

FINAL REPORT

**EIDER NEST SEARCHES AT THE CD-3 PAD, ICE ROAD,  
SPILL-RESPONSE SITES, AND PIPELINE BRIDGES ON THE  
COLVILLE RIVER DELTA, 2010**

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PREPARED FOR  
**CONOCOPHILLIPS ALASKA, INC.**  
ANCHORAGE, ALASKA

PREPARED BY  
**ABR, INC.—ENVIRONMENTAL RESEARCH & SERVICES**  
FAIRBANKS, ALASKA



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Prepared for

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## EXECUTIVE SUMMARY

The breeding range of the Spectacled Eider (*Somateria fischeri*) includes the Colville River delta where it is a common nester. Spectacled Eiders and Steller's Eiders (*Polysticta stelleri*) are listed as threatened species under the Endangered Species Act (ESA). Although within the historic range of Steller's Eiders, the Colville River delta is no longer part of its breeding range, which has retracted westward to the Barrow area. ConocoPhillips Alaska, Inc. (CPAI) operates the Alpine Satellite Development Project (Alpine Oilfield), an oil and gas development, on the Colville River delta in areas of potential breeding habitat for Spectacled Eiders. To comply with the ESA and to avoid disturbance of Spectacled Eiders during the nesting season, CPAI documented the location of Spectacled Eider nests in areas slated for off-pad activities (e.g., tundra clean-up, surveying, spill prevention). Once active nests were identified, CPAI avoided scheduled work activities around nest locations until after the nesting season.

CPAI contracted ABR, Inc., to conduct nest searches for eiders in areas where off-pad work was scheduled during 1 June–1 August 2010. These areas included the CD-3 pad and airstrip, the ice road from CD-2 to CD-3, 13 Alaska Clean Seas (ACS) spill-response equipment sites, and 3 pipeline bridges over channels of the Colville River. Except for the 3 bridge sites, all other sites had been searched for nests and evaluated for suitable eider nesting habitat during the 2009 nesting season.

A 200-m buffer around the majority of work sites was searched for eider nests in 2010. Because of transportation limitations on the nest searching crew, sections of the ice road were searched within 50-m and 100-m buffers where litter was scarce (thus requiring no clean-up) or habitat was not suitable for Spectacled Eider nesting.

In 2010, a total of 4 Spectacled Eider nests and 1 King Eider nest were found within the search areas. One failed Spectacled Eider nest was located near the CD-3 airstrip. Three active Spectacled Eider nests and 1 failed King Eider nest were found along the ice-road. No eider nests were located at the 13 spill-response or the 3 pipeline-bridge crossing sites in 2010. We found no Steller's Eiders or their nests in any of the areas searched in 2010, which is consistent with past results from studies on the delta.

Coordinates for eider nest locations were transmitted to CPAI field environmental compliance staff, who in turn informed helicopter pilots and off-pad workers of areas to avoid. Based on assessments of nesting habitat available in the areas searched, as well as prior nesting

records, nest searches should be continued in the future around the CD-3 pad and airstrip, 13 spill-response, and 3 pipeline-bridge sites, if off-pad activities are expected in these locations during the breeding season.

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## INTRODUCTION

The Colville River delta is within the current or historic ranges of 2 species of eider ducks that are listed as threatened under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.): the Spectacled Eider (*Somateria fischeri*) and Steller's Eider (*Polysticta stelleri*). Spectacled Eiders are common breeders on the Colville River delta and occur at relatively high densities on the outer portions of the delta. In contrast, Steller's Eiders in Alaska breed primarily near Barrow and, although their historic range included all of the Arctic Coastal Plain of Alaska, they are extremely rare on the Colville River delta (Quakenbush et al. 2002). Possible evidence of nesting by Steller's Eiders away from Barrow has been reported only 3 times in recent years: single broods were seen inland along the Colville River in 1987 (T. Swem, unpubl. data), near Prudhoe Bay in 1993 (M. M. Johnson, pers. comm.), and near the upper Chipp River, approximately 80 km inland from the Dease Inlet/Admiralty Bay area, in 1997 (King and Dau 1997). Steller's Eiders have been sighted twice (1995 and 2001) on the Colville River delta in the last two decades (J. Bart, Boise State University, pers. comm.; Johnson et al. 2002), but there is no evidence of this species nesting on the delta.

The outer Colville River delta is where ConocoPhillips Alaska, Inc. (CPAI) operates the CD-3 drill pad as part of the Alpine Oilfield (Figure 1). Section 9 of the ESA prohibits harming, harassing, and disrupting normal activities of threatened and endangered species, without special exemption. However, under section 7(b)(4) and 7(o)(2) of the ESA, Incidental Take Statements allow actions that are prohibited under Section 9 if they comply with specific terms and conditions. In the Biological Opinion issued prior to construction of CD-3 (one part of the Alpine Satellites Development Project [ASDP]), the U.S. Fish and Wildlife Service (USFWS) stipulated terms and conditions in the Incidental Take Statement for the project that restrict human activity within 200 meters of occupied Spectacled Eider nests to existing gravel fill during 1 June–1 August (USFWS 2004). Where minimal summer support or construction activities must occur off existing gravel fill, USFWS-approved nest surveys for Spectacled Eiders must be conducted during the nesting period each year prior to those activities. CPAI conducts off-pad activities annually (e.g., tundra clean-up after the ice-road season, pipeline inspections, and civil surveys) on the tundra in portions of the nesting habitat of the Spectacled Eider during the breeding season (June and July). These off-pad activities have the potential to disturb nesting Spectacled Eiders, as the cryptic female eiders are difficult to detect from a distance and difficult to identify. Without

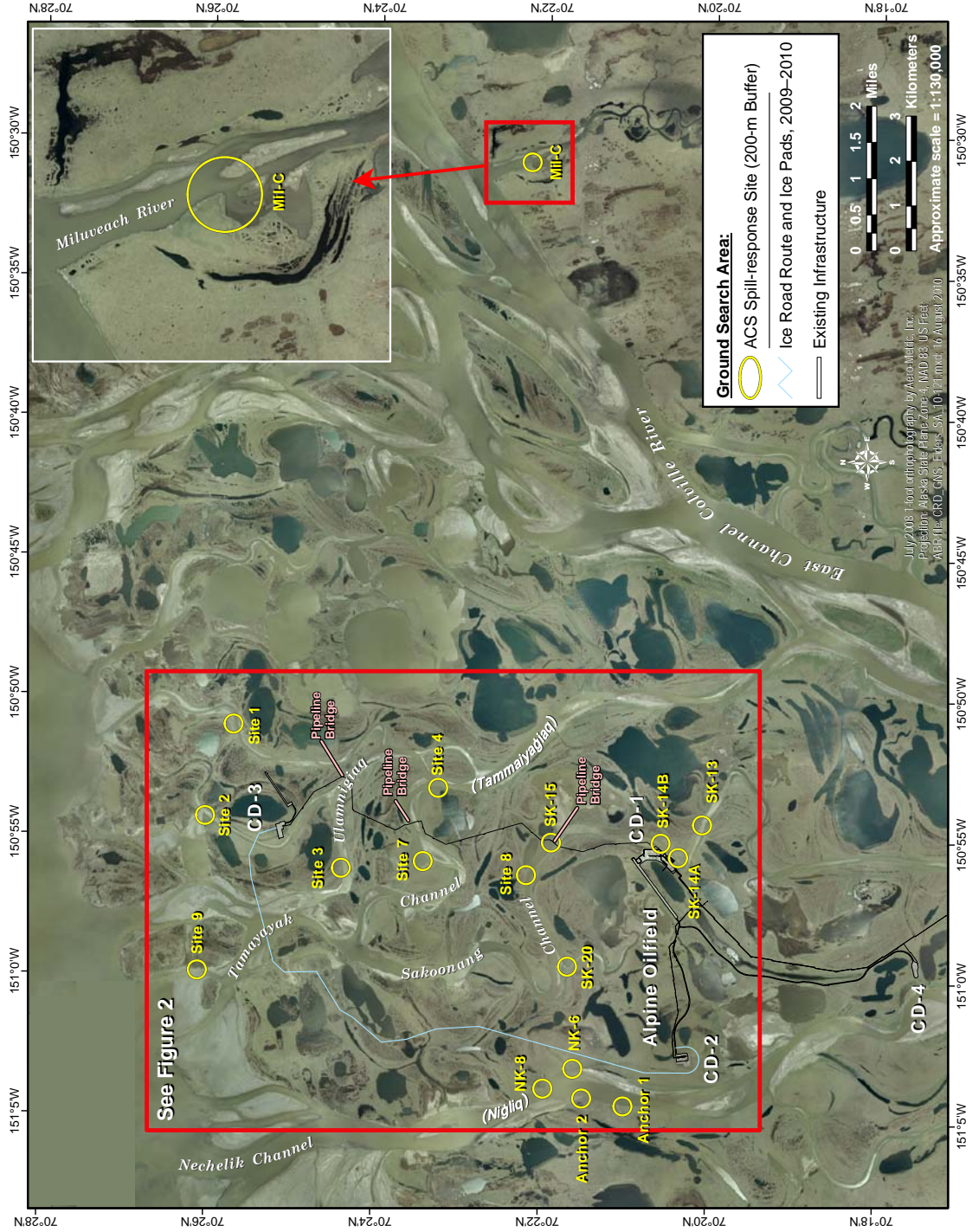


Figure 1. Study area map showing CD-3, the ice-road route, spill-response equipment sites, and pipeline bridges on the Colville River Delta, Alaska, June 2010.

knowledge of nest locations, workers could unintentionally flush birds from their nests. In particular, helicopter landings and clean-up crews picking up debris from the tundra near gravel pads and along ice-road routes could inadvertently disturb nesting Spectacled Eiders and cause nest failure. Similarly, seasonal mobilization at spill-response sites and pipeline-bridge inspections may affect eiders nesting near work sites.

To comply with the Incidental Take Statement issued in the Biological Opinion for ASDP (USFWS 2004), and to reduce inadvertent disturbance to breeding Spectacled Eiders, CPAI Operations requires documentation of the presence or absence of Spectacled Eider nests prior to initiating off-pad activities and then modifies those activities to avoid disturbance if nests are found. Consequently, CPAI contracted ABR, Inc., to conduct nest searches for eiders in June 2010 in areas of the Colville River Delta where off-pad activities were scheduled during the 2010 breeding season. In this report, we document eider nest locations within search areas around the CD-3 pad and airstrip, the ice road from CD-2 to CD-3, Alaska Clean Seas (ACS) spill-response equipment sites, and pipeline bridges on the Colville Delta. Those same areas were searched in 2009, with the exception of the pipeline-bridge sites, which were added to the list of search areas in June 2010.

## **OBJECTIVES**

The primary objective of nest searching in 2010 was to identify the locations of nesting Spectacled Eiders prior to off-pad activities in eider nesting habitat. Documentation of nest locations allowed CPAI to modify planned activities occurring near nests, either by delaying activities until after the nesting season or by maintaining a 200-m zone of no activity around nests. A list of Spectacled Eider nest locations was transmitted to CPAI field environmental compliance staff on the completion of field work to inform helicopter pilots and off-pad workers of areas to avoid.

## **METHODS**

We conducted intensive ground-based nest searches for Spectacled Eiders in areas where tundra clean-up, pipeline inspections, mobilization and maintenance of spill-response equipment, or other tundra-based activity was proposed to occur during the breeding season (Figure 1). We did not search any spill-response sites south of Alpine because Spectacled Eiders are rarely

observed there (Johnson et al. 2004b). We searched a 200-m buffer around the majority of work sites. The 200-m buffer around work sites is based on terms and conditions in the Incidental Take Statement (USFWS 2004). While regulatory guidelines have not been issued on the extent of area around human activity that should be monitored for nesting activity, or conversely, the area around nests in which human activity should be avoided, we have applied the 200-m buffer as a zone outside of which human activity is not likely to cause severe disturbance. Data on flushing distances for nesting Spectacled Eiders over the last 17 years of nest searching suggest that this species rarely flushes from a nest when people are greater than 25 m away (ABR, unpublished data).

Crews of 3 to 8 people searched for nests by walking a regular search pattern with 10–20 m between searchers, which provided total coverage of the tundra between searchers. Crews were transported by helicopter to search sites, except for a few sites nearby Alpine that were reached by walking. All nest locations were recorded with handheld GPS units and on aerial-photo maps. Each nest was recorded as active if occupied, or inactive if empty. We tried to avoid disturbing incubating Spectacled Eiders, but when a female Spectacled Eider was flushed inadvertently, we floated the eggs to estimate hatch dates and installed in the nest an artificial temperature-sensing egg. Temperature data recorded by the artificial egg were used to determine nest fate (success or failure), the timing of hatch or nest failure, and incubation constancy. After hatch, we returned to retrieve the artificial eggs and record the fate of nests.

The CD-3 pad, airstrip, and ice road areas were scheduled for tundra clean-up during summer 2010. At CD-3, we searched within a 200-m buffer around the drill pad, airstrip, and connecting road (Figure 2). For the ice road, we searched the entire length from CD-3 to CD-2, within buffers that varied from 50 to 200 m in width on each side of the road (Figure 2). Helicopter availability for crew transportation was limited at times, which constrained the buffer sizes we could search. We attempted to search at least 100 m on each side of the ice-road centerline (200-m total strip-width) because, from personal observation, the majority of the clean-up activities occur within that distance from the road. Along the ice-road, we narrowed our buffer width from 200 m to 100 m at >500 m from the CD-3 pad because the amount of litter away from the pad diminished to little or none. Thus, we searched 200 m on each side of the ice road from CD-3 to the Ulamnigjaq Channel. Southwest of the Ulamnigjaq Channel we reduced our search width to 100 m on each side of the ice road for the next 8.6 km, and then expanded to 200 m on each side

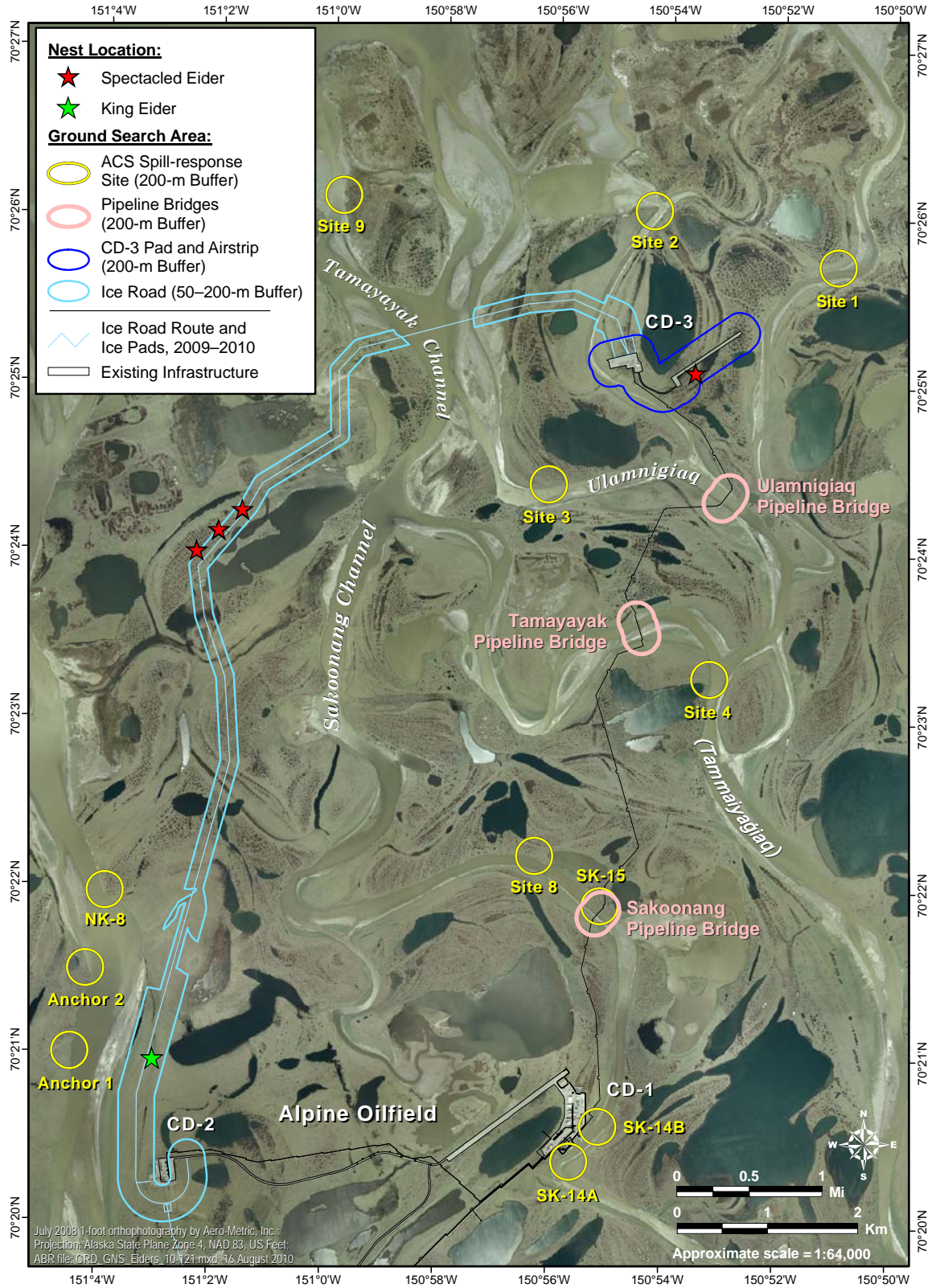


Figure 2. Eider nest locations in the CD-3, ice-road, spill-response equipment site, and pipeline-bridge search areas on the Colville River Delta, Alaska, June 2010.

of the ice road for the remaining 4 km of the ice road as it approached CD-2. On a small section of the ice road (~7%) just north of CD-2, we reduced our buffer to 50 m on each side of the centerline, to skip over shrubby areas that were not typical nesting habitat for eiders. We did not search the ice road south of CD-2 because eiders are uncommon south of that area, and because the tussock and low shrub habitats along that portion of the ice road are not used by nesting eiders, as reported in prior studies of Spectacled Eiders on the Colville Delta (Johnson et al. 2008).

We searched 13 spill-response equipment sites and 3 pipeline-bridge sites (Figure 2), where maintenance and inspection activities were planned. For each pipeline-bridge site we searched a 200-m buffer around the pipeline spanning the river channel. At sites where spill-response storage containers were already in place, we searched within 200 m of the container, otherwise we searched a 200-m radius around the coordinates provided by ACS.

In addition to nest searches, we evaluated eider nesting habitat within a 200-m buffer of the pipeline bridge and spill-response equipment sites. We consulted the wildlife habitat map produced for the area by Johnson et al. (1997). Habitats we considered to have the highest potential for nesting included Brackish Water, Salt-killed Tundra, Salt Marsh, Deep Water (both with and without islands), Shallow Water (both with and without islands), Deep Polygon Complex, Sedge Marsh, Grass Marsh, and Patterned Wet Meadow (Johnson et al. 2008). Barrens, Moist Sedge–Shrub Meadow, and Tall, Low, and Dwarf Shrub were considered to have low potential as nesting habitat. In 2009, we visited 16 spill-response sites and determined that suitable eider nesting habitat was present at 12 sites, marginal eider nesting habitat was available at 2 sites (Site 2 and SK-20), and nesting habitat was absent at 2 sites (Site 7 and NK-6; Seiser and Johnson 2010). Mil-C was a spill-response site searched for the first time in 2010. Based on lack of suitable habitat, we did not revisit Site 7 or NK-6 in 2010. SK-13 and SK-20 were not searched because helicopter availability limited total search hours.

## **RESULTS**

### **CD-3 PAD**

On 25 June, we searched a 200-m-wide buffer (total area searched = 103.8 ha) around the CD-3 pad, airstrip, and access road to the airstrip (Figure 2). We located 1 failed eider nest 32 m from the airstrip. We tentatively identified it as a Spectacled Eider nest based on patterns on the

contour feathers from the nest. The largest number of Spectacled Eider nests previously reported in this search area (2000–2009) was 3 nests in 2002 (Johnson et al. 2004a, 2004b, 2005, 2006, 2007, 2008; Seiser and Johnson 2010). Although Spectacled Eiders were the focus of the nest search, we also located 46 nests of other large waterbirds in the CD-3 search area (Table 1). As with all previous surveys conducted in the CD-3 area, no Steller’s Eider nests were discovered around CD-3 or any of the other search areas in 2009 or 2010.

## **ICE ROAD**

We searched 13.8 km of the ice road from CD-2 to CD-3 on 24, 26, and 27 June. Total area searched was 353 ha. Along the ice road, we found 3 active Spectacled Eider nests 32–129 m from the ice road centerline and 1 failed eider nest 78 m from the centerline (Figure 2, Table 1). We preliminarily identified the failed nest as belonging to a King Eider based on color patterns of contour feathers found in the nest. On 26 June, we placed temperature-sensing eggs in 2 Spectacled Eider nests. We revisited the 3 active Spectacled Eider nests on 20 July and found evidence of hatch at 1 nest and evidence of failure at the other 2. The successful nest contained 3 egg membranes, indicating that  $\geq 3$  eggs had hatched. Data from the 2 instrumented nests indicated that the females last attended each nest on 28 June and 6 July, and that failure occurred well before the estimated hatch dates for these nests. In addition to the eider nests that we searched for, we also found 92 nests of other large waterbirds within the ice-road search area (Table 1).

## **SPILL-RESPONSE SITES**

In 2010, we found no Spectacled Eider nests among the 13 spill-response sites we visited on 14–28 June (Table 1). Unavailability of a helicopter for transportation prevented us from searching SK-13 and a low priority site at SK-20 (low priority because of limited nesting habitat at the site). Only Site 1 and Site 3 are in areas with records of nesting by Spectacled Eiders in the past (Johnson et al. 2004a, 2004b, 2005, 2006, 2007, 2008; Seiser and Johnson 2010). Five nests of other large waterbirds were found among the 13 spill-response sites; the most common nests were those of Greater White-fronted Geese (Table 1). Spectacled Eider nesting habitat was present at all 13 sites (Table 2).

Table 1. Numbers of nests of Spectacled Eiders and other large waterbirds found incidentally in search areas at CD-3, the ice road from CD-2 to CD-3, 13 spill-response equipment sites, and 3 pipeline bridges, Colville River delta, Alaska, 14–28 June 2010.

Search Area	Eiders			Other Large Waterbirds													Total
	Spectacled Eider	King Eider	Unidentified eider	Greater White-fronted Goose	Snow Goose	Brant	Cackling/Canada Goose <sup>a</sup>	Unidentified goose	Northern Pintail	Green-winged Teal	Long-tailed Duck	Red-throated Loon	Pacific Loon	Parasitic Jaeger	Long-tailed Jaeger	Glaucous- Gull	
CD-3 Pad and Airstrip	1	–	–	40	–	–	3	–	–	–	1	–	1	1	–	–	47
CD-2 to CD-3 Ice Road	3	–	1	74	2	6	2	1	–	–	1	1	1	1	2	1	96
ACS Spill-response Sites																	
Site 1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
Site 2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
Site 3	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1
Site 4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
Site 8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
Site 9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
Anchor 1	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1
Anchor 2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
NK-8	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	2
Mil- C	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
SK-14A	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1
SK-14B	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
SK-15 <sup>b</sup>	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
Pipeline Bridges																	
Sakoonang <sup>b</sup>	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1
Tamayyak	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
Ulamnigiq	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0

<sup>a</sup> Unidentified goose nest belonging to either Cackling or Canada goose species

<sup>b</sup> The Sakoonang Pipeline Bridge search area overlaps with the SK-15 Spill-response Site search area.



Table 2. Site descriptions and eider habitat assessments for 17 spill-response equipment sites and 3 pipeline bridges on the Colville River delta, Alaska, 2009 and 2010.

Site Name	Location	Site Description	Wildlife Habitat <sup>a</sup>	Habitat Description	Nesting Habitat Present <sup>b</sup>	Search History /		Search in Future Years?	Comments
						Nesting Records	Years Searched		
Anchor 1	N70.35003	West bank of the Nechelik Channel	NWM,	Shrubs, low-relief low-center polygons	Yes	No/No	2009	Yes	Marginal nesting habitat because of prevalence of shrubs. Used by nesting Greater White-fronted Geese and ptarmigan
	W151.07447		MSSM, PWM			2010			
Anchor 2	N70.35828	West bank of the Nechelik Channel	PWM,	Shrubs, low-relief low-center polygons	Yes	No/No	2009	Yes	Marginal nesting habitat because of prevalence of shrubs. Used by nesting Greater White-fronted Geese
	W151.07022		DOWIP			2010			
Mil-C	N 70.37038	Shoreline and islands ~800m upstream of Miluveach River mouth	NWM,	NWM on river banks, BAR and SKT on islands	Yes	No/No	2010	Yes	No habitat mapping available for this site; nesting habitat on both banks and islands, based on appraisal in field
	W 150.51505		BAR, SKT						
NK-6	N70.36017	East bank of the Nechelik Channel.	TLDS,	Low willow shrubs and non-patterned grass/sedge	No	No/No	2009	No	No nesting habitat at this site for eiders or most other species of waterfowl; recommend dropping from list of sites to search
	W151.05275		MSSM						
NK-8	N70.36606	NW bank of the Nechelik Channel.	PWM,	Low willow shrubs with some polygons, river bank with polygon troughs	Yes	No/No	2009	Yes	Marginal nesting habitat because of prevalence of shrubs, contains some polygonal areas
	W151.06483		MSSM			2010			

Table 2. Continued.

Site Name	Location	Site Description	Wildlife Habitat <sup>a</sup>	Habitat Description	Nesting Habitat Present <sup>b</sup>	Search History / Nesting Records	Years Searched	Search in Future Years?	Comments
Site 1	N70.42874 W150.85064	Container on west bank, site includes both sides of the Tamayayak	NWM, PWM, BAR, SOW	Vegetated areas predominately NWM and PWM	Yes	Yes <sup>d</sup> /Yes	2009 2010	Yes	Eider nesting habitat consists of polygon ponds 100 m inland from the container; nesting habitat is easily delineated from the rest of the site by distinct rise in elevation above the current river bank and container location
Site 2	N70.43417 W150.90533	Container on west bank, site includes both sides of the of the West Ulammigiaq	MSSM, BAR, SM, SKT	Half of site is vegetated, with MSSM on west bank and SM on east bank	Yes	Yes <sup>d</sup> /No	2009 2010	Yes	Marginal nesting habitat; site borders better nesting habitat; driftwood lines indicate flooding is common at this site; in future, search only east side
Site 3	N70.40692 W150.93553	Container on north bank of Ulammigiaq; site spans the channel and mud flats on south bank	NWM, PWM, BAR	North bank is 50% NWM and 50% PWM	Yes	Yes <sup>d</sup> /Yes	2009 2010	Yes	Eider nesting habitat on the north side; a Spectacled Eider nested just beyond 200-m search radius in 2009 and 4 other female Spectacled Eiders were observed nearby
Site 4	N70.38775 W150.88721	Container on west bank of the Tamayayak	PWM, MSSM, DOWIP, BAR	~30% dry, low-relief PWM; ~10% high-relief PWM; ~10% DOWIP; ~50% channel and mud bars	Yes	No/No	2009 2010	Yes	Marginal nesting habitat in the high relief area because of prevalence of shrubs

Table 2. Continued.

Site Name	Location	Site Description	Wildlife Habitat <sup>a</sup>	Habitat Description	Nesting Habitat Present <sup>b</sup>	Search History / Nesting Records	Years Searched	Search in Future Years?	Comments
Site 7	N70.39061 W150.93079	Container on NW bank of Tamayayak; site includes mud bar in the of middle channel	NWM, TLDS, BAR	Well-drained NWM and low shrubs along the river channel	No	No/No	2009	No	No suitable nesting habitat; area dry and shrubby; no lakes within 200 m; recommend dropping from list of sites to search
Site 8	N70.37003 W150.93819	Predominately on the north bank of the Sakoonang Channel. Site barely spans the channel.	PWM, TLDS, BAR	~20% low-relief PWM, ~30% high-relief PWM, and ~50% shrub habitats (MSSM & TLDS) on north bank, TLDS and BAR on south bank	Yes	No/No	2009 2010	Yes	Nesting habitat limited to PWM bordering the large deep lake NE of site 8. Two female Spectacled Eiders flew by and landed ~1,000 m north of site
Site 9	N70.43531 W150.99748	Container on east side of Tamayayak.	SM, SKT, BAR	Salt-affected vegetation and abundant drift wood on east bank, river channel and BAR	Yes	No/No	2009 2010	Yes	Marginal nesting area with sparse vegetation, but better habitat ~250 m east of the container in low-center polygon area; area probably used extensively by molting/brood-rearing geese in late July and early-mid August
SK-13	N70.33506 W150.90711	Both banks of Sakoonang just south of Alpine	PWM, NWM, TLDS, BAR	Low-relief PWM with narrow bands of TLDS, BAR, and NWM	Yes	No/No	1998–2000 2009	Yes	Potential eider nesting habitat in areas of PWM

Table 2. Continued.

Site Name	Location	Site Description	Wildlife Habitat <sup>a</sup>	Habitat Description	Nesting Habitat Present <sup>b</sup>	Search History / Nesting Records		Search in Future Years?	Comments
						Yes <sup>d</sup> /No	Years Searched		
SK-14A	N70.33975 W150.92675	Site is adjacent to the Alpine flare pit; on the Sakoonang.	PWM, NWM, TLDS, BAR	Gravel pad, high-relief polygons, and shrubs are on the NW bank. The east bank contains TLDS, NWM, and PWM.	Yes	Yes <sup>d</sup> /No	1996–2001 2009	No	Marginal nesting habitat because of shrubs and habitat modification. The NW bank habitat is modified by gravel pad and flare and SE bank is relatively dry. Previous searches have not found eider nests; recommend dropping from list of sites to search
SK-14B	N70.34325 W150.91836	Site is NW of the Alpine boat ramp	PWM, NWM, TLDS, BAR	PWM, gravel pad and NWM on NE bank, TLDS and PWM on SW bank	Yes	Yes <sup>d</sup> /No	1996–2001 2009 2010	No	Eider nesting habitat adjacent to the Alpine gravel pad and to a lesser degree on the west side of the channel. Snow banks on the pad edge may delay availability. Previous searches have not found eider nests; recommend dropping from list of sites to search
SK-15	N70.36514 W150.91869	~2.5 km north of Alpine and next to a pipeline bridge on the Sakoonang	PWM, NWM, MSSM, TLDS, BAR	TLDS, NWM, and BAR on NW bank, MSSM with aquatic centers on SE bank	Yes	No/No	1998 1999 2009 2010	Yes	Nesting habitat on both sides of the channel in areas of PWM and NWM
SK-20	N70.36156 W150.99228	Near the intersection of channels on the Sakoonang	PWM, NWM, TLDS, BAR	10% PWM, 50% low relief MSSM, 40% riverine habitats	Yes	No/No	2009	Yes	Nesting habitat on both sides of the channel in areas of PWM, but not in the willows on the island.
Sakoonang Pipeline Bridge	N70.36444 W150.91888	First Colville River channel-crossing north of Alpine, adjacent to SK-15	PWM, NWM, TLDS, BAR	PWM on NE bank, SW bank is shrubs with low-centered polygons in PWM	Yes	Yes <sup>d</sup> /No	1998 1999 2010	Yes	Polygons in the southwest end of the site area have nesting potential. Marginal nesting habitat on the NE side because of prevalence of shrubs

Table 2. Continued.

Site Name	Location	Site Description	Wildlife Habitat <sup>a</sup>	Habitat Description	Nesting Habitat Present <sup>b</sup>	Search History / Nesting Records	Years Searched	Search in Future Years?	Comments
Tamayyak Pipeline Bridge	N70.39277 W150.90805	Second Colville River channel-crossing north of Alpine	PWM, NWM, TLDS BAR	PWM and NWM on north bank, south bank is barrens, shrub, and NWM	Yes	No/No	2010	Yes	Willows along channel, suitable nesting habitat away from channels
Ulamnigiat Pipeline Bridge	N70.39277 W150.90805	Third Colville River channel-crossing north of Alpine	PWM, NWM, BAR	PWM and NWM on north bank, south bank is NWM	Yes	Yes <sup>d</sup> /No	2000–2007 2010	Yes	The majority of this site contains suitable nesting habitat

<sup>a</sup> Wildlife Habitats = Salt Marsh (SM), Salt-killed Tundra (SKT), Deep Open Water without Islands (DOW), Deep Open Water with Islands or Polygonized Margins (DOWIP), Shallow Open Water without Islands (SOW), Nonpatterned Wet Meadow (NWM), Patterned Wet Meadow (PWM), Moist Sedge-Shrub Meadow (MSSM), Tall, Low, Dwarf Shrub (TLDS), and Barrens (BAR)

<sup>b</sup> Areas containing SM, SKT, DOWIP, DOW, SOW, NWM, PWM, or DPC (Deep Polygon Complex)

<sup>c</sup> Alpine nest searches conducted in 1995–2001 (Johnson et al. 2003)

<sup>d</sup> CD-3 nest searches conducted between 2000 and 2007 during which Spectacled Eider and unidentified eider nests were found (Johnson et al. 2008)

## **PIPELINE-BRIDGE SITES**

We searched 3 pipeline-bridge sites on 17 June, and we observed no Spectacled or Steller's eiders or their nests (Figure 2, Table 1). The Sakoonang bridge site overlapped with the SK-15 spill-response site, and these 2 areas were searched simultaneously. Only 1 large waterbird nest (belonging to Green-winged Teal) was found among the 3 pipeline-bridge sites (Table 1). Spectacled Eider nesting habitat was available in varying amounts at all 3 pipeline-bridge sites (Table 2).

## **SUMMARY**

Four Spectacled Eider nests and 1 King Eider nest were found in the CD-3, ice-road, spill-response, and pipeline-bridge search areas. We found no Steller's Eiders or their nests in any of the areas searched in 2010, which is consistent with past results from studies on the delta. A pair of Steller's Eiders was seen in 2001 near CD-3, but no Steller's Eider nests have been found on similar nest searches conducted on the Colville River delta nearly annually from 1992 to 2009 (Johnson et al. 2002, 2004a, 2004b, 2005, 2006, 2007, 2008, Seiser and Johnson 2010).

Eider nesting habitat was present in varying proportions and quality at the 3 pipeline-bridge sites and the 17 spill-response sites evaluated in 2009 and 2010 (Table 2, Seiser and Johnson 2010). Of these 17 sites, 7 sites (Site 1–3, SK-14A, SK-14B, Sakoonang and Ulamnigraq pipeline bridges) were included in prior nest searches conducted in association with development of CD-3 and Alpine (Johnson et al. 2004a, 2004b, 2005, 2006, 2007, 2008).

Although no eiders were nesting near the spill-response and pipeline-bridge sites we searched in 2010, we have documented Spectacled Eiders nesting at 2 of the spill-response sites (Site 1 and Site 3) over multiple years. Assuming there will be continued human activity at these sites during the breeding season, we recommend continuing nest searches at 13 spill-response and 3 pipeline-bridge sites, based on the nesting habitat available at these sites (Table 2).

We also recommend continuing nest searches along the ice road from CD-2 to CD-3, if human activity will occur along this route during the breeding season. In 2010, we encountered numerous coils of industrial extension cords along the ice road, in addition to the usual litter associated with ice road activity. Although the volume of litter around CD-3 in 2010 appeared to be less than in 2009, the dispersal pattern was similar. Therefore, we recommend that a 200-m buffer around CD-3 and its ice road be searched annually as long as clean-up activities continue in this area during the breeding season.

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