. - noon

Buckland **– Buckland City Hall**

Thursday, May 10, 2012

Refreshments/sign-in: 7:00 p.m.

Presentation & public input: 7:15 p.m. – 9:00 p.m.

For more information contact:
Christopher Johnston, P.E., Project Manager
DOT&PF; 2301 Peger Road, Fairbanks, AK 99709
Ph: (907) 451-2322

Brooks & Associates
Community Building through Conversations & Collaboration

FAX COVER SHEET

DATE:	April 30, 2012
B&A JOB NO./NAME:	3949.01 Cape Blossom
TO:	Kotzebue IRA
FAX NUMBER:	907.442.2162
# OF PAGES **(including this cover page)**	2
FROM:	Anne Brooks

[ ] Hand Deliver [X] Fax [ ] by U.S. Mail [ ] by Overnight Courier [ ] Pick Up

Attached are the following:

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These are transmitted as checked below:

[ ] For approval
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[ ] Approved as submitted
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[ ] Resubmit ____ copies for approval
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[ ] ____

REMARKS:

I am working to get the word out about meetings in Kotzebue (May 10) and Buckland (May 10) regarding the proposed Kotzebue to Cape Blossom Road. Please share the attached flyer with your internal and external stakeholders and let them know of this opportunity for their voices to be heard.

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Alaska Department of Transportation and Public Facilities

Kotzebue to Cape Blossom Road

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Kotzebue **– Northwest Arctic Borough Assembly Chambers**
Thursday, May 10, 2012
Refreshments/sign-in: 9:00 a.m.
Presentation & public input: 9:30 a.m. - noon

Buckland **– Buckland City Hall**
Friday, May 11, 2012 (Note date change)
Refreshments/sign-in: 12:00 Noon
Presentation & public input: 12:15 p.m. – 2:00 p.m.

For more information contact:
Christopher Johnston, P.E., Project Manager
DOT&PF; 2301 Peger Road, Fairbanks, AK 99709
Ph: (907) 451-2322

From: "Johnston, Christopher F (DOT)" <chris.johnston@alaska.gov>
Subject: Buckland meeting
Date: May 1, 2012 4:16:42 PM AKDT
To: "Brown, Karen M" <Karen.Brown@mbakercorp.com>, Anne Brooks <a.brooks@brooks-alaska.com>
Cc: "Christianson, Derek M" <Derek.Christianson@mbakercorp.com>, "Karczmarczyk, Paul F (DOT)" <paul.karczmarczyk@alaska.gov>

Karen,

I got a call from Buckland saying their high school graduation is at 7PM on the 10th. They've got 14 seniors graduating so it's a big to do out there and we'll have to move the meeting. I'm going to try to see if we can do a Friday meeting during the day. Are there any deal breaker issues you might have with a Friday meeting? We should be able to get on AS153 back to Anchorage Friday evening.

I'll call out to Buckland tomorrow morning and see if we can do a Friday meeting but wanted to give you a heads up.

Christopher Johnston, P.E. | **Northern Region Aviation** | **Alaska Department of Transportation**
2301 Peger Road Fairbanks, AK 99709 | ☎: 907.451.2322 | 🖶: 907.451.5126 | ✉: chris.johnston@alaska.gov

From: Internet Mail Delivery <postmaster@msgmmp-2.gci.net>
Subject: Delivery Notification: Delivery has failed
Date: May 3, 2012 8:15:00 AM AKDT
To: mycomments@brooks-alaska.com

1 Attachment, 433 KB

This report relates to a message you sent with the following header fields:

Message-id: <0EDA2AE1-93F2-4663-B92C-2F5440382C7A@brooks-alaska.com>
Date: Thu, 03 May 2012 08:14:48 -0800
From: Public Comments <mycomments@brooks-alaska.com>
To: lcommack@inutek.net, akleah1070@hotmail.com, isabelle.booth@maniilaq.org,
percy.ballot@maniilaq.org, raymondstoney@inutek.net,
Sandy Schroyer-Beaver <sshroyerbeaver@nana.com>, robertaurorakids@hotmail.com,
cpcannon2006@yahoo.com, emerson.moto@maniilaq.org, nellie.greist@maniilaq.org,
johnettacleveland@hotmail.com, shidow@att.net
Subject: Re: Kotzebue to Cape Blossom Road

Your message cannot be delivered to the following recipients:

Recipient address: raymondstoney@inutek.net
Reason: Remote SMTP server has rejected address
Diagnostic code: smtp;550 5.1.1 unknown or illegal alias: raymondstoney@inutek.net
Remote system: dns;inutek.net.s6a1.psmtp.com (TCP|209.165.149.147|61799|64.18.5.10|25)

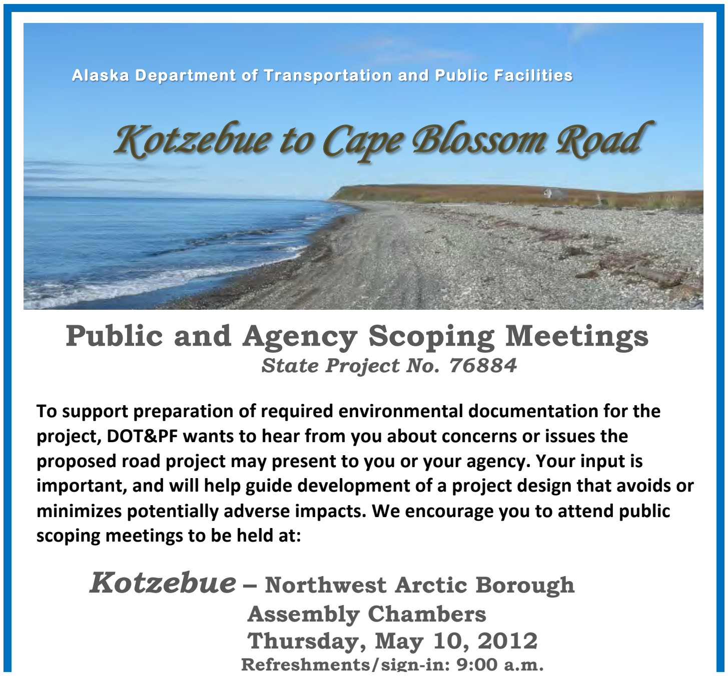
Reporting-MTA: dns;msgmmp-2.gci.net (tcp-daemon)

Original-recipient: rfc822;raymondstoney@inutek.net
Final-recipient: rfc822;raymondstoney@inutek.net
Action: failed
Status: 5.0.0 (Remote SMTP server has rejected address)
Remote-MTA: dns;inutek.net.s6a1.psmtp.com
(TCP|209.165.149.147|61799|64.18.5.10|25)
Diagnostic-code: smtp;550 5.1.1 unknown or illegal alias:
raymondstoney@inutek.net

From: Public Comments <mycomments@brooks-alaska.com>
Subject: **Re: Kotzebue to Cape Blossom Road**
Date: May 3, 2012 8:14:48 AM AKDT
To: lcommack@inutek.net, akleah1070@hotmail.com, isabelle.booth@maniilaq.org, percy.ballot@maniilaq.org, raymondstoney@inutek.net, Sandy Schroyer-Beaver <sshroyerbeaver@nana.com>, robertaurorakids@hotmail.com, cpcannon2006@yahoo.com, emerson.moto@maniilaq.org, nellie.greist@maniilaq.org, johnettacleveland@hotmail.com, shidow@att.net
Cc: Anne Brooks <a.brooks@brooks-alaska.com>

We have rescheduled the Buckland meeting next week to avoid a conflict with High School graduation. It will be Friday, May 11 from noon to 2 p.m.

I've attached a revised flyer. We appreciate any assistance you can lend us in getting this information out to communities in the area.



Alaska Department of Transportation and Public Facilities

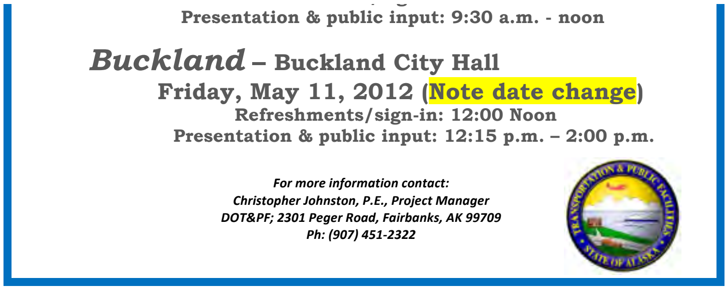
Kotzebue to Cape Blossom Road

Public and Agency Scoping Meetings

State Project No. 76884

To support preparation of required environmental documentation for the project, DOT&PF wants to hear from you about concerns or issues the proposed road project may present to you or your agency. Your input is important, and will help guide development of a project design that avoids or minimizes potentially adverse impacts. We encourage you to attend public scoping meetings to be held at:

Kotzebue **– Northwest Arctic Borough**
Assembly Chambers
Thursday, May 10, 2012
Refreshments/sign-in: 9:00 a.m.



Presentation & public input: 9:30 a.m. - noon

Buckland **– Buckland City Hall**

Friday, May 11, 2012 (Note date change)

Refreshments/sign-in: 12:00 Noon

Presentation & public input: 12:15 p.m. – 2:00 p.m.

For more information contact:
Christopher Johnston, P.E., Project Manager
DOT&PF; 2301 Peger Road, Fairbanks, AK 99709
Ph: (907) 451-2322

M. Anne Brooks P.E.
Public Involvement Specialist
Brooks & Associates
301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: mycomments@brooks-alaska.com
Toll Free: 866-535-1877

Please consider the environment before printing this e-mail

On Apr 30, 2012, at 10:47 AM, Anne Brooks wrote:

I have attached a flyer about upcoming meetings in Kotzebue and Buckland regarding a proposed road from Kotzebue to Cape Blossom.

I am hoping you will be able to help us get the word out about this meeting by circulating the flyer within the Maniilaq organization and by posting it in prominent places within the Northwest Arctic Borough communities.

If you have any questions, please let us know.
<20120510_MeetingFlyer(DOT).pdf>

M. Anne Brooks P.E., Public Involvement Coordinator
Brooks & Associates
301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: a.brooks@brooks-alaska.com
Tel: 907-272-1877
Toll Free: 866-535-1877

Please consider the environment before printing this e-mail

From: MAILER-DAEMON
Subject: Undelivered Mail Returned to Sender
Date: May 3, 2012 8:33:14 AM AKDT
To: <mycomments@brooks-alaska.com>

This is the mail system at host mail196-tx2-R.bigfish.com.

I'm sorry to have to inform you that your message could not
be delivered to one or more recipients. It's attached below.

For further assistance, please send mail to postmaster.

If you do so, please include this problem report. You can
delete your own text from the attached returned message.

                    The mail system

```
<sshroyerbeaver@nana.com>: host 209.112.162.37[209.112.162.37] said: 554 5.4.6
   Hop count exceeded - possible mail loop (in reply to end of DATA command)
Reporting-MTA: dns; mail196-tx2-R.bigfish.com
X-Postfix-Queue-ID: 8B91680543
X-Postfix-Sender: rfc822; mycomments@brooks-alaska.com
Arrival-Date: Thu,  3 May 2012 16:33:02 +0000 (UTC)

Final-Recipient: rfc822; sshroyerbeaver@nana.com
Original-Recipient: rfc822;sshroyerbeaver@nana.com
Action: failed
Status: 5.4.6
Remote-MTA: dns; 209.112.162.37
Diagnostic-Code: smtp; 554 5.4.6 Hop count exceeded - possible mail loop
Return-Path: <mycomments@brooks-alaska.com>
Received: from mail196-tx2 (localhost [127.0.0.1])
        by mail196-tx2-R.bigfish.com (Postfix) with ESMTP id 8B91680543
        for <sshroyerbeaver@nana.com>; Thu,  3 May 2012 16:33:02 +0000 (UTC)
X-SpamScore: -2
X-BigFish: Vvps-2(zz9371Ic85fh98dK62a3Izz1202hz70kz8275bhz2dh793h87h2a8h839hd25he5bhe96h)
X-Forefront-Antispam-Report: CIP:209.112.162.36;KIP:(null);UIP:(null);IPV:NLI;H:mail.nana.com;RD:smtp.nana.com;EFVD:NLI
X-FB-DOMAIN-IP-MATCH: fail
Received: from mail196-tx2 (localhost.localdomain [127.0.0.1]) by mail196-tx2 (MessageSwitch) id 133606277973412_10283; Thu,  3 May 2012 16:32:59 +0000 (UTC)
Received: from TX2EHSMHS027.bigfish.com (unknown [10.9.14.239])
        by mail196-tx2.bigfish.com (Postfix) with ESMTP id E0E6B4600FA
        for <sshroyerbeaver@nana.com>; Thu,  3 May 2012 16:32:58 +0000 (UTC)
Received: from mail.nana.com (209.112.162.36) by TX2EHSMHS027.bigfish.com
(10.9.99.127) with Microsoft SMTP Server (TLS) id 14.1.225.23; Thu, 3 May
2012 16:33:00 +0000
Received: from mail189-ch1-R.bigfish.com (192.168.0.150) by mail.nana.com
(10.53.11.11) with Microsoft SMTP Server (TLS) id 8.3.245.1; Thu, 3 May 2012
08:17:55 -0800
Received: from mail189-ch1 (localhost [127.0.0.1])        by
mail189-ch1-R.bigfish.com (Postfix) with ESMTP id 1AACB2A06D0     for
<sshroyerbeaver@nana.com>; Thu,  3 May 2012 16:17:45 +0000 (UTC)
Received: from mail189-ch1 (localhost.localdomain [127.0.0.1]) by mail189-ch1
(MessageSwitch) id 1336061862515832_29798; Thu,  3 May 2012 16:17:42 +0000
(UTC)
Received: from CH1EHSMHS013.bigfish.com (snatpool1.int.messaging.microsoft.com
[10.43.68.250])        by mail189-ch1.bigfish.com (Postfix) with ESMTP id
73FA720008C for <sshroyerbeaver@nana.com>; Thu,  3 May 2012 16:17:42 +0000
(UTC)
Received: from mail.nana.com (209.112.162.36) by CH1EHSMHS013.bigfish.com
(10.43.70.13) with Microsoft SMTP Server (TLS) id 14.1.225.23; Thu, 3 May
2012 16:17:40 +0000
Received: from mail128-ch1-R.bigfish.com (192.168.0.150) by mail.nana.com
(10.53.11.11) with Microsoft SMTP Server (TLS) id 8.3.245.1; Thu, 3 May 2012
08:16:34 -0800
Received: from mail128-ch1 (localhost [127.0.0.1])        by
mail128-ch1-R.bigfish.com (Postfix) with ESMTP id 35F813C0780      for
<sshroyerbeaver@nana.com>; Thu,  3 May 2012 16:16:24 +0000 (UTC)
Received: from mail128-ch1 (localhost.localdomain [127.0.0.1]) by mail128-ch1
(MessageSwitch) id 1336061780802221_14332; Thu,  3 May 2012 16:16:20 +0000
(UTC)
Received: from CH1EHSMHS029.bigfish.com (snatpool2.int.messaging.microsoft.com
[10.43.68.237])        by mail128-ch1.bigfish.com (Postfix) with ESMTP id
B1D7B3000FC        for <sshroyerbeaver@nana.com>; Thu,  3 May 2012 16:16:20 +0000
(UTC)
Received: from mail.nana.com (209.112.162.36) by CH1EHSMHS029.bigfish.com
(10.43.70.29) with Microsoft SMTP Server (TLS) id 14.1.225.23; Thu, 3 May
2012 16:16:11 +0000
Received: from mail131-ch1-R.bigfish.com (192.168.0.150) by mail.nana.com
(10.53.11.11) with Microsoft SMTP Server (TLS) id 8.3.245.1; Thu, 3 May 2012
08:15:44 -0800
Received: from mail131-ch1 (localhost [127.0.0.1])        by
mail131-ch1-R.bigfish.com (Postfix) with ESMTP id 8D7FF3C064C     for
```

```
<sshroyerbeaver@nana.com>; Thu,  3 May 2012 16:15:34 +0000 (UTC)
Received: from mail131-ch1 (localhost.localdomain [127.0.0.1]) by mail131-ch1
(MessageSwitch) id 1336061731639584_7363; Thu,  3 May 2012 16:15:31 +0000
(UTC)
Received: from CH1EHSMHS016.bigfish.com (snatpool2.int.messaging.microsoft.com
[10.43.68.235])        by mail131-ch1.bigfish.com (Postfix) with ESMTP id 8AB17C006A
        for <sshroyerbeaver@nana.com>; Thu,  3 May 2012 16:15:31 +0000 (UTC)
Received: from mail.nana.com (209.112.162.36) by CH1EHSMHS016.bigfish.com
(10.43.70.16) with Microsoft SMTP Server (TLS) id 14.1.225.23; Thu, 3 May
2012 16:15:27 +0000
Received: from mail147-ch1-R.bigfish.com (192.168.0.150) by mail.nana.com
(10.53.11.11) with Microsoft SMTP Server (TLS) id 8.3.245.1; Thu, 3 May 2012
08:15:33 -0800
Received: from mail147-ch1 (localhost [127.0.0.1])        by
mail147-ch1-R.bigfish.com (Postfix) with ESMTP id 63C3624055F       for
<sshroyerbeaver@nana.com>; Thu,  3 May 2012 16:15:23 +0000 (UTC)
Received: from mail147-ch1 (localhost.localdomain [127.0.0.1]) by mail147-ch1
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(UTC)
Received: from CH1EHSMHS023.bigfish.com (snatpool1.int.messaging.microsoft.com
[10.43.68.250])        by mail147-ch1.bigfish.com (Postfix) with ESMTP id
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(UTC)
Received: from mail.nana.com (209.112.162.36) by CH1EHSMHS023.bigfish.com
(10.43.70.23) with Microsoft SMTP Server (TLS) id 14.1.225.23; Thu, 3 May
2012 16:15:15 +0000
Received: from mail45-ch1-R.bigfish.com (192.168.0.150) by mail.nana.com
(10.53.11.11) with Microsoft SMTP Server (TLS) id 8.3.245.1; Thu, 3 May 2012
08:15:21 -0800
Received: from mail45-ch1 (localhost [127.0.0.1])  by mail45-ch1-R.bigfish.com
(Postfix) with ESMTP id 6739C26049C  for <sshroyerbeaver@nana.com>; Thu,  3
May 2012 16:15:05 +0000 (UTC)
Received: from mail45-ch1 (localhost.localdomain [127.0.0.1]) by mail45-ch1
(MessageSwitch) id 133606170324655_28951; Thu,  3 May 2012 16:15:03 +0000
(UTC)
Received: from CH1EHSMHS028.bigfish.com (snatpool1.int.messaging.microsoft.com
[10.43.68.252])        by mail45-ch1.bigfish.com (Postfix) with ESMTP id EB1DC2C0052
        for <sshroyerbeaver@nana.com>; Thu,  3 May 2012 16:15:02 +0000 (UTC)
Received: from mail.nana.com (209.112.162.36) by CH1EHSMHS028.bigfish.com
(10.43.70.28) with Microsoft SMTP Server (TLS) id 14.1.225.23; Thu, 3 May
2012 16:14:58 +0000
Received: from mail49-tx2-R.bigfish.com (192.168.0.150) by mail.nana.com
(10.53.11.11) with Microsoft SMTP Server (TLS) id 8.3.245.1; Thu, 3 May 2012
08:15:03 -0800
Received: from mail49-tx2 (localhost [127.0.0.1])   by mail49-tx2-R.bigfish.com
(Postfix) with ESMTP id CF4B560590    for <sshroyerbeaver@nana.com>; Thu,  3 May
2012 16:14:53 +0000 (UTC)
Received: from mail49-tx2 (localhost.localdomain [127.0.0.1]) by mail49-tx2
(MessageSwitch) id 1336061691662818_23266; Thu,  3 May 2012 16:14:51 +0000
(UTC)
Received: from TX2EHSMHS034.bigfish.com (unknown [10.9.14.242])        by
mail49-tx2.bigfish.com (Postfix) with ESMTP id 8B90C2C0073     for
<sshroyerbeaver@nana.com>; Thu,  3 May 2012 16:14:51 +0000 (UTC)
Received: from msgmmp-2.gci.net (209.165.130.12) by TX2EHSMHS034.bigfish.com
(10.9.99.134) with Microsoft SMTP Server id 14.1.225.23; Thu, 3 May 2012
16:14:47 +0000
Received: from [192.168.2.62] ([69.178.8.253]) by msgmmp-2.gci.net (Sun Java
System Messaging Server 6.2-3.03 (built Jun 27 2005)) with ESMTPA id
<0M3G00BWKFSNZW00@msgmmp-2.gci.net> for sshroyerbeaver@nana.com; Thu, 03 May
2012 08:14:55 -0800 (AKDT)
Date: Thu, 3 May 2012 08:14:48 -0800
From: Public Comments <mycomments@brooks-alaska.com>
Subject: Re: Kotzebue to Cape Blossom Road
In-Reply-To: <FD013E9D-8F36-4A34-A380-F24D2A89141B@brooks-alaska.com>
To: <lcommack@inutek.net>, <akleah1070@hotmail.com>,
        <isabelle.booth@maniilaq.org>, <percy.ballot@maniilaq.org>,
        <raymondstoney@inutek.net>, Sandy Schroyer-Beaver <sshroyerbeaver@nana.com>,
        <robertaurorakids@hotmail.com>, <cpcannon2006@yahoo.com>,
        <emerson.moto@maniilaq.org>, <nellie.greist@maniilaq.org>,
        <johnettacleveland@hotmail.com>, <shidow@att.net>
CC: Anne Brooks <a.brooks@brooks-alaska.com>
Message-ID: <0EDA2AE1-93F2-4663-B92C-2F5440382C7A@brooks-alaska.com>
MIME-Version: 1.0
X-Mailer: Apple Mail (2.1084)
Content-Type: multipart/alternative;
        boundary="Boundary_(ID_tl3kmT1ZL03eZ7MGMLg/pA)"
References: <FD013E9D-8F36-4A34-A380-F24D2A89141B@brooks-alaska.com>
X-OriginatorOrg: nana.com
```

From: "Hansen, Margaret A (CED)" <margaret.hansen@alaska.gov>
Subject: RE: Kotzebue to Cape Blossom Road Project -- Upcoming Meeting, May 10, 2012
Date: May 3, 2012 9:40:14 AM AKDT
To: Anne Brooks <a.brooks@brooks-alaska.com>

Ok, that is good hopefully you will have more participation. I should be there as I am traveling to train the new administrator.

Margaret

From: Anne Brooks [mailto:a.brooks@brooks-alaska.com]
Sent: Thu 5/3/2012 8:22 AM
To: Hansen, Margaret A (CED)
Subject: Re: Kotzebue to Cape Blossom Road Project -- Upcoming Meeting, May 10, 2012

Margaret --

We have rescheduled the Buckland meeting next week to avoid a conflict with High School graduation. It will be Friday, May 11 from noon to 2 p.m.

I've attached a revised flyer. We appreciate any assistance you can lend us in getting this information out to communities in the area.

Thanks for your assistance and willingness to help us get the word out about this meeting.

From: Joann Mitchell <J.mitchell@brooks-alaska.com>
Subject: Fwd: Kotzebue to Cape Blossom Road
Date: May 3, 2012 8:37:01 AM AKDT
To: Anne Brooks <a.brooks@brooks-alaska.com>

1 Attachment, 923 bytes

fyi

Begin forwarded message:

> **From:** Shelly Wozniak <Shelly.Wozniak@nana.com>
> **Subject:** **RE: Kotzebue to Cape Blossom Road**
> **Date:** May 3, 2012 8:19:53 AM AKDT
> **To:** Joann Mitchell <J.mitchell@brooks-alaska.com>
>
> Hi Joann,
>
> Our Corporate Communications group is happy to send these on for you. Pls feel free to send these notices to news@nana.com and we'll take care of it from there. If you need any further assistance or we can be of any help at all, pls let me know.
> Best,
> S
>
> **Shelly Wozniak** | Director, Corporate Communications
> **NANA Regional Corporation** | 3150 C St. Suite 150, Anchorage, Alaska 99503
> **Direct** 907 265 3776 | **Cell** 907 227 8059 | shelly.wozniak@nana.com
>
>
>
> ---
>
> **From:** Joann Mitchell [mailto:J.mitchell@brooks-alaska.com]
> **Sent:** Thursday, May 03, 2012 8:14 AM
> **To:** Shareholder Relations; news; Red Seeberger; Shelly Wozniak; Lands
> **Subject:** Re: Kotzebue to Cape Blossom Road
>
> All
>
> We have rescheduled the Buckland meeting next week to avoid a conflict with High School graduation. I've attached a revised flyer. We appreciate any assistance you can lend us in getting this information out to communities in the area.
> On Apr 30, 2012, at 10:33 AM, Anne Brooks wrote:
>
> All
>
> I am working to get the word out about meetings in Kotzebue (May 10) and Buckland (May 10) regarding the proposed Kotzebue to Cape Blossom Road. Please share the attached flyer with your internal and external stakeholders and let them know of this opportunity for their voices to be heard.
>
> Feel free to forward this flyer within your organization and to Nana stakeholders. You make give me a call if you have any questions or comments.
>
> <20120510_MeetingFlyer(DOT).pdf>
> M. Anne Brooks P.E.
> Brooks & Associates
> 301 West Northern Lights Blvd, Suite 440
> Anchorage, AK 99503
> E-mail: a.brooks@brooks-alaska.com
> Tel: 907-272-1877
> Toll Free: 866-535-1877
>
> **Please consider the environment before printing this e-mail**

From: Public Comments <mycomments@brooks-alaska.com>
Subject: Re: Kotzebue to Cape Blossom Road
Date: May 3, 2012 8:16:05 AM AKDT
To: pwotz@otz.net, pwdir@otz.net
Cc: Public Comments <mycomments@brooks-alaska.com>

1 Attachment, 433 KB

We have rescheduled the Buckland meeting next week to avoid a conflict with High School graduation. It will be Friday, May 11 from noon to 2 p.m.

I've attached a revised flyer. We appreciate any assistance you can lend us in getting this information out to communities in the area.

Alaska Department of Transportation and Public Facilities

Kotzebue to Cape Blossom Road

Public and Agency Scoping Meetings

State Project No. 76884

To support preparation of required environmental documentation for the project, DOT&PF wants to hear from you about concerns or issues the proposed road project may present to you or your agency. Your input is important, and will help guide development of a project design that avoids or minimizes potentially adverse impacts. We encourage you to attend public scoping meetings to be held at:

Kotzebue **– Northwest Arctic Borough**
Assembly Chambers
Thursday, May 10, 2012
Refreshments/sign-in: 9:00 a.m.
Presentation & public input: 9:30 a.m. - noon

Buckland **– Buckland City Hall**
Friday, May 11, 2012 (Note date change)
Refreshments/sign-in: 12:00 Noon
Presentation & public input: 12:15 p.m. – 2:00 p.m.

For more information contact:
Christopher Johnston, P.E., Project Manager
DOT&PF; 2301 Peger Road, Fairbanks, AK 99709
Ph: (907) 451-2322

M. Anne Brooks P.E.
Public Involvement Specialist
Brooks & Associates
301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: mycomments@brooks-alaska.com
Toll Free: 866-535-1877

Please consider the environment before printing this e-mail

On Apr 30, 2012, at 11:29 AM, Public Comments wrote:

John -- I am working to get the word out about the May 10th meetings on the Kotzebue to Cape Blossom Road. I have attached flyer that can be distributed within the City and posted around Kotzebue.

We appreciate any assistance you can lend us getting the word out.

Please call or email if you have questions. More information can be found on the project website at: http://www.brooks-alaska.com/kotzebue/

I'll look forward to seeing you on the 10th.

<20120510_MeetingFlyer(DOT).pdf>

M. Anne Brooks P.E.
Public Involvement Specialist
Brooks & Associates
301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: mycomments@brooks-alaska.com
Toll Free: 866-535-1877

From: Joann Mitchell <J.mitchell@brooks-alaska.com>
Subject: Re: Kotzebue to Cape Blossom road
Date: May 3, 2012 7:57:39 AM AKDT
To: Anne Brooks <a.brooks@brooks-alaska.com>
Cc: Darlene Hadley <DHadley@nwabor.org>

Darlene -- we have rescheduled the meeting in Buckland for Friday, May 11 from noon to 2 pm. An updated flyer is attached.

Anne

On Apr 30, 2012, at 10:19 AM, Anne Brooks wrote:

Thanks Darlene. We appreciate your assistance.

Anne

M. Anne Brooks P.E.
Brooks & Associates
301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: a.brooks@brooks-alaska.com
Tel: 907-272-1877
Toll Free: 866-535-1877

Please consider the environment before printing this e-mail

On Apr 30, 2012, at 10:11 AM, Darlene Hadley wrote:

Forwarded to the City of Buckland, Mayor and Tribe *admin* , an will post in a couple of prominent places.
Darlene Hadley

From: Anne Brooks [a.brooks@brooks-alaska.com]
Sent: Monday, April 30, 2012 10:04 AM
To: Darlene Hadley
Cc: Joann Mitchell
Subject: Kotzebue to Cape Blossom road

Darlene --

I've attached a flyer about upcoming meetings in Kotzebue and Buckland regarding the Kotzebue to Cape Blossom Road project. Are you the appropriate person for me to request that these get sent to the other communities within the Northwest Arctic Borough? I did send to Tom Okleasik. We will make a distribution, but sometimes it works well to come from someone with the borough.

We would request that these get posted at a prominent place in each community.

Thanks very much.

From: Anne Brooks <a.brooks@brooks-alaska.com>
Subject: Re: Kotzebue to Cape Blossom road
Date: May 3, 2012 8:10:46 AM AKDT
To: Anne Brooks <a.brooks@brooks-alaska.com>
Cc: Darlene Hadley <DHadley@nwabor.org>

1 Attachment, 433 KB

Darlene -- We rescheduled the Buckland meeting to Friday so we didn't conflict with the graduation celebration. I've attached an updated flyer. Thanks again for helping us get the word out to local folks.

Alaska Department of Transportation and Public Facilities

Kotzebue to Cape Blossom Road

Public and Agency Scoping Meetings

State Project No. 76884

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For more information contact:
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Tel: 907-272-1877
Toll Free: 866-535-1877

Please consider the environment before printing this e-mail

On Apr 30, 2012, at 10:19 AM, Anne Brooks wrote:

Thanks Darlene. We appreciate your assistance.

Anne

M. Anne Brooks P.E.
Brooks & Associates

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Anchorage, AK 99503
E-mail: a.brooks@brooks-alaska.com
Tel: 907-272-1877
Toll Free: 866-535-1877

On Apr 30, 2012, at 10:11 AM, Darlene Hadley wrote:

Forwarded to the City of Buckland, Mayor and Tribe *admin* , an will post in a couple of prominent places.
Darlene Hadley

From: Anne Brooks [a.brooks@brooks-alaska.com]
Sent: Monday, April 30, 2012 10:04 AM
To: Darlene Hadley
Cc: Joann Mitchell
Subject: Kotzebue to Cape Blossom road

Darlene --

I've attached a flyer about upcoming meetings in Kotzebue and Buckland regarding the Kotzebue to Cape Blossom Road project. Are you the appropriate person for me to request that these get sent to the other communities within the Northwest Arctic Borough? I did send to Tom Okleasik. We will make a distribution, but sometimes it works well to come from someone with the borough.

We would request that these get posted at a prominent place in each community.

Thanks very much.

From: Anne Brooks <a.brooks@brooks-alaska.com>
Subject: Re: Kotzebue to Cape Blossom Road Project -- Upcoming Meeting, May 10, 2012
Date: May 3, 2012 8:22:12 AM AKDT
To: "Hansen, Margaret A (CED)" <margaret.hansen@alaska.gov>

1 Attachment, 433 KB

Margaret --

We have rescheduled the Buckland meeting next week to avoid a conflict with High School graduation. It will be Friday, May 11 from noon to 2 p.m.

I've attached a revised flyer. We appreciate any assistance you can lend us in getting this information out to communities in the area.

Thanks for your assistance and willingness to help us get the word out about this meeting.

Alaska Department of Transportation and Public Facilities

Kotzebue to Cape Blossom Road

Public and Agency Scoping Meetings

State Project No. 76884

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Tel: 907-272-1877
Toll Free: 866-535-1877

Please consider the environment before printing this e-mail

On Apr 30, 2012, at 1:02 PM, Hansen, Margaret A (CED) wrote:

Hi Anne. I have posted it here at NANA and will other places as well like the school district office. Sorry to say I have scheduled a trip to one of my villages so will not be able to attend in Kotzebue but I will be in Buckland so will be a ble to attend that one.

Margaret

From: Anne Brooks [mailto:a.brooks@brooks-alaska.com]
Sent: Mon 4/30/2012 10:53 AM
To: gadams@nwiha.com; cmcconnell@nwarctic.org; dannyegak@yahoo.com; tarruq46@yahoo.com; daisy.lambert@maniilaq.org; wkarmun@otz.net; Hansen, Margaret A (CED); c.harris@maniilaq.org
Subject: Kotzebue to Cape Blossom Road Project -- Upcoming Meeting, May 10, 2012

I have attached a flyer about upcoming meetings in Kotzebue and Buckland regarding a proposed road from Kotzebue to Cape Blossom.

I am hoping you will be able to help us get the word out about this meeting by circulating the flyer within Native Village of Kotzebue organization and by posting it in prominent places around Kotzebue

From: Anne Brooks <a.brooks@brooks-alaska.com>
Subject: Re: Kotzebue to Cape Blossom Road
Date: May 3, 2012 8:10:43 AM AKDT
To: Anne Brooks <a.brooks@brooks-alaska.com>

2 Attachments, 568 KB

KOTZ Folks -- we rescheduled the Buckland meeting to avoid a conflict with their high school graduation. A revised flyer is attached. Let me know if you have difficulty opening the document. I've attached both a word and PDF version.

Thanks again for helping us get the word out about this important meeting for the region.

Alaska Department of Transportation and Public Facilities

Kotzebue to Cape Blossom Road

Public and Agency Scoping Meetings

State Project No. 76884

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DOT&PF; 2301 Peger Road, Fairbanks, AK 99709
Ph: (907) 451-2322

2012_04_24...er1 (135 KB)

M. Anne Brooks P.E.
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301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: a.brooks@brooks-alaska.com
Tel: 907-272-1877
Toll Free: 866-535-1877

Please consider the environment before printing this e-mail

On Apr 30, 2012, at 11:15 AM, Anne Brooks wrote:

It is a pdf. You should be able to open with Adobe Acrobat. I've reattached so we can try again.

Anne

<20120510_MeetingFlyer(DOT).pdf>

On Apr 30, 2012, at 11:04 AM, KOTZ Messages wrote:

Cannot open attachment.....

> ----- Original Message -----
> **From:** Anne Brooks
> **To:** message@kotz.org ; rhensley@kotz.org
> **Sent:** Monday, April 30, 2012 10:59 AM
> **Subject:** Kotzebue to Cape Blossom Road
>
> I've attached a flyer about an upcoming meeting in Kotzebue regarding the proposed road from Kotzebue to Cape Blossom. Please add information about this meeting to your program. Let me know if you need any additional information.
>
> Thanks for your assistance in getting the word out about this meeting. More detail on the project is available on the project web site at:
> http://dot.alaska.gov/nreg/capeblossomroad/
>
> ---
>
> M. Anne Brooks P.E.
> Brooks & Associates
> 301 West Northern Lights Blvd, Suite 440
> Anchorage, AK 99503
> E-mail: a.brooks@brooks-alaska.com
> Tel: 907-272-1877
> Toll Free: 866-535-1877
>
> **Please consider the environment before printing this e-mail**
>
> ---
>
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> Thanks for your assistance in getting the word out about this meeting. More detail on the project is available on the project web site at:
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>
> M. Anne Brooks P.E.
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> 301 West Northern Lights Blvd, Suite 440
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> E-mail: a.brooks@brooks-alaska.com
> Tel: 907-272-1877
> Toll Free: 866-535-1877
>
> Please consider the environment before printing this e-mail

From: Public Comments <mycomments@brooks-alaska.com>
Subject: Re: Kotzebue to Cape Blossom Road
Date: May 3, 2012 8:14:48 AM AKDT
To: lcommack@inutek.net, akleah1070@hotmail.com, isabelle.booth@maniilaq.org, percy.ballot@maniilaq.org, raymondstoney@inutek.net, Sandy Schroyer-Beaver <sshroyerbeaver@nana.com>, robertaurorakids@hotmail.com, cpcannon2006@yahoo.com, emerson.moto@maniilaq.org, nellie.greist@maniilaq.org, johnettacleveland@hotmail.com, shidow@att.net
Cc: Anne Brooks <a.brooks@brooks-alaska.com>

1 Attachment, 433 KB

We have rescheduled the Buckland meeting next week to avoid a conflict with High School graduation. It will be Friday, May 11 from noon to 2 p.m.

I've attached a revised flyer. We appreciate any assistance you can lend us in getting this information out to communities in the area.

Alaska Department of Transportation and Public Facilities

Kotzebue to Cape Blossom Road

Public and Agency Scoping Meetings
State Project No. 76884

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Anchorage, AK 99503
E-mail: mycomments@brooks-alaska.com
Toll Free: 866-535-1877

Please consider the environment before printing this e-mail

On Apr 30, 2012, at 10:47 AM, Anne Brooks wrote:

I have attached a flyer about upcoming meetings in Kotzebue and Buckland regarding a proposed road from Kotzebue to Cape Blossom.

I am hoping you will be able to help us get the word out about this meeting by circulating the flyer within the Maniilaq organization and by posting it in prominent places within the Northwest Arctic Borough communities.

If you have any questions, please let us know.
<20120510_MeetingFlyer(DOT).pdf>

M. Anne Brooks P.E., Public Involvement Coordinator
Brooks & Associates
301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: a.brooks@brooks-alaska.com
Tel: 907-272-1877
Toll Free: 866-535-1877

From: Joann Mitchell <J.mitchell@brooks-alaska.com>
Subject: Re: Kotzebue to Cape Blossom Road
Date: May 3, 2012 8:13:43 AM AKDT
To: shareholderrelations@nana.com, news@nana.com, administration@nana.com, shelly.wozniak@nana.com, lands@nana.com

1 Attachment, 433 KB

All

Alaska Department of Transportation and Public Facilities

Kotzebue to Cape Blossom Road

Public and Agency Scoping Meetings

State Project No. 76884

To support preparation of required environmental documentation for the project, DOT&PF wants to hear from you about concerns or issues the proposed road project may present to you or your agency. Your input is important, and will help guide development of a project design that avoids or minimizes potentially adverse impacts. We encourage you to attend public scoping meetings to be held at:

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Ph: (907) 451-2322

We have rescheduled the Buckland meeting next week to avoid a conflict with High School graduation. I've attached a revised flyer. We appreciate any assistance you can lend us in getting this information out to communities in the area.
On Apr 30, 2012, at 10:33 AM, Anne Brooks wrote:

All

I am working to get the word out about meetings in Kotzebue (May 10) and Buckland (May 10) regarding the proposed Kotzebue to Cape Blossom Road. Please share the attached flyer with your internal and external stakeholders and let them know of this opportunity for their voices to be heard.

Feel free to forward this flyer within your organization and to Nana stakeholders. You make give me a call if you have any questions or comments.

<20120510_MeetingFlyer(DOT).pdf>
M. Anne Brooks P.E.
Brooks & Associates
301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: a.brooks@brooks-alaska.com
Tel: 907-272-1877
Toll Free: 866-535-1877

From: Public Comments <mycomments@brooks-alaska.com>
Subject: Re: Kotzebue to Cape Blossom Road
Date: May 3, 2012 8:12:42 AM AKDT
To: Ukallaysaaq Tom Okleasik <tokleasik@nwabor.org>
Cc: Anne Brooks <a.brooks@brooks-alaska.com>

1 Attachment, 433 KB

Kia ora Tom

We have rescheduled the Buckland meeting next week to avoid a conflict with High School graduation. I've attached a revised flyer. We appreciate any assistance you can lend us in getting this information out to communities in the area.

Alaska Department of Transportation and Public Facilities

Kotzebue to Cape Blossom Road

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For more information contact:
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DOT&PF; 2301 Peger Road, Fairbanks, AK 99709
Ph: (907) 451-2322

On Apr 30, 2012, at 10:00 AM, Anne Brooks wrote:

Kia ora Tom

I am attaching a one page flyer announcing the May 10th meetings in Kotzebue and Buckland for the Cape Blossom Road project. May I impose on you to forward to within the borough and post on the Borough's bulletin board. We hope the promise of pizza will bring folks to the meeting. We really want to hear from residents within the region about the project.

I will be sending this to the City, NANA, KIC Maniilaq, KOTZ radio, and others. Let me know if you think of others who should be able to help us get the word out.

Thanks a bunch.
<20120510_MeetingFlyer(DOT).pdf>

M. Anne Brooks P.E.
Brooks & Associates
301 West Northern Lights Blvd, Suite 440
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E-mail: a.brooks@brooks-alaska.com

Public Meeting Notes

Kotzebue to Cape Blossom Road
Project 76844/NCPD-0002(204)

Meeting Notes

SUBJECT:	Kotzebue to Cape Blossom Road Kotzebue & Buckland Scoping Meetings
PROJECT NO.:	Project 76844/NCPD-0002(204)/B&A 3949.01
GROUP:	Public
DATE:	May 10 and 11, 2012
TIME:	4 p.m. to 8 p.m.
LOCATION:	Kotzebue: Northwest Arctic Borough Assembly Chambers Buckland: City Office
MEETING OUTREACH:	Display advertisement in *Arctic Sounder*, May 3, 2012; Poster to community members; Posters posted by DOT&PF Maintenance & Operations Personnel in Kotzebue; email notices to stakeholders in Kotzebue and Buckland on April 30, 2012; faxes to Kotzebue IRA, Maniilaq and KIC on April 30, 2012; reminders and notice of Buckland meeting date change on May 3, 2012
MEETING ATTENDANCE:	Kotzebue, 24 individuals signed in Buckland, 20 individuals signed in
MEETING MATERIALS:	Reconnaissance Study Alternative Routes; project timeline; Geotechnical information,
STAFF PRESENT:	DOT&PF: Christopher Johnston; Paul Karzmarczyk Baker: Karen Brown, Bonnie Pfuntner Brooks & Associates: Anne Brooks
MEETING INFORMATION:	

These meeting notes cover scoping meetings held in Kotzebue and Buckland. The meeting format was the same for both meetings. Attendees were greeted at the door and asked to sign in. They were informed that a presentation would proceed in about 15 minutes. Written comment sheets were available. Food and beverages were available for their enjoyment.

At both meetings, Alaska Department of Transportation and Public Facilities (DOT&PF) Project Manager, Chris Johnston opened the meeting by thanking all for coming and provided a project overview. At the Kotzebue meeting, he pointed out that the meeting presentation would be broadcast on KOTZ radio. The broadcast would reach radio listeners throughout the Northwest Arctic Borough.

Mr. Johnston explained the purpose of the meetings was to inform the community and the public about the project and what the team proposes to do. He also stated that it was important to solicit comment on the project so the comments can be addressed as part of the environmental process. He explained that it was important to get the public feedback and this could be provided on comment forms. He also reminded everyone to sign in so the team could get a meeting attendance count.

He indicated the purpose of the project is to build a road to Cape Blossom because Cape Blossom had been identified as a site that will provide relatively deep-water port and barge access. The area believes that Cape Blossom will be a better site for the port and improve transportation and lower costs of goods in the region.

Back in the 1980's DOT and the City of Kotzebue were looking at routes to Chicago Creek to access coal and other mineral resources. DOT&PF did environmental and preliminary engineering of the routes. An alignment from Kotzebue to Cape Blossom was studied. In 1983 the City had a study done to identify a port location on the Baldwin Peninsula. That study confirmed that Cape Blossom is a good site for a port. Other locations were also considered. The report also talks about Kivalina and Red Dog as potential sites; however, because of distance it was not considered a viable port location for Kotzebue. Funding and other considerations kept the project from moving forward. In 2008-09 an airport relocation study was performed. As part of the preliminary engineering study, engineering and environmental considerations were reviewed in a broad manner.

A couple of years ago – two Federal funding earmarks were designated for the Cape Blossom road project, $5 million and $1.8 million. We have been working off the $1.8 million and have completed a reconnaissance study to identify potential routes to get from Kotzebue to Cape Blossom.

Mr. Johnston described the various routes while pointing to a map. Only one cargo/shipping staging area is being considered near Cape Blossom because of proximity of native allotments. The route currently identified, as the proposed action, is the route furthest west. Potential conflicts with right-of-way across the old radar site that is a site stilled owned by the Air Force, may change this when further analysis is performed. To avoid a lengthy right-of-way process we will look at some minor changes to the alignment.

Mr. Johnson pointed out that all routes avoid the native allotments in the area. The team is taking this information into consideration and getting survey data on the allotment corners to avoid the native allotments during fieldwork and with any road alignment selection. The reconnaissance work provided terrestrial data and bathymetry data. The team has some bathymetry at Cape Blossom to about 20-foot depth and the availability of this data will expedite the work of the team.

Additional project data comes from work accomplished by the City of Kotzebue in a cooperative relationship with the US Marine Corps who surveyed some of the road routes. In addition to the survey, the DOT&PF gathered geotechnical data in an effort to identify a good gravel source on the Baldwin peninsula in the areas identified on the map. The gravel source would serve the Cape Blossom Road and other City of Kotzebue projects. Several road alignments were drilled. DOT&PF didn't drill the existing road to the wind farm. Unfortunately the material on the

Baldwin Peninsula is mostly silt, which is not good enough to build roads with. DOT&PF considered looking off Cape Blossom to see if dredged material would be good enough for road construction; however, using dredge materials can raise concerns about using the salt-water materials on the tundra. The good news about gravel is that in 2009, during a survey for the airport relocation, a couple a good sites were found near Iggy Hill (Pipe Spit). The site was drilled in 2010 to reveal a good material site. KIC is developing the site for local use as a material source. Based on their estimates, the material would be enough to build the road – approximately 500,000 cubic yards of material is needed. The local source would result in considerable savings over barging the material from Nome or elsewhere.

The Cape Blossom road itself would be two-lane, with a 24-foot top and the road embankment would rise 6-feet above the tundra. The road height is important to prevent snow drifting and improve maintainability. This road height also protects the permafrost, preventing it from melting and creates neither an ecological nor maintenance problem. The side slopes for this type of road are typically 4 feet vertical to 1-foot horizontal in urban areas, the side slopes proposed for the Cape Blossom Road are 2 feet vertical to 1 foot horizontal.
Mr. Johnston turned over the presentation to Karen Brown with Michael Baker, Jr. Inc. (Baker), to discuss the environmental document development.

Karen Brown, Baker, is managing the Environmental Assessment (EA) for the Cape Blossom Road project. She explained the environmental documentation process. She indicated that because the project has federal funding, the project must go through the National Environmental Policy Act (NEPA) process. She indicated that the team will benefit due to the amount of background data gathering that has been completed to date and the team does not have to start from scratch. Pointing to the schedule graphic, Ms. Brown indicated where the team was in the environmental process. She indicated that the team would go to the agencies to talk and listen.

Ms. Brown noted that the team has prepared a draft purpose and need based on comments from the community and the previous document. The team has good alternatives going forward. She asked attendees to look at the proposed alternatives as well as the purpose and need, and provide comments to refine them as we write the EA.

Ms. Brown noted that the purpose of the meeting was to begin community coordination. She noted that the team would continue conversations with the agencies and start putting together a draft environmental document. The team is trying to get all the environmental studies done this summer and complete the EA by Christmas 2012. The draft document will be released for public and agency review and comment. Once the comments are considered and the document revised, the final document will be sent to the Federal Highway Administration (FHWA) and a Finding of No Significant Impact (FONSI) would be issued. Once it is approved and federal permits are obtained the project would proceed.

The summer fieldwork includes break up studies of Sadie and June creeks. The breakup study of the two creeks provides the team information to enable design of the stream crossings. To complete the studies, three areas on Sadie Creek; one on June Creek will be viewed. In addition, wetlands, vegetation, fish and wildlife studies will be accomplished by ABR, Inc. They will start with the work done during the reconnaissance report preparation so they are not starting from scratch. Northern Land Use Research (NLUR) will perform the archaeological and cultural surveys building on previous work in areas that need to have a closer look. McClintock will be providing surveying to establish points for the LIDAR survey. Subsistence and economical analysis by Mike Galganaitis, Applied Sociocultural Research (ASR) will include discussions with folks in the community. Northern Economics will be completing the socioeconomics evaluation.

The team is getting the community involved in the fieldwork in coordination with the Native Village of Kotzebue's Alex Whiting. The team could use snow machines, three-wheelers and other support. The team will be back in the next weeks to continue work. Ms. Brown suggested that any community members who want to work with the team should go to Alex Whiting and let him know they are interested in the employment.

Mr. Johnston asked Mayor Eugene Smith with the City of Kotzebue to provide some background on the Cape Blossom project and its purpose and need..

Mayor Smith noted that the City of Kotzebue has been working on the deep-water port for many years. He stated that when it comes to the deep-water port it is a no brainer because it benefits the local economy and reduces fuel costs. He noted it is important keep moving toward. The City of Kotzebue was instrumental in securing funds to get the project going. The city has been ambitiously working on it and the port project has been in the City of Kotzebue Comprehensive Plan for a long time. The military helped by surveying the alternative routes. He wanted to discuss the alternative routes – making sure we are not dealing with projects that are in limbo such as the military site. He indicated he didn't want this to stop or delay the project and asked that the team consider routes on the outside of the military lands. He said the City of Kotzebue would keep moving diligently on the project and keep pushing the State and "build it and they will come".

Mr. Johnston indicated that the overall project schedule includes completing the Environmental next summer (2013). This would be followed by any needed right-of-way acquisition. The project would be competitively bid for construction in about 2014.

The following oral and written comments were received at the meeting. Comments are in regular type, team responses are in *italics.*

Walter Sampson – thanks for coming to the Kotzebue, Thanks to Derek, Eugene, Grant, Jason and Matt for taking the lead on the Cape Blossom road issue. Appreciate your commitment to doing this. This is certainly in the future for this region. Creating a port site for the community. road to port and helping with transport up the river. This planning and discussion didn't occur overnight. It has been a discussion for some time. The issue regarding land status – did some homework on our side – and noted about 2000 acres was not prioritized. BIA is working on conveyance of the land to NANA. Would like to suggest regarding your comments on dredging – it should be looked at. Some of the creeks get breached. Look at the area west of the little creek – north of the Cape Blossom area where it is quickly eroding and take a look at the erosion problem. Over time they are eroding away. Based on that – a port alternative is here [point to map near Cape Blossom] where some dredge and backfill of the lowland area probably should be considered. He pointed out where the water is much deeper – 40 to 42 feet. A strong current is directed towards the area which is something to take a look at and consider backfill. He is not concerned about backfill in the area because it is saltwater anyway.

Mr. Sampson further stated that in the1980's Chevron did lots of exploration in the area. Based on the information that was collected, NANA got interested in doing some work getting information on that area. NANA hired someone familiar with oil and gas to look at that information, NANA decided to partner with an outfit out of California. NANA thought about doing some drilling for natural gas or oil and five (5) different locations were considered in the Cape Espenberg area —looking at drilling two locations and well as another hole in this area [pointing to map]. Funding sources has been a problem – $20 to $25 million needed to drill a well.

Some years back Crowley had a tracked vehicle, delivering 5 – 10,000 gallons of fuel to Buckland and started through the flats going down the coast – there is a dry lake, where in February they went through the ice and dropped their tracked vehicle. From the studies that have been done, in this general area there is a push up that comes up but didn't quite blow. We are interested in understanding what happen. We are continuing to look at oil and gas. The future of the region is dependent on what we create here and the deep-water port. Other user groups are interested such as the US Coast Guard and the groups doing exploration work up north. Search and rescue will be another issue that will come up in the future. We support creating some infrastructure to prepare for the future.

Willie Goodwin at NPS and find from him additional information to direct him to different people who have knowledge of the area being discussed here.

As far as resources being discussed here – we need to make sure we have the resource here to construct a good system.

As far as the road is concerned, a good portion is snow free. A couple of areas where the snow accumulates – a good portion is open in the winter except for a couple of areas. 6-feet is quite high enough to look at what it intends to do. In the future we need to look at what we want to do with that road. As far as the feasibility of the Cape Blossom area – I'd go a little further to look at what you can do in the area for fill. There are lots of big rocks in the area. When you are doing a search for the people of Buckland, we ran into pretty big rocks. The other thing I wanted to say – you might want to find an individual to interpret for us so folks in the region also know what is happening.

Greg McConnell – if the gravel source comes from Pipes Pit, have you done a study to see it would be cheaper to build a road to the source or barge it around? *We are looking at Pipes Spit – generally found that during winter construction – cheaper to build an ice road in the winter for the haul. KIC as been looking at building a road for future use. DOT has found that an ice road is the cheapest approach to acquiring the gravel for the road construction.*

Written comment from Kotzebue meeting:

Several options for the road were discussed. It was an informative meeting. I was surprised to hear so many views (after the meeting was officially over) from meeting participants. The group in charge of proposals seems to have good information, but they were willing to hear concerns of the community. I appreciate snacks & pizza were provided to attendees. Nobody had to worry about hunger pains.

Written comment from Kotzebue meeting:
Keep to an approved schedule. Do not ?? this project. We have been waiting for 25 years for this project to start. If you wait, inflation will drive up the construction cost "huge" and this will definitely affect the project. The cost of ?? drives construction costs. Don't wait!

Oral Comments from Buckland meeting:
The Sadie Creek – camped there last summer – one of the main resources for subsistence hunting –birds, fish, caribou – one of the main parts of where they hunt. Going around the creek is a good idea.

Caribou that go through Kivalina – cross the Baldwin Peninsula [shown on the map].

Caribou arrive on the coast every day.

Road may affect them, caribou may go around the road.

We are interested in how the resources are used and the sensitive areas to avoid.

Kotzebue residents use that area – Buckland folks don't.

We can see shallow water during low tide.

Caribou came through the community this year. We will work with Jim Dow to get his data – looking at satellite data – and show the migration routes.

We do a lot of bearded seal hunting about 10 miles straight out from Blossom – I think this is where they feed. That will probably affect everyone that hunts bearded seals. *The EIS would be looking at this area too. We discussed a lot of that – Crowley not in until July – think about the barging times that come in. Compare with the calendar and understanding the seasons.*

Seal hunting in June, 1st barge into Buckland arrives the first week in July.

There will be a study on the marine life during the study of the port – environmental impact study – will look at the marine environment in more detail. The team is only focusing on the road. Additional studies will have to be done when the project can focus on the port. We hope the USGS can look at this.

We are always boating too. I'd like my son to be able to drive to Cape Blossom and bring stuff that I need and I would pick him up by boat.

Over the years – I read about the port – before they do any barging they have to get approval from the Elders – support subsistence hunting for ugruk [bearded seal]. Gravel – working with Kotzebue – empty barges coming.

Where is the material you are talking about [in Buckland]? The speaker pointed to its location on a map and through the window.

The Village of Buckland fully support the project – fuel prices, fuel oil, propane is very high – in the next 30 years the prices will continue to grow. Think about how much a gallon you will be paying. That is why I fully support what these people are doing. Think about how much they pay when they ship to Kotzebue.

You are going to visit other villages besides Buckland? *We sent out letters, but only heard from Buckland. Kiana might be interested.*

What you guys are doing affects the whole region around Kotzebue. It is one of our main interests in subsistence hunting.

Gravel available here [in Buckland]. Still learning how to use the material in the area for construction.

I am for this too – Cape Blossom is a good port location.

Caribou migration –the road will not bother them. Ugruk and beluga was abundant – but not now. In Kotzebue, Deering and Buckland they came in great numbers but did not stay long. Any harm to hunting areas would be seasonal. I support the Cape Blossom Road project.

At a January meeting about the Ambler mining district, this project came up. Buckland folks expressed interest in the project and the team scheduled this meeting. We would be interested in getting the word out to all communities.

Written comment from Buckland meeting:
Rough waters at Cape Blossom.

Written comment from Buckland meeting:
It's great that you can come out to surrounding villages of Kotzebue and regards to your project the more input & opinions the better. Common sense – the more input you have from not only the residents of Kotzebue, having a more visual and understanding of culture subsistence hunting, grounds. Raymond Lee Jr comments saying a request to make the road along side the cost I think that is not a possible because of future eroding of land.

Related documents on file:

Sign in Sheets
Handouts (Comment Sheet)
Comment Sheets received at meeting

Meeting graphics
Mailing List
Display advertising
Posters

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ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

PUBLIC MEETING

SIGN IN SHEET

PROJECT NAME Kotzebue to Cape Blossom Road, Buckland Meeting, 76844/NCPD-0002(204) **DATE** May 11, 2012

NAME (PLEASE PRINT)	**ADDRESS** (to receive project notices, you MUST provide)	**PHONE**	***GENDER (M/F)**	***RACE (W, AN, N, B, H, A, P, O)**
Maria Thomas	Box 53 Buckland	494-5078	F	
Elsie Thomas	P.O Box 112 Buckland	494-5311	F	
Eva M Foxglove	PO Box 21 Buckland AK 99727	4945012	F	AN
Riley Armstrong	P.O. Box 21 Buckland AK. 99727	494-5012	m	AN
Bonnie Pfuntner	1400 W. Benson Anchorage, AK	273-9640	F	W
Anne Brooks	on file	272-1877	F	W

3904.06 PI Docs:3909.06 Meetings:3906.06 060329 Meeting:3904.06_060329 Title VI Sign-In.doc

***RACE CATEGORIES: WHITE (W), ALASKA NATIVE (AN), NATIVE AMERICAN (N), BLACK (B), HISPANIC (H), ASIAN (A), PACIFIC ISLANDER (P), and OTHER (O)**

revised: March 2005

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PROJECT NAME Kotzebue to Cape Blossom Road, Buckland Meeting, 76844/NCPD-0002(204) DATE May 10, 2012

NAME (PLEASE PRINT)	**ADDRESS** (to receive project notices, you MUST provide)	**PHONE**	***GENDER (M/F)**	***RACE (W, AN, N, B, H, A, P, O)**
Alice Moore	PO Box 37 Buckland, AK	4942290	F	AK Native
Jonica Lee	Box 62 Buckland AK	494-2218	F	AK Native
Raymond Lee	"	"	M	"
Ernest Barger Sr.	Box 48 Buckland, Alaska 99727	494-4150	M	"
David Barr	Box 37 Buckland	494-2290	m	AK native
GENE ARMSTRONG	Box 71 BUCKLAND	2388	M	AN

***RACE CATEGORIES: WHITE (W), ALASKA NATIVE (AN), NATIVE AMERICAN (N), BLACK (B), HISPANIC (H), ASIAN (A), PACIFIC ISLANDER (P), and OTHER (O)**

2 of 3

revised: March 2005

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PROJECT NAME **Kotzebue to Cape Blossom Road, Buckland Meeting, 76844/NCPD-0002(204)** **DATE** **May 10, 2012**

NAME (PLEASE PRINT)	**ADDRESS** (to receive project notices, you MUST provide)	**PHONE**	***GENDER** (M/F)	***RACE** (W, AN, N, B, H, A, P, O)
Wyna Washington	Box 87 Buckland Ak 99727	494 1962	F	AN
John Washington	Box 87 Buckland Ak 99727	494 1962	M	AN
Glenna parrish	Box 25 BKL, Ak. 99727	494 2117	F	AN
Ernest H Thurman	Box 52 BKL Ak 99727	494 2487	M	AN
Laura Washington	Box 107 Buckland 99727	494- 2301	F	AN

***RACE CATEGORIES: WHITE (W), ALASKA NATIVE (AN), NATIVE AMERICAN (N), BLACK (B), HISPANIC (H), ASIAN (A), PACIFIC ISLANDER (P), and OTHER (O)**

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PROJECT NAME Kotzebue to Cape Blossom Road, Buckland Meeting, 76844/NCPD-0002(204) DATE May 1~~0~~1, 2012

NAME (PLEASE PRINT)	**ADDRESS** **(to receive project notices, you MUST provide)**	**PHONE**	***GENDER (M/F)**	***RACE (W, AN, N, B, H, A, P, O)**
Stephen Ballot	Box 94 Buckland, Alaska 99727	(907) 4121542	m	American Indian
Marvin Barger	Box 48 Buckland, AK 99727	494-5064	M	AN
Kevin Carter	POBox 58 Buckland AK 99727	4945012	M	AN
Tim Gray Jr	P.O. 57 BKL AK 99727	494-5066	M	AN
Eugene Smith	POB 1158 Kotz AK 99[illegible]	360-4696	M	AN
Derek Martin	POBox 46 Kotz 99752	442-3401	M	AN
Karen Brown	N. Benson BLVD ANCH 99503	273-1628	F	W

*RACE CATEGORIES: WHITE (W), ALASKA NATIVE (AN), NATIVE AMERICAN (N), BLACK (B), HISPANIC (H), ASIAN (A), PACIFIC ISLANDER (P), and OTHER (O)

_____ of _____

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ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

PUBLIC MEETING

SIGN IN SHEET

PROJECT NAME Kotzebue to Cape Blossom Road, Kotzebue Meeting, 76844/NCPD-0002(204) **DATE** May 10, 2012

NAME (PLEASE PRINT)	**ADDRESS** (to receive project notices, you MUST provide)	**PHONE**	***GENDER (M/F)**	***RACE (W, AN, N, B, H, A, P, O)**
KAREN BROWN	1400 W. Benson Blvd ANCH AK 99502	907 273-1638	F	W
DAVE MYERS	573 A BISON ST KOTZ AK 99752	907 442-2540	M	W
Bonnie Pfuntner	1400 W. Benson Blvd. Anchorage, AK 99503	907-273-1640	F	W
TOBY DRAKE	Box 338 KOTZEBUE, AK 99752	907 442-3512	M	AN
Walter Sampson	BX 49 Kotz	442-3301	M	AN
MATT TEKKER	Box 894 KOTZEBUE, AK 99752	442-7331	M	W

3904.06 PI Docs:3909.06 Meetings:3906.06 060329 Meeting:3904.06_060329 Title VI Sign-In.doc

***RACE CATEGORIES: WHITE (W), ALASKA NATIVE (AN), NATIVE AMERICAN (N), BLACK (B), HISPANIC (H), ASIAN (A), PACIFIC ISLANDER (P), and OTHER (O)**

revised: March 2005

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PROJECT NAME **Kotzebue to Cape Blossom Road, Kotzebue Meeting, 76844/NCPD-0002(204)** **DATE** **May 10, 2012**

NAME (PLEASE PRINT)	**ADDRESS** (to receive project notices, you MUST provide)	**PHONE**	***GENDER** (M/F)	***RACE** (W, AN, N, B, H, A, P, O)
CRAIG MC_CONNELL	PO BOX 51 Kotzebue	442-3476	M	N
SHARON MILBOCKER	Box 175 OTZ		F	W
B Schaeffer	Kotz	442 2500	M	Esk.
G [illegible]	Kotz	442 2421	M	N
Robert [illegible]	Kotzebue	442 4246	M	Esk
Enoch L. Mitchell	Box 85 Noatak Ak 99761	485 5399	M	N

***RACE CATEGORIES: WHITE (W), ALASKA NATIVE (AN), NATIVE AMERICAN (N), BLACK (B), HISPANIC (H), ASIAN (A), PACIFIC ISLANDER (P), and OTHER (O)**

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PROJECT NAME **Kotzebue to Cape Blossom Road, Kotzebue Meeting, 76844/NCPD-0002(204)** **DATE** **May 10, 2012**

NAME (PLEASE PRINT)	**ADDRESS** (to receive project notices, you MUST provide)	**PHONE**	***GENDER (M/F)**	***RACE (W, AN, N, B, H, A, P, O)**
Anne Brook	on file	272-1877	F	W
Derek Martin	City of Kotzebue	442-3401	M	
Noah Naylor	NAB	442-2500	M	Inupiaq
ERNIE NORTON	KIC	442-3165	M	INUPIAT
Ukallaysaaq Okleasik	NWAB	2500	M	AN
CRAIG MOATES	CITY OF KOTZEBUE	442-3539	M	W
Jason Jessup	Box 46 City	442-5204	M	Inupiat
Grant Hildreth	Box 46 Kotzebue	442-5203	M	Inupiat

***RACE CATEGORIES: WHITE (W), ALASKA NATIVE (AN), NATIVE AMERICAN (N), BLACK (B), HISPANIC (H), ASIAN (A), PACIFIC ISLANDER (P), and OTHER (O)**

3 of 3

revised: March 2005

Public Meeting Materials

Kotzebue to Cape Blossom Road Environmental Documentation

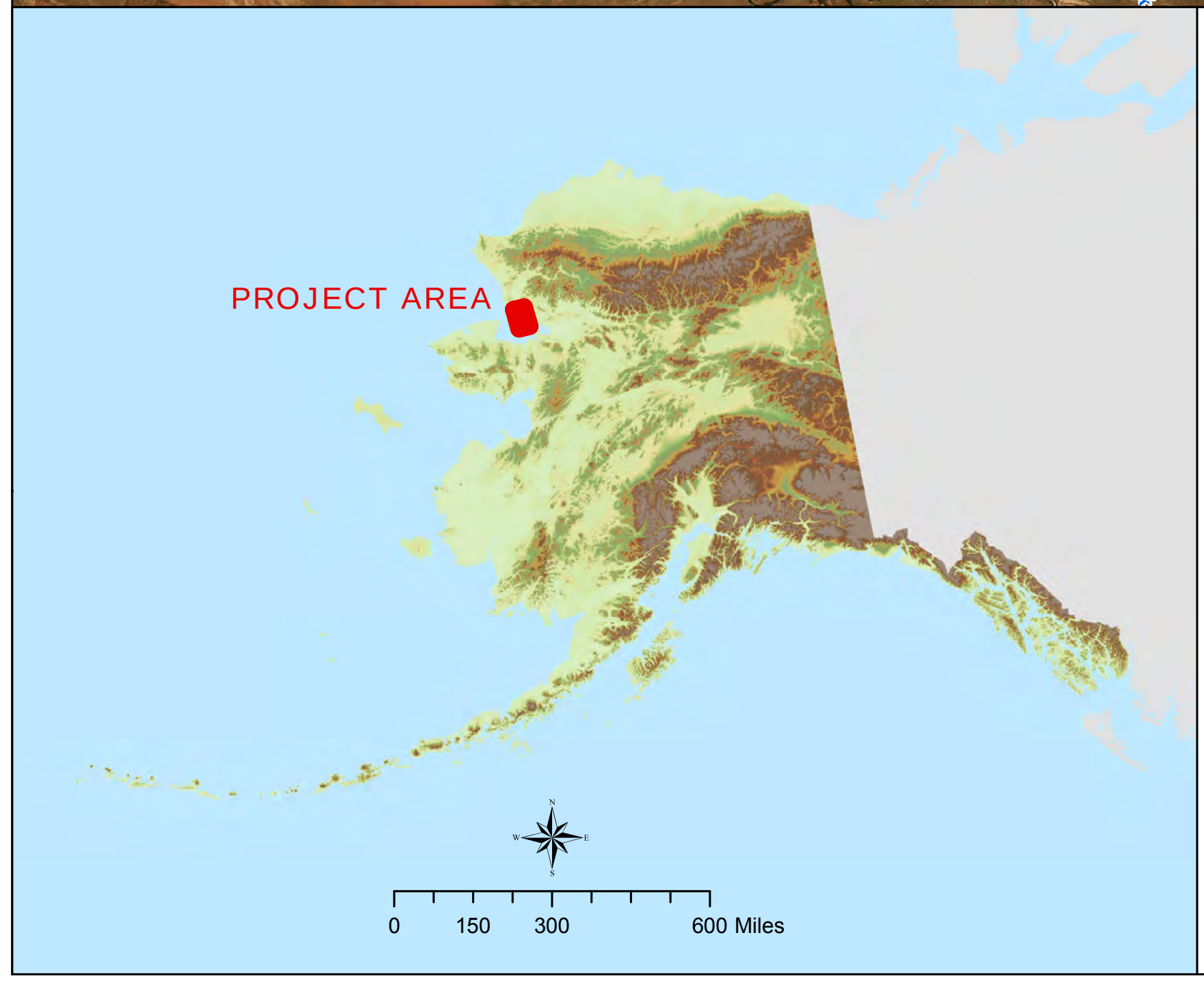
May 10, 2012 Figure 2 of 2

1 in = 0.75 miles

0 0.75 1.5 2.25 3 Miles

Legend

━	Proposed Alternative
┅	Other Alternatives
▭	Native Allotment



Kotzebue to Cape Blossom Road Environmental Documentation

May 10, 2012 Figure 1 of 2

1 in = 2.5 miles

0 2.5 5 10 15 20 Miles

Legend

🟥 Proposed Alternative

┄ Other Alternatives

Comment Form

Kotzebue to Cape Blossom Road

Project No. 76844/NCPD-0002(204)

Your Comments Please... Please use this form to provide written comments about the Cape Blossom Road project—the purpose and need or any issues or concerns that should be addressed in the environmental documentation. We appreciate your written input!

Name	
Street Address or PO Box	
City, State, Zip	
Email	Phone

Your comments:

We welcome your input. Please send written comments:

Mail

ADOT&PF Northern Region
Attn: Christopher Johnston, P.E., Engineering Manager
2301 Peger Road
Fairbanks, AK 99709

Call

Alaska Relay
TTY 800-770-8973 or
Toll Free: 1-866-535-1877

Email

chris.johnston@alaska.gov

Alaska Department of Transportation & Public Facilities
Northern Region
2301 Peger Road
Fairbanks, AK 99709

Alaska Department of Transportation & Public Facilities
Attn: Christopher Johnson, P.E.
2301 Peger Road
Fairbanks, AK 99709

(To mail, fold here, tape lower edge, and affix first class stamp)

Comments continued:

Written Public Comments

Comment Form

Kotzebue to Cape Blossom Road

Project No. 76844/NCPD-0002(204)

Your Comments Please... Please use this form to provide written comments about the Cape Blossom Road project—the purpose and need or any issues or concerns that should be addressed in the environmental documentation. We appreciate your written input!

Name DAVE MYERS OTZ LRRS	
Street Address or PO Box P.O. Box 728	
City, State, Zip KOTZEBUE AK 99752-0728	
Email dwesleym@gci.net	Phone 907 442-7540

Your comments:

Several options for the road were discussed. It was an informative meeting. I was surprized to hear so many views (after the meeting was officially over) from meeting participants. The group in charge of proposals seems to have good information, but they were willing to hear concerns of the community. I appreciate snacks & pizza were provided to attendees. Nobody had to worry about hunger pains.

We welcome your input. Please send written comments:

Mail ADOT&PF Northern Region Attn: Christopher Johnston, P.E., Engineering Manager 2301 Peger Road Fairbanks, AK 99709	**Call** Alaska Relay TTY 800-770-8973 or Toll Free: 1-866-535-1877

Email chris.johnston@alaska.gov

20120510cs Myers 1/1 1

Kotzebue to Cape Blossom Road

Project No. 76844/NCPD-0002(204)

Comment Form

Your Comments Please... Please use this form to provide written comments about the Cape Blossom Road project—the purpose and need or any issues or concerns that should be addressed in the environmental documentation. We appreciate your written input!

Name Bobby Schaeffer

Street Address or PO Box Bx 148

City, State, Zip Kotz AK

Email bschaeffer@nwasu.org

Phone 442-2500

Your comments:

Keep to an approved schedule. Do not mothball this project. We have been waiting for 25 years for this project to start. If you wait, inflation will drive up the construction cost "huge" and this will definitely affect the project. The cost of energy drives construction costs. Don't wait

We welcome your input. Please send written comments:

Mail

ADOT&PF Northern Region
Attn: Christopher Johnston, P.E., Engineering Manager
2301 Peger Road
Fairbanks, AK 99709

Call

Alaska Relay
TTY 800-770-8973 or
Toll Free: 1-866-535-1877

Email chris.johnston@alaska.gov

20120510CaSchaeffer1

Comment Form

Kotzebue to Cape Blossom Road

Project No. 76844/NCPD-0002(204)

Your Comments Please... Please use this form to provide written comments about the Cape Blossom Road project—the purpose and need or any issues or concerns that should be addressed in the environmental documentation. We appreciate your written input!

Name GENE ARMSTRONG

Street Address or PO Box PO BOX 71

City, State, Zip BUCKLAND, AK 99727

Email GENEUSA2002@LIVE.COM

Phone 907 494 2388

Your comments:

ROUGH WATERS AT CAPE BLOSSOM

We welcome your input. Please send written comments:

Mail

ADOT&PF Northern Region
Attn: Christopher Johnston, P.E., Engineering Manager
2301 Peger Road
Fairbanks, AK 99709

Call

Alaska Relay
TTY 800-770-8973 or
Toll Free: 1-866-535-1877

Email chris.johnston@alaska.gov

20120511cs Armstrong

Comment Form

Kotzebue to Cape Blossom Road

Project No. 76844/NCPD-0002(204)

Your Comments Please... Please use this form to provide written comments about the Cape Blossom Road project—the purpose and need or any issues or concerns that should be addressed in the environmental documentation. We appreciate your written input!

Name: Marvin Barger

Street Address or PO Box: P.O BOX 48

City, State, Zip: Buckland, AK 99727

Email: barger.08@hotmail.com

Phone: 494-5064

Your comments:

It's great that you can come out to Surrounding villages of Kotzebue and regards to your project the more input & opinions the better. Common Sense - the more input you have from not only the residents of Kotzebue, having a more visual and understanding of culture subsistance hunting. grounds. Raymond Lee) Commented saying a request to make the road along side the coast I think that is not a possible because of future eroding of land

We welcome your input. Please send written comments:

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ADOT&PF Northern Region
Attn: Christopher Johnston, P.E., Engineering Manager
2301 Peger Road
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Call

Alaska Relay
TTY 800-770-8973 or
Toll Free: 1-866-535-1877

Email chris.johnston@alaska.gov

20120511cs Barger 1/1

From: zhikezhik@gmail.com
Subject: Cape Blossom Road Comment
Date: May 13, 2012 6:36:45 AM AKDT
To: chris.johnston@alaska.gov, paul.karczmarczyk@alaska.gov, derek.christianson@mbakercorp.com, a.brooks@brooks-alaska.com

---

From: Public Comments <mycomments@brooks-alaska.com>
Subject: Re: Cape Blossom Road Comment
Date: May 14, 2012 8:57:56 AM AKDT
To: zhikezhik@gmail.com
Cc: chris.johnston@alaska.gov, paul.karczmarczyk@alaska.gov, derek.christianson@mbakercorp.com

---

Hi -- Just thought I'd let you know we didn't receive any content with your message (see below). Please resend with you comments on the Cape Blossom Road project.

M. Anne Brooks P.E.
Public Involvement Specialist
Brooks & Associates
301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: mycomments@brooks-alaska.com
Toll Free: 866-535-1877

On May 13, 2012, at 6:36 AM, zhikezhik@gmail.com wrote:

From: parkallekp@gmail.com
Subject: Cape Blossom Road Comment
Date: May 28, 2012 9:49:27 AM AKDT
To: chris.johnston@alaska.gov, paul.karczmarczyk@alaska.gov, derek.christianson@mbakercorp.com, a.brooks@brooks-alaska.com

---

From: Public Comments <mycomments@brooks-alaska.com>
Subject: Re: Cape Blossom Road Comment
Date: May 29, 2012 8:50:28 AM AKDT
To: parkallekp@gmail.com

I am still not getting any content in your email messages. Perhaps you can try sending it to my gmail account.

brooks.markaanne@gmail.com

Thanks. We really want to get your comments.

M. Anne Brooks P.E.
Public Involvement Specialist
Brooks & Associates
301 West Northern Lights Blvd, Suite 440
Anchorage, AK 99503
E-mail: mycomments@brooks-alaska.com
Toll Free: 866-535-1877

On May 28, 2012, at 9:49 AM, parkallekp@gmail.com wrote: