[Shoreline evaluations, 1991].

Kenai GP-1002 to NK-04
REGION: KENAI

SEGMENT: ST/GP-1002

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ GP-1002 SUBDIVISION A (1 OF 1) DATE 4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
No specific constraints identified.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ______________________ DATE: ______________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 1141 m
Subsurface Oil Observed: Yes No X Maximum Depth ______

RECOMMENDATIONS:
X No Treatment Recommended Snare/Absorbent Booms
Treatment Recommended Oil Snares (pom poms)
Manual Pickup Absorbents (pads, rolls, etc)
Bioremediation Spot Washing: Wands
Tarmat Removal Beach Cleaner

COMMENTS: _______________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________

TAG COMMENTS: __________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________

TAG APPROVAL DATE: ______________

ADEC __________________________ FOSC: __________________ DATE: ______________
EXXON __________________________
NOAA __________________________
USCG __________________________
Salmon stream mouth - fry outmigration (3/1 to 5/15)
Salmon stream mouth - spawning (7/10 to 8/31)

No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream without authorization from ADF&G. No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or inipol application, prior to at least July 1 unless authorized by ADF&G. Treatment which is not intrusive and which will not affect nearshore oil or toxicity levels, such as manual removal, can probably proceed without adherence to time constraints. In any case, contact ADF&G Habitat Division prior to treatment for consultation and/or permit application.

AGENCY CONTACT PERSON: ADF&G John Morton 267-2324

Salmon fry nursery area (4/31 to 7/31)

No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or inipol application, prior to July 31 unless authorized by ADF&G. Treatment which will not affect nearshore oil or toxicity levels, such as manual or mechanical removal, can probably proceed without adherence to time constraints. Contact ADF&G prior to treatment for confirmation and advice.

AGENCY CONTACT PERSON: ADF&G Larry Peltz 424-3214

Estuary Hatchery release (4/15 to 6/15)
Main Bay Hatchery release (4/20 to 6/15)
Sonne Bay Hatchery release (4/15 to 6/11)
Cannery Creek Hatchery release (4/21 to 6/11)
Remote release site

No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or inipol application, prior to at least July 1 unless authorized by ADF&G and/or PWS Aquaculture Association. Treatment which will not affect nearshore oil or toxicity levels, such as manual or mechanical removal, can probably proceed without adherence to time constraints. Contact ADF&G for confirmation and authorization.

AGENCY CONTACT PERSON: ADF&G Larry Peltz 424-3214

Gill net area (6/7 to 8/31)
Purse seine area (7/20 to 9/30)
Purse seine hook-off (7/20 to 9/30)
Set net sites (6/11 to 7/25)

Contact ADF&G for specific dates, locations and constraints. Restrict boat and air traffic to essential minimum. When set net sites are present (1L) restrict boat operations to essential minimum as authorized by ADF&G. If plans for treatment include methods such as hot water wash or inipol application which might affect nearshore oil or toxicity levels, contact ADF&G for consultation and authorization.

AGENCY CONTACT PERSON: ADF&G Evelyn Biggs 424-3235

Herring spawning (4/1 to 6/15)

Contact ADF&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to uncultivated intertidal and subtidal algae and seagrass. If plans for treatment include methods such as hot water wash or inipol application which might affect nearshore oil or toxicity levels, contact ADF&G for consultation and authorization.

AGENCY CONTACT PERSON: ADF&G Evelyn Biggs 424-3235

Harbor seal and sea lion pupping (5/15 to 7/1)
Harbor seal and sea lion molting (8/15 to 9/16)

Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts. No application of inipol within two weeks of arrival dates (work window at these sites is limited to 7/2 to 7/31). Contact ADF&G and USFWS prior to treatment for confirmation.

AGENCY CONTACT PERSON: US National Marine Fisheries Service Steve Zimmerman 586-7235
ADFG Don Cullina 257-2403

Seabird colony (5/1 to 9/1)

Restrict air and boat traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance from colony. Contact USFWS prior to treatment.

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

Shorebird/tern/auklet concentration (4/1 to 5/15)

Restrict all activity to essential minimum, especially air traffic. Contact USFWS and ADF&G for confirmation.

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377
ADFG Tom Roty 267-2206

All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)

Restrict air traffic and all disturbance to essential minimum. No personnel within 400m. 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

Recreation:
Tent sites (9/1 to 9/15)
Anchorage (9/1 to 9/15)
Forest Service cabins (9/1 to 9/15)
Lodge (9/1 to 9/15)
Special use destination

Subsistence area: Salmon harvesting (5/1 to 9/30)
Finfish harvesting
Deer harvesting (6/15 to 2/26)

Contact ADF&G and appropriate Native Corporation for specific dates, locations, and constraints. Restrict boat and air traffic and beach disturbance to essential minimum. If plans for treatment include methods such as hot water wash or application of Inipol which might affect intertidal or nearshore oil or toxicity levels, contact ADF&G and appropriate Native Corporation for authorization - see Native Corporation Contact List for each Native Corporation's contact person.

AGENCY CONTACT PERSON: ADF&G Jim Fell 267-2359
FIELD SHORELINE COMMENT SHEET

SEGMENT ST / GP-1002  SUBDIVISION:  A  DATE 4/29/90

NAME Stephen Sturm  SIGNATURE Stephen Sturm

☑ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Segment is an east-facing, very exposed beach, located in a crenulate bay north of Gore Point. Exposure to the Gulf of Alaska has resulted in a very steep beach profile, with multiple beach scarps comprised of well-rounded, lenticular pebbles to cobble Amphibolite. The Storm Pawl is most impressive, approx 40 feet wide and approx. 15 feet above mean sea level.

Five pits were excavated in the intertidal zone across the beach to locate subsurface oil. None was observed. Several oiled logs and some oiled debris was present in and along the storm wave amongst the several hundred pounds of man made trash deposited by storms.

ADEC

NAME Wesley Gholmeley  SIGNATURE Wesley Gholmeley

☑ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

This segment consisted of a large black sand, cobble & pebble beach.

No oil was observed surface or subsurface except for a small amount of oiled wood & tar ball:

- State of Alaska Cerda test site on premises
- There is also a massive amount of logs & Human trash (mostly fishin' relate)
- 5 deep pits were dug in search of subsurface oil, if it is present it is extremely deep.

LAND MANAGER

NAME: J. David McManus (ADEC) SIGNATURE: [Signature]

☑ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Segment GP-1002, within Kachemak State Wilderness Park, is a high-energy gravel/cobble beach exposed to the east. A small tar ball and a few pieces of spattered driftwood were noted. No subsurface oil located in several deep tests. Periodic monitoring may be warranted.

5/9
### SHORELINE OILING SUMMARY

**LOCATION:** Segment ST-1 GP-1002

**REVIEWED:** 4/30/90

**DATE:** 4/29/90

**TIME:** 3:15 to 9:15

**TIDE LEVEL:** -1 ft

**TEAM NO.:** 0

**ST. SUBDIVISION LENGTH:** 709.9 ft

**SURVEYED FROM:** Foot

**SURFACE SEDIMENTS:**
- R: 0%
- 0: 0%
- 30: 0%
- 30: 0%
- 0: 0%
- 40: 0%
- M: 0%
- D: 0%
- V: 0%
- %: 0%

**SLOPE:**
- Long: 100%
- Hang: 0%
- Var: 0%

**WAVE EXPOSURE:**
- Low: 0%
- Med: 0%
- High: 0%

**OIL CATEGORY LENGTH:**
- West: 0 m
- East: 0 m
- North: 0 m
- South: 0 m
- VL: 0 m
- NO: 0 m

### SURFACE OIL

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<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<tr>
<td>POOLED COVER</td>
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<tr>
<td>STAIN MOUSSE</td>
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</tr>
<tr>
<td>PATTIES TARBALLS</td>
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<td></td>
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</tr>
<tr>
<td>FILM NO OIL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PAVEMENT
- H: 0 sq. m
- F: S: 0 cm

### OILED DEBRIS
- DID YOU COLLECT DEBRIS?
  - YES [ ]
  - NO [ ]

### SURFACE OILS

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERNAL</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>ANA SHEEN (VIN)</th>
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<td>H - S-S/Sick</td>
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<td>3</td>
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<td>X</td>
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<td>H - C-C/Pres</td>
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<td>X</td>
<td></td>
<td>X</td>
<td>H - C-C/Pres</td>
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<tr>
<td>5</td>
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<td>X</td>
<td></td>
<td>X</td>
<td>H - C-P/Pres</td>
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</tbody>
</table>

### SUBSURFACE OIL SEDIMENTS

**COMMENTS:**

- Segment is a high energy bench grading from predominantly sand at the southern end to predominantly cobble at the northern end. High accumulation of logs and debris.

- One tarball was observed and picked up.

- Some logs were oiled (stains/s).

- In rest of segment: no oil observed.

**REVIEWED:** Y

**DATE:** 4/30/90
W = WALK

PIT #5

LOGS WITH STRAYS

PIT #3

PIT #2

PIT #1

STR#KT ST-GP-1002-H

ST-GP-1002-H

XXX Wide
/// Medium
----- Narrow
TTTT Very Light
0000 No Oil

Map Key: KEN-41
Name: K.D.BUSCH
Date: 4/29/90

ADEC Segment Length: 1094

3/9 100 200 300
**SHORELINE ECOLOGICAL SUMMARY**

**Segment ST** / Subdivision 80-102

<table>
<thead>
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<th>Date (mo/day/yr)</th>
<th>04/29/80</th>
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</thead>
</table>

**Biology** (24 hr) 0815-0915

**Biologist** D. Reed

---

### (A) Substrate type and % of segments:

1. Bedrock
2. Boulder
3. Cobble
4. Pebble
5. Sand
6. Silt

---

### (B) Overall % cover of biota (% of segment):

- Dense
- Moderate
- Low

---

### (C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa:

- Upper-U: mid-M: low tidal-L:
- Juveniles/adults (X): new settlement (3)

#### BARNACLES

- **Dense**
  - 1U: 2 2
  - 1M: 2 2
  - 1L: 2 2
- **Moderate**
  - 1U: 2 2
  - 1M: 2 2
  - 1L: 2 2
- **Sparse**
  - 1U: 3 3
  - 1M: 3 3
  - 1L: 3 3
- **Rare**
  - 1U: 2 2
  - 1M: 2 2
  - 1L: 2 2

#### MYTILUS

- **Dense**
  - 1U: 2 2
  - 1M: 2 2
  - 1L: 2 2
- **Moderate**
  - 1U: 2 2
  - 1M: 2 2
  - 1L: 2 2
- **Sparse**
  - 1U: 3 3
  - 1M: 3 3
  - 1L: 3 3
- **Rare**
  - 1U: 2 2
  - 1M: 2 2
  - 1L: 2 2

#### GASTROPODS

- **Dense**
  - 1U: 2 2
  - 1M: 2 2
  - 1L: 2 2
- **Moderate**
  - 1U: 2 2
  - 1M: 2 2
  - 1L: 2 2
- **Sparse**
  - 1U: 3 3
  - 1M: 3 3
  - 1L: 3 3
- **Rare**
  - 1U: 2 2
  - 1M: 2 2
  - 1L: 2 2

#### FUCUS

- **Dense**
  - 1U: 2 2
  - 1M: 2 2
  - 1L: 2 2
- **Moderate**
  - 1U: 2 2
  - 1M: 2 2
  - 1L: 2 2
- **Sparse**
  - 1U: 3 3
  - 1M: 3 3
  - 1L: 3 3
- **Rare**
  - 1U: 2 2
  - 1M: 2 2
  - 1L: 2 2

---

**Wildlife Observational/General Comments:**

- Mountain goat.
- High exposure beach. No intertidal biota observed.

**Ecological Considerations:**

- None. No oil or biota observed.
- No ecology map was done. No evidence of recruitment, growth, or mortality was observed.
SHORELINE EVALUATION

SEGMENT ST/ GP-1002 SUBDIVISION A (1 OF 1) DATE 4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
No specific constraints identified.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: __________________________ DATE: 5/8/90

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 1141 m
Subsurface Oil Observed: Yes ___ No X ___ Maximum Depth ______

RECOMMENDATIONS:

X No Treatment Recommended ___ Snare/Absorbent Booms
____ Treatment Recommended ___ Oil Snare (pom poms)
____ Manual Pickup ___ Absorbents (pads, rolls, etc)
____ Bioremediation ___ Spot Washing: ______ Wands
____ Tarmat Removal ___ Beach Cleaner

COMMENTS: __________________________

TAG COMMENTS: __________________________

TAG APPROVAL DATE: 5/8/90

ADEC Art Weiser date
EXXON Amy Teas date
NOAA Mike Bolter date
USCG \\

DATE: 5-15-90
REGION: KENAI

SEGMENT: ST/GP-1003

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ GP-1003 SUBDIVISION A (1 OF 1) DATE 4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4GG Alaska State Parks
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ____________________ DATE: _______________________

OILING CATEGORIZATION:
Wide 0 m; Medium 0 m; Narrow 0 m; V.Light 0 m; No Oil 878 m
Subsurface Oil Observed: Yes No M Maximum Depth

RECOMMENDATIONS:
X No Treatment Recommended
_____ Treatment Recommended
_____ Manual Pickup
_____ Bioremediation
_____ Tarmat Removal

Snare/Absorbent Booms
Oil Snares (pom poms)
Absorbents (pads, rolls, etc)
Spot Washing: Wands
Beach Cleaner
Other (see comments)

COMMENTS: ____________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

TAG COMMENTS:________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

TAG APPROVAL DATE:____________
ADEC ________________________ FOSC: ______________ DATE: ___________
EXXON ________________________
NOAA ________________________
USCG ________________________
Salmon stream mouth - fry outmigration (3/1 to 6/15)

Salmon stream mouth - spawning (7/10 to 8/31)

No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream without authorization from ADF&G. No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or inlipol application, prior to at least July 1 unless authorized by ADF&G. Treatment which is not intrusive and which will not affect nearshore oil or toxicity levels, such as manual removal, can probably proceed without adherence to time constraints. In any case, contact ADF&G or Habitat Division prior to treatment for consultation and/or permit application.

AGENCY CONTACT PERSON: ADF&G Larry Pelitz 267-3214

Salmon fry nursery area (4/21 to 7/21)

No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or inlipol application, prior to July 31 unless authorized by ADF&G. Treatment which will not affect nearshore oil or toxicity levels, such as manual or mechanical removal, can probably proceed without adherence to time constraints. Contact ADF&G prior to treatment for confirmation and advice.

AGENCY CONTACT PERSON: ADF&G Larry Pelitz 267-3214

Estuary Hatchery release (4/15 to 6/15)

Main Bay Hatchery release (4/20 to 6/15)

Sawmill Bay Hatchery release (4/15 to 6/1)

Cannery Creek Hatchery release (4/21 to 6/1)

Remote release site

No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or inlipol application, prior to at least July 1 unless authorized by ADF&G and/or PWS Aquaculture Association. Treatment which will not affect nearshore oil or toxicity levels, such as manual or mechanical removal, can probably proceed without adherence to time constraints. Contact ADF&G or PWS Aquaculture Association for confirmation and authorization.

AGENCY CONTACT PERSON: ADF&G Larry Pelitz 267-3214

PWS Aquaculture Association John McMillen or Bruce Suzumoto 424-7511

Gill net area (8/7 to 8/31)

Purse seine area (7/20 to 9/30)

Purse seine hook (7/20 to 9/30)

Set net sites (8/11 to 7/25)

Contact ADF&G for specific dates, locations and constraints. Restrict boat and air traffic to essential minimum. When set net sites are present (1L) restrict beach operations to essential minimum as authorized by ADF&G. If plans for treatment include methods such as hot water wash or inlipol application which might affect nearshore oil or toxicity levels, contact ADF&G for consultation and authorization.

AGENCY CONTACT PERSON: ADF&G Larry Pelitz 424-3212

Herring spawning (4/4 to 6/15)

Contact ADF&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to unooked Intertidal and subtidal algae and seagrass. If plans for treatment include methods such as hot water wash or inlipol application which might affect nearshore oil or toxicity levels, contact ADF&G for consultation and authorization.

AGENCY CONTACT PERSON: ADF&G Evelyn Biggs 424-3235

Harbor seal and sea lion pupping (5/15 to 7/1)

Harbor seal and sea lion moulting (8/15 to 9/15)

Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts. No application of inlipol within two weeks of arrival dates (work window at those sites is limited to 7/2 to 7/31).

Contact ADF&G and USFWS prior to treatment for confirmation.

AGENCY CONTACT PERSON: US National Marine Fisheries Service Steve Zimmerman 566-7235

ADFG Don Calkins 267-2403

Seabird colony (5/1 to 9/1)

Restrict air and boat traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance from colony. Contact USFWS prior to treatment.

AGENCY CONTACT PERSON: USFWS Jill Parker 766-3377

Shorebird/��sterflow concentration (4/1 to 5/15)

Restrict all activity to essential minimum, especially air traffic. Contact USFWS and ADF&G for confirmation.

AGENCY CONTACT PERSON: USFWS Jill Parker 766-3377

ADFG Tom Raths 267-2206

All Bald Eagle nests (3/1 to 6/1)

Active Bald Eagle nests (3/1 to 9/1)

Restrict air traffic and all disturbance to essential minimum. No personnel within 4000m 3/1 to 6/1. Air approach and takeoff from and to seaward only. Maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

AGENCY CONTACT PERSON: USFWS Jill Parker 766-3377

Recreation:

Tent sites (5/1 to 6/15)

Anchorages (6/1 to 9/15)

Forest Service camp (6/1 to 9/15)

Lodge (6/1 to 9/15)

Special use destination

Substance area: Salmon harvesting (5/1 to 9/30)

Finfish harvesting

Deer harvesting (8/15 to 2/26)

Invertebrate harvesting

Contact ADF&G and appropriate Native Corporation for specific dates, locations, and constraints. Restrict boat and air traffic and beach disturbance to essential minimum. If plans for treatment include methods such as hot water wash or application of inlipol which might affect Intertidal or nearshore oil or toxicity levels, contact ADF&G and appropriate Native Corporation for authorization - see Native Corporation Contact List for each Native Corporation's contact person.

AGENCY CONTACT PERSON: ADF&G Jim Fall 267-3259
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1 GP-1003 SUBDIVISION: A DATE 4-29-90
NAME Steven Sturm SIGNATURE

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

Comments:
Segment is a northwest facing, exposed beach, located in a granulite bay north of Gore Point facing Port Dick. A total of 6 pits were excavated in the intertidal zone along the beach face. No subsurface oil was encountered in these pits, and no surface oiling was observed along the Sturm beam.

ADEC
NAME Wesley Coherent NAME SIGNATURE Wesley Coherent

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

Comments:
This segment primarily consists of a sand beach, with cobbles, pebbles & a few boulders. Six deep pits were dug in search of subsurface oil (none was observed) If subsurface oil is present it is extremely deep. A large amount of logs & non clean-up debris have accumulated on beach.
- No oil observed surface or subsurface.

LAND MANAGER
NAME David McAlpine SIGNATURE

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

Comments:
Segment GP-1003, within Kachemak State Wilderness Park is comprised of a sand/gravel/cobble beach located to the north of Gore Point. Despite several deep subsurface tests, no banded surface oil was noted. Periodic monitoring may be warranted.

REVISION NO. 05/21/90
**SHORELINE OILING SUMMARY**

**OIL K DEBASCHET**

**STANDARD STAIN SEGMENT**

**BIO.H. REED**

**LAND REP.**

**AMERICAN PIPE AND**

**TIME 8:30 AM 12:20**

**TEAM NO. 9 TIDE LEVEL**

**TIDE**

**DATE 4/21/90**

**EST. SUBDIVISION LENGTH 810 m**

**PLANTS DESCRIPTION 1 Grass 2 Forest 3 Rock**

**SURVEYED FROM**

**WORKING DIRECTION 8 to N**

**SURFACE SEDIMENTS:**

- 0% Asphalt
- 8% Paving
- 15% Paving
- 15% Paving
- 25% M.
- 0% V.
- 0% O.

**SLOPE:**

- Lang 100% Hang 0% Ven 0%

**WAVE EXPOSURE:**

- Low Med High

**OIL CATEGORY LENGTH:**

- W 0 m M 0 m N 0 m V 0 m N 0 m NO 810 m

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### SURFACE OIL

<table>
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<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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**PAVEMENT H F S 0 sq. m by 0 cm**

**PATTERNS / TARBALLS 0 BAGS**

**NEAR SHORE SHEEN? NO**

**BR RW SL TL**

**OILED DEBRIS AMOUNT**

- Logs
- Vegetation
- Trash
- Debris

**Photographs:**

- Roll No. NO
- Frames NO

**COMMENTS**

- Segment is relatively high energy beach South end is predominantly sand. Northern end has p/k stormy berm. Logs and debris are accumulated in W-E. No oil observed.

**Reviewed**

[Signature]

**DATE 4/30/90**

---

### SUBSURFACE OIL

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<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
<th>BELOW</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE</th>
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**COMMENTS**

- Segment is relatively high energy beach. South end is predominantly sand. Northern end has p/k stormy berm. Logs and debris are accumulated in W-E. No oil observed.
WIDE

Medium

Narrow

Very Light

No Oil

ST-GP-1003-14

ST-GP-1003-14

START

END

W

W

PIT #1

PIT #2

PIT #3

PIT #4

PIT #5

PIT #6

W = WALK

Map Key: KEN-42
Name: K.DEVESCHLE
Date: 4/29/30
Data Entered:
SHORELINE ECOLOGICAL SUMMARY

Segment ST/ GP-1003 Subdivision A Date (mo/day/yr) 04/29/90
Time (24 hr) 0930-020 Biologist D. REED

(A) Substrate type and % of segments:
1. Bedrock
2. Boulder
3. Cobble
4. Pebble
5. Sand
6. Silt

(B) Overall % cover of biota (% of segment): Dense Moderate Low

(C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa: (upper-U; mid-M; low tidal-L); juveniles/adults (X), new settlement (3)

### Barnacles

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### Mytilus

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Wildlife Observations/ General Comments:
1 common merganser, 4 scapous-wing gulls, 1 red-winged cormorant.

Ecological Considerations:

This segment is a high-energy wave swept beach. The only intertidal biota observed was in a small boulder field located in the mid and low zones at the southern border of the segment. The boulders were covered with a thin slimy layer of green algae (enteromorpha) in the mid zone. Other seagrasses (irriga, waha, and alaria) were common (low).

NO BIRDS OBSERVED. BIOTA RARE AND VERY PATCHY.
SEGMENT ST/ GP-1003   SUBDIVISION A (1 OF 1) DATE 4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4GG    Alaska State Parks
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE:   DATE: 5/5/90

OILING CATEGORIZATION:
Wide 0 m; Medium 0 m; Narrow 0 m; V.Light 0 m; No Oil 878 m
Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:
X No Treatment Recommended   Snare/Absorbent Booms
_____Treatment Recommended   Oil Snares (pom poms)
_____Manual Pickup   Absorbents (pads, rolls, etc)
_____Bioremediation   Spot Washing: Wands
_____Tarmat Removal   Beach Cleaner
_____Other (see comments)

COMMENTS:


TAG COMMENTS:


TAG APPROVAL DATE: 5/9/90
ADEC  DATE: 5/9/90
EXXON  DATE: 5/9/90
NOAA  DATE: 5/9/90
USCG  DATE: 5/9/90
REGION: KENAI

SEGMENT: ST/HA-01

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/HA-01 SUBDIVISION A (1 OF 1) DATE 4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

5R Seabird colony (5/1 to 9/1)
Kenai Fjords National Park
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: __________________________ DATE: __________________________

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 3642 m
Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:

X No Treatment Recommended
_____ Treatment Recommended
_____ Manual Pickup
_____ Bioremediation
_____ Tarmat Removal

Snare/Absorbent Booms
Oil Snares (pom poms)
Absorbents (pads, rolls, etc)
Spot Washing: Wands
Beach Cleaner
Other (see comments)

COMMENTS: __________________________

TAG COMMENTS: __________________________

TAG APPROVAL DATE: __________

ADEC
EXXON
NOAA
USCG

FOSC: __________ DATE: __________
Salmon stream mouth - fry outmigration (3/1 to 5/15)
Salmon stream mouth - spawning (7/10 to 8/31)

No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream without authorization from ADF&G. No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or inipol application, prior to July 1 unless authorized by ADF&G. Treatment which is not intrusive and which will not affect nearshore oil or toxicity levels, such as manual removal, can probably proceed without adherence to time constraints. In any case, contact ADF&G Habitat Division prior to treatment for consultation and/or permit application.

AGENCY CONTACT PERSON: ADF&G John Morison 267-2324

Salmon fry nursery area (4/31 to 7/31)

No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or inipol application, prior to July 31 unless authorized by ADF&G. Treatment which will not affect nearshore oil or toxicity levels, such as manual or mechanical removal, can probably proceed without adherence to time constraints. Contact ADF&G prior to treatment for confirmation and advice.

AGENCY CONTACT PERSON: ADF&G Larry Peitz 424-3214

Estuary Hatchery release (4/15 to 6/15)
Main Bay Hatchery release (4/20 to 6/15)
Sewall Bay Hatchery release (4/15 to 6/1)
Cannery Creek Hatchery release (4/21 to 6/1)
Remote release site

No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or inipol application, prior to at least July 1 unless authorized by ADF&G and/or PWS Aquaculture Association. Treatment which will not affect nearshore oil or toxicity levels, such as manual or mechanical removal, can probably proceed without adherence to time constraints. Contact ADF&G or PWS Aquaculture Association for confirmation and authorization.

AGENCY CONTACT PERSON: ADF&G Larry Peitz 424-3214

Col net area (6/7 to 6/31)
Purse seine area (7/20 to 9/30)
Purse seine hook-off (7/20 to 9/30)
Set net sites (6/11 to 7/25)

Contact ADF&G for specific dates, locations and constraints. Restrict boat and air traffic to essential minimum. When set net sites are present (1L) restrict beach operations to essential minimum as authorized by ADF&G. If plans for treatment include methods such as hot water wash or inipol application which might affect nearshore oil or toxicity levels, contact ADF&G for consultation and authorization.

AGENCY CONTACT PERSON: ADF&G Evelyn Biggs 424-3235

Harbor seal and sea lion pupping (5/15 to 7/1)
Harbor seal and sea lion molting (8/15 to 6/15)

Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulout. No application of inipol within two weeks of arrival dates (work window at these sites is limited to 7/2 to 7/31). Contact ADF&G and USFWS prior to treatment for confirmation.

AGENCY CONTACT PERSON: ADF&G James Brady 424-3212

Seabird colony (5/1 to 9/1)

Restrict air and boat traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance from colony. Contact USFWS prior to treatment.

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

Shorebird/wader fly concentration (4/1 to 5/15)

Restrict all activity to essential minimum, especially air traffic. Contact USFWS and ADF&G for confirmation.

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)

Restrict air traffic and all disturbance to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

Recreation:
Tent sites (5/1 to 9/15)
Anchorage (5/1 to 9/15)
Forest Service cabins (5/1 to 9/15)
Lodge (5/1 to 9/15)
Special use destination

Subsistence area: Salmon harvesting (5/1 to 9/30)
Finfish harvesting
Deer harvesting (5/15 to 2/28)
Invertebrate harvesting

Contact ADF&G and appropriate Native Corporation for specific dates, locations, and constraints. Restrict boat and air traffic and beach disturbance to essential minimum. If plans for treatment include methods such as hot water wash or application of inipol which might affect intertidal or nearshore oil or toxicity levels, contact ADF&G and appropriate Native Corporation for authorization - see Native Corporation Contact List for each Native Corporation's contact person.

AGENCY CONTACT PERSON: ADF&G Jim Fall 267-2359
FIELD SHORELINE COMMENT SHEET

SEGMENT ST: HA-1  SUBDIVISION: A  DATE 4/29/96

USCG
NAME JERRY SCHULTZ  SIGNATURE

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

ADEC
NAME Mike Eldel  SIGNATURE

HA-1-A8  No oil found.

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

LAND MANAGER NPS
NAME Michael Tetreau  SIGNATURE

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

Good survey. No oil found.

21/46
**SHORELINE OILING SUMMARY**

**OIL:** Distributio Oil
**FILM COLOR:** Character

---

**SURFACE OIL**

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**PAVEMENT H F S**

**PATTIES/TARBALLS**

**NEAR SHORE SHEEN?**

**OILED DEBRIS**

**AMOUNT**

**DID YOU COLLECT DEBRIS?**

**TYPE**

**Photographs:**

**Roll No:** None
**Frames:**

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**SUBSURFACE OIL**

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**COMMENTS**

No Exxon length provided in Table. Value is taken from bottom of computer map.

Segment consisted of triangle cliffs with a few sand-pebble-cobble beaches. No oiling at all was observed. All pits were uncoiled. Surveyed by boat with spot checks along shoreline. Walked the main beach.

**REVIEWED**

**DATE:** May 90
Oil Character Length (m): 23% refusal
AP φ
PO φ
CV φ
CT φ
ST φ
MS φ
PT φ
TB φ
FL φ
NO 3215

Sketch Map (2022)

Bedrock outcrop

H2O

XXX Wide
/// Medium
---- Narrow

Approx. Segment Length: 5715m

Map Key: KEK-HA-1

Name: Pasko Obers

4/29/90
Sketch Map
(10821)

HA-1

XXX Wide
/ / / / Medium
--- Narrow
TTTT Very Light

Map Key: KEN-HA-1c
Name: [Redacted]
Date: 4129/90

[Diagram with annotations and scale]
SHORELINE ECOLOGICAL SUMMARY

Segment ST / HA-1 Subdivision A McDonald

Date (mo/day/yr) 4/29/90

Time (24 hr) 0410-1810 Biologist SHARMAN

(A) Substrate type and % of segments:
   (1) Bedrock 15 (2) Boulder 30 (3) Cobble 10 (4) Pebble 7 (5) Sand 8 (6) Silt

(B) Overall % cover of biota (% of segment): Dense Moderate Low

(C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa: (upper-U; mid-M; low tidal-L);
   juveniles / adults (X), new settlement (S)

Photographs:
   Roll No. ______
   Frames ______

**BARNACLES**

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**GASTROPODS (Nucella, Littorina, Lymnaea)**

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**FUCUS**

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Wildlife Observations/ General Comments:

4 piece gillnet, 8 harp seal, 5 common, 2 pelagic common, 1 red phalarope, gold plover, 1 peregrine falcon, 10 unidentified gulls, 12 seagulls, 3 surf scoters, 1 wood duck, 17 cormorants, 2 gulls, 4 herring gulls, 12 terns, 30 gulls, 19 terns, 1 gull, 30 terns, 150 terns, 150 gulls, 1 herring gull, 1 black-backed gull, very degenerate. However, gulls, herring gulls, terns, cormorants, seagulls, common, scoters, ducks are very degenerate. However, gulls, herring gulls, terns, cormorants, seagulls, common, scoters, ducks are very degenerate. However, gulls, herring gulls, terns, cormorants, seagulls, common, scoters, ducks are very degenerate. However, gulls, herring gulls, terns, cormorants, seagulls, common, scoters, ducks are very degenerate. However, gulls, herring gulls, terns, cormorants, seagulls, common, scoters, ducks are very degenerate.

Ecological Considerations:

We received no information regarding species or habitat previously identified for this segment. The only peculiar ecological feature apparent to us is the importance of the exposed bedrock points and numerous rock pools as denoted for principal

19/46
Wide
Medium
Narrow
Very Light

HA-1

Approx. Segment Length: 3715m

Map Key: KEM-HA-1c
Name: B.G. Siegl
Date: 4/25/90
SHORELINE EVALUATION

SEGMENT ST/ HA-01 SUBDIVISION A (1 OF 1) DATE 4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R Seabird colony (5/1 to 9/1)
Kenai Fjords National Park
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ___________________________ DATE: 5/11/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 3642 m
Subsurface Oil Observed: Yes ______ No X ______

RECOMMENDATIONS:
X No Treatment Recommended
_____ Treatment Recommended
_____ Manual Pickup
_____ Bioremediation
_____ Tarmat Removal

Snare/Absorbent Booms
Oil Snares (pom poms)
Absorbents (pads, rolls, etc)
Spot Washing: Wands
Beach Cleaner
Other (see comments)

COMMENTS: ____________________________________________________________

_____________________________________________________________________

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TAG COMMENTS: _______________________________________________________

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

TAG APPROVAL DATE: 5/11/90

ADEC: ___________________________ DATE: ___________________________

EXXON: ___________________________ DATE: ___________________________

NOAA: ___________________________ DATE: ___________________________

USCG: ___________________________ DATE: ___________________________
Oil Character Length (m): 0 m

AP Φ
PO Φ
CV Φ
CT Φ
ST Φ
MS Φ
PT Φ
TB Φ
FL Φ
NO 3215

Sketch Map (2062)

H₂O

HA-1

XXX Wide
/// Medium
--- Narrow

Approx. Segment Length: 3715 m

Map Key: KEN-HA-1a
Name: Ruby Diego

4/29/90
REGION: KENAI

SEGMENT: ST/HA-02

SUBDIVISIONS: A (1 OF 1)
SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4LL Kenai Fjords National Park
5T-1 All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 to 9/1)
6U Recreation: Tent sites (6/1 to 9/15)
6V Recreation: Anchorages (6/1 to 9/15)
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: __________________________ DATE: __________________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 268 m: No Oil 2898 m
Subsurface Oil Observed: Yes No X Maximum Depth ______

RECOMMENDATIONS:
_X_ No Treatment Recommended Snare/Absorbent Booms
_Treatment Recommended Oil Snares (pom poms)
_Manual Pickup Absorbents (pads, rolls, etc)
_Bioremediation Spot Washing: Wands
_Tarmat Removal Beach Cleaner

COMMENTS: ____________________________________________________________

TAG COMMENTS: _________________________________________________________

TAG APPROVAL DATE: __________
ADEC __________
EXXON __________
NOAA __________
USCG __________
FOSC: __________ DATE: ______
Salmon stream mouth - fry outmigration (3/1 to 5/15)
Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream without authorization from ADF&G. No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or lnipol application, prior to at least July 1 unless authorized by ADF&G. Treatment which is not intrusive and which will not affect nearshore oil or toxicity levels, such as manual or mechanical removal, can probably proceed without adherence to time constraints. In any case, contact ADF&G Habitat Division prior to treatment for consultation and/or permit application.

AGENCY CONTACT PERSON: ADF&G John Morison 267-2324

Salmon fry nursery area (4/31 to 7/31)
No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or lnipol application, prior to July 31 unless authorized by ADF&G. Treatment which will not affect nearshore oil or toxicity levels, such as manual or mechanical removal, can probably proceed without adherence to time constraints. Contact ADF&G prior to treatment for confirmation and advice.

AGENCY CONTACT PERSON: ADF&G Larry Peitz 424-3214

Esther Hatchery release (4/15 to 6/15)
Main Bay Hatchery release (4/20 to 6/15)
Sawmill Bay Hatchery release (4/15 to 6/1)
Cannery Creek Hatchery release (4/21 to 6/1)
Remote release site
No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or lnipol application, prior to at least July 1 unless authorized by ADF&G and/or PWS Aquaculture Association. Treatment which will not affect nearshore oil or toxicity levels, such as manual or mechanical removal, can probably proceed without adherence to time constraints. Contact ADF&G or PWS Aquaculture Association for confirmation and authorization.

AGENCY CONTACT PERSON: ADF&G Larry Peitz 424-3214

Gill net area (6/7 to 8/31)
Purse seine area (7/20 to 9/30)
Purse seine hook-off (7/20 to 9/30)
Set nets (6/11 to 7/25)
Contact ADF&G for specific dates, locations and constraints. Restrict boat and air traffic to essential minimum. When set nets are present (1L) restrict beach operations to essential minimum as authorized by ADF&G. If plans for treatment include methods such as hot water wash or lnipol application which might affect nearshore oil or toxicity levels, contact ADF&G for consultation and authorization.

AGENCY CONTACT PERSON: ADF&G Evelyn Biggs 424-3235

Harbor seal and sea lion pupping (5/15 to 7/1)
Harbor seal and sea lion molting (5/15 to 9/15)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts. No application of lnipol within two weeks of arrival dates (work window at these sites is limited to 7/2 to 7/31). Contact ADF&G and USFWS prior to treatment for confirmation.

AGENCY CONTACT PERSON: US National Marine Fisheries Service Steve Zimmerman 588-7235

ADF&G Don Calkins 267-2403

Seabird colony (5/1 to 9/1)
Restrict air and boat traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance from colony. Contact USFWS prior to treatment.

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

Shorebird/waterfowl concentration (4/1 to 5/13)
Restrict all activity to essential minimum, especially air traffic. Contact USFWS and ADF&G for confirmation.

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

ADF&G Tom Rothy 267-2206

Recreation: Tent sites (6/1 to 9/15)
Anchorage (6/1 to 9/15)
Forest Service cabins (6/1 to 9/15)
Lodge (6/1 to 9/15)
Special use destination

Subsistence area: Salmon harvesting (6/1 to 9/30)

Finfish harvesting
Duck harvesting (8/15 to 2/28)
Invertebrate harvesting

Contact ADF&G and appropriate Native Corporation for specific dates, locations, and constraints. Restrict boat and air traffic and beach disturbance to essential minimum. If plans for treatment include methods such as hot water wash or application of lnipol which might affect intertidal or nearshore oil or toxicity levels, contact ADF&G and appropriate Native Corporation for authorization - see Native Corporation Contact List for each Native Corporation's contact person.

AGENCY CONTACT PERSON: ADF&G Jim Fall 267-2359
HA-2-A: Very little oil found on the southern end of segment, in the boulders and pocket beaches (western shore). Splotches of weathering off cliff faces need no attention, and the few splashes of intertidal pool and asphalt found in rock crevices are not of enough substance to justify any further impact such as crunching underfoot of the intertidal critters.

Good survey. Sparse oil was found, but treatment does not appear to be necessary.
### SHORELINE OILING SUMMARY

**OG:** Randy Siegel  USCG Jerry Schultz  SEGMENT ST/ HA-2  
**BIO:** Lewis Sharman  LAND REP: Pat Pollard  
**EXXON:** Leonard Hardt  ADEC Mike Ebel  
**TEAM NO.:** 12  
**TIDE LEVEL:** +1.5 ft  
**DATE:** 4/29/90  
**EST. SUBDIVISION LENGTH:** 3.510 m  
**UPLANDS DESCRIPTION:** Grass  
**SURVEYED FROM:** Foot  
**SURFACE OILS:** Grass  
**WORKING DIRECTION:** S to N  
**SLOPE:** Long  
**OIL CATEGORY LENGTH:** W 0 m M 0 m N 0 m V 340 m NL 3270 m  

#### SURFACE OIL

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<th>DISTRIBUTION</th>
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**Pavement** H F S 1 sq. m by 2 cm  
**Patties/Tarballs** 0 BAGS  
**Near Shore Sheen?** NO  
**Oiled Debris:**  
- Logs  
- Vegetation  
- Trash  
- Debris  
**Did You Collect Debris?** YES  
**Type Plastic**  
**Photographs:**  
**Roll No.:** None  
**Frames:**  

#### SUBSURFACE OIL

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**COMMENTS**

Segment consisted of granite cliffs with occasional pocket beaches. Light oiling in the southernly beach—coast. Oil on cliff walls, and some asphalt pools in boulder crevices. All pits were unlined. Surveyed by boat with spot checks along shoreline.

**Reviewed:** Bat  
**Date:** May 90
Oil character length (cm):

AP 10
PO 10
CV 0
CT 240
ST 240
MS 0
PT 0
TB 0
FL 0
NO 3270
Shoreline Ecological Summary

Segment ST  HA-2  Subdivision  A  Date (mo/day/yr)  4/27/90

Time (24 hr)  0800-1600  Biologist  SHARMA

(A) Substrate type and % of segments:
   (1) Bedrock  (2) Boulder  (3) Cobble  (4) Pebble  (5) Sand  (6) Silt

(B) Overall % cover of biota (% of segment):  Dense  Moderate  Low

(C) Density, substrate preference (by number from A, above), &
vertical zonation of major taxa: (upper-U; mid-M; low tidal-L);
juveniles/adults (X), new settlement (3)

Barnacles

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Gastropods (Angaria, Littorina, Lumaets)

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Wildlife Observations/General Comments:
29 December 1990
1. Bird observations: 1 pigeon, quail, unspecified.
2. Barnacle observations: 1 murre, 1 loon, 1 herring gull, 1 black-capped kingfisher.
3. Weather conditions: 1" rain, 24°F.
4. Substrate observations: 1 sand, 2 cobble, 3 boulder, 4 bedrock, 5 mud.
5. Water depth: 3 ft.
6. Water clarity: 30".

Ecological Considerations:
We received no information regarding resource sensitivity previously identified
for this segment. The only potential ecological priority appears to rest in the
importance of the bedrock points at the NE end of the segment as habitats for
nesting.
General Comments (cont.):

Disaster, etc. Moderate MTB + LTE algal diversity. Generally normal + healthy intertidal community with normal ongoing recruitment.
XXX Wide
/// Medium
--- Narrow
TTTT Very Light
0000 No Oil

HA-2

ADEC Segment Length: 3167m

Map Key: KEN-44a
Name: Edg Dief
Date: 4/29/90
Data Entered:
SHORELINE EVALUATION

SEGMENT ST/ HA-02     SUBDIVISION A (1 OF 1) DATE 4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4LL  Kenai Fjords National Park
5T-1  All bald eagle nests (3/1 to 6/1)-Active eagle nests (3/1 to 9/1)
6U  Recreation: Tent sites (6/1 to 9/15)
6V  Recreation: Anchorages (6/1 to 9/15)
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECMOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: DATE: 5/8/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 268 m: No Oil 2898 m
Subsurface Oil Observed: Yes ___ No X ___ Maximum Depth ______

RECOMMENDATIONS:
  X  No Treatment Recommended  ___ Snare/Absorbent Booms
  ___ Treatment Recommended  ___ Oil Snares (pom poms)
  ___ Manual Pickup  ___ Absorbents (pads, rolls, etc)
  ___ Bioremediation  ___ Spot Washing: ___ Wands
  ___ Tarmat Removal  ___ Beach Cleaner
  ___ Other (see comments)

COMMENTS:


TAG COMMENTS: ____________________________

TAG APPROVAL DATE: 5/8/90
ADEC  Art Werner  Art Werner  DATE: 6/June 90
EXXON  John Toth  John Toth  FOSC: ___________________
Oil Character Length (cm):

AP 10
PO 10
cv 0
cT 240
ST 240
MS 0
PT 0
TB 0
FL 0
NO 3370

Bedrock Cliff

Do oiling

HA-2

XXX Wide

/// Medium

---- Narrow

TTTT Very Light

00000 No Oil

Map Key: KEK-44b
Name: Ruby Siegel
Date: 4/29/90
Data Entered:
REGION: KENAI

SEGMENT: ST/HR-03

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ HR-003 SUBDIVISION A (1 OF 1) DATE 4/8/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
- 5R  Seabird colony (5/1 to 9/1)
- 4QQ National Wildlife Refuge

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: __________________ DATE: ______________________

OILING CATEGORIZATION:

Wide_0_m: Medium_0_m: Narrow_0_m: V.Light_175_m: No Oil_1501_m

Subsurface Oil Observed: Yes X No Maximum Depth 25 cm

RECOMMENDATIONS:

X No Treatment Recommended  X Snare/Absorbent Booms
X Treatment Recommended  Oil Snare (pom poms)
X Manual Pickup  Absorbents (pads, rolls, etc)
X Bioremediation  Spot Washing: Wands
_____ Tarmat: Breakup  Beach Cleaner
_____ Removal  Other (see comments)

COMMENTS: Recommend bioremediation of subsurface oil as indicated on sketch map. Treatment should be conducted before 5/1 or with permission of USFWS after 5/1 due to presence of seabird colony.

TAG COMMENTS: ________________________________________________________

TAG APPROVAL DATE:__________

ADEC  EXXON  FOSC: ___________ DATE: __________
NOAA  USCG
PWS ECOLOGICAL CONSTRAINTS

1A
Salmon stream mouth - fry outmigration (3/1 to 5/15)
Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G.
No beach flushing into stream drainage.
No biomonitoring or other chemical application within 100 m of stream.
Contact ADF&G Habitat Division prior to treatment for permits.

1C
Salmon fry nursery area (4/31 to 7/31)

1D
Esther Hatchery release (4/15 to 6/1)

1E
Main Bay Hatchery release (4/20 to 5/10)

1F
Sawmill Bay Hatchery release (4/20 to 5/10)

1G
Cannery Creek Hatchery release (4/21 to 6/1)

1H
Remote release site

1I

1J
Purse seine area (7/21 to 9/30)

1K
Purse seine hook-off (7/20 to 9/30)

1L
Set net sites (6/11 to 7/25)
For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.

2M
Herring spawning (4/1 to 6/15)
Restrict boat traffic to essential minimum.
Aircraft to maintain 800 m horizontal, 300 m vertical distance.
ContacPWS ECOLOGICAL CONSTRAINTS ADF&G for specific dates and locations.

3N, 3P
Harbor seal and sea lion pupping (5/15 to 7/1)

3O, 3Q
Harbor seal and sea lion molting (8/15 to 9/15)
Restrict boat and air traffic to essential minimum.
No personnel within 400 m. Aircraft to maintain 800 m horizontal, 300 m vertical distance.

5R
Seabird colony (3/1 to 9/15)
Restrict air traffic to essential minimum.
No personnel within 800 m. Aircraft to maintain 800 m horizontal, 300 m vertical distance.
Contact ADF&G and USFWS prior to treatment.

5S
Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic.

5T
All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)
Restrict air traffic to essential minimum.
No personnel within 400 m. 3/1 to 6/1. Air approach and takeoff from
and to seaward only; maintain 600 m horizontal, 300 m vertical distance from nests.
Contact USFWS prior to treatment for confirmation of dates.

6U
Recreation:
Tent sites (6/1 to 9/15)
Anchorage (6/1 to 9/15)
Forest Service cabins (6/1 to 9/15)
Lodge (6/1 to 9/15)
Special use destination

7Z
Subsistence area:
Salmon harvesting (5/1 to 9/30)
Finfish harvesting

7HH
Deer harvesting (8/15 to 2/28)

7JJ
Invertebrate harvesting
For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
FIELD SHORELINE COMMENT SHEET

SEGMENT ST  HR - 3 SUBDIVISION: A DATE 4/8/90

NOAA NAME JACQUI MICHE Signature

<table>
<thead>
<tr>
<th>NO TREATMENT RECOMMENDED</th>
<th>TREATMENT SUGGESTED</th>
</tr>
</thead>
</table>

COMMENTS

The only oil remaining was found on the southernmost boulder beach — only a few drips were observed. No further treatment is warranted.

ADEC NAME John R. Reed Signature

<table>
<thead>
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<th>TREATMENT SUGGESTED</th>
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COMMENTS

Very light oiling consisting of a few splatters. No treatment is required. I have read and agree with all data on S.S.A.T. Forms.

LAND MANAGER / USFWS

NAME Mary Potts Signature

<table>
<thead>
<tr>
<th>NO TREATMENT RECOMMENDED</th>
<th>TREATMENT SUGGESTED</th>
</tr>
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COMMENTS

Oil remains as coat and stain between and beneath boulders in the boulder beach at the southern end of the segment. The amount and location of the oil remaining make it insufficient to recover.
SHORELINE OILING SUMMARY

**R.EVIEWED DATE**

| TEAM NO.: | 18 |
| TIDE LEVEL: | +1.0 to +2.2 |
| DATE: | 4/18/90 |

**SURFACE SEDIMENTS:**
- R 90%, B 10%, C 0%, P 0%, G 0%, O 0%, M 0%, V 0%, O 0%

**SLOPE:**
- Lang 10%, Hang 50%, Vert 40%

**WAVE EXPOSURE:**
- Low 0%, Med 0%, High 0%

**OIL CATEGORY:**
- LENGTH: W 0 m, M 0 m, N 0 m, VL 100 m, NO 1R 10 m

### SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<td>STAIN</td>
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<td>FILM</td>
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<td>✓ ✓ ✓</td>
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### SUBSURFACE OIL

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<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL (cm-3cm)</th>
<th>OIL / FILM COLOR</th>
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### COMMENTS

This is a monotonous, stage shoreline backed by a high, angle, space front. I hiked on a boulder beach (very light oil category orange) where surface oil was scarce and showed signs of wave and boulder battering erosion. CT and ST persist on boulder surfaces at depth but I doubt there is a significant volume of subsurface oil - ie. I don't expect to see sheens on hot days here.
No sketch

LEGEND

1 △
Pit - No Subsurface Oil

2 △
Pit - Subsurface Oil

CT/C
Continuous Distribution

CT/B
Braided Distribution

CT/P
Patchy Distribution

CT/S
Splashed Distribution

Oil Character Length (m): AP ○ PO ○ CV ○ CT 10 ST 10 MS ○ PT ○ TB ○ FL ○ NO 1906
OILING

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<td>M</td>
<td>Moderate</td>
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<td>L</td>
<td>Light</td>
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<tr>
<td>VL</td>
<td>Very Light</td>
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<td>N</td>
<td>None</td>
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<td>NS</td>
<td>Not Surveyed</td>
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Distance in Meters

CT/S ST/S 1 pet day to 250cm (all BC) oil on ST scattered on boulders to 2.5cm.
### SHORELINE ECOLOGICAL SUMMARY

**Segment ST**: HR-3  
**Subdivision**: A  
**Date (mo/day/yr)**: 4/8/90  
**Biolgist**: M. CARR

**Substrate type and % of segments**:

1. Bedrock  
2. Boulder  
3. Cobble  
4. Pebble  
5. Sand  
6. Silt

**Overall % cover of biota (% of segment)**:

- Dense 80
- Moderate 20
- Low

**Density, substrate preference** (by number from A, above), & vertical zonation of major taxa: (upper-U; mid-M; low tidal-L); juveniles/adults (X), new settlement (3)

**Photographs**:

- **Roll No.**: 5  
- **Frames**: 11-12

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**Wildlife Observations/General Comments**:  
**NONE**

**Ecological Considerations**:

- **Sensitivity codes**: 4-09 (National Wildlife Refuge), 5-R (Seabird colony).
SEGMENT ST/ HR-003 SUBDIVISION A (1 OF 1) DATE 4/8/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R  Seabird colony (5/1 to 9/1)
4QQ  National Wildlife Refuge
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: [Signature] DATE: 4/20/90

OILING CATEGORIZATION:
Wide 0 m; Medium 0 m; Narrow 0 m; V.Light 175 m; No Oil 1501 m
Subsurface Oil Observed: Yes X No Maximum Depth 25 cm

RECOMMENDATIONS:
____ No Treatment Recommended  ___ Snare/Absorbent Booms
X ___ Treatment Recommended  ___ Oil Snare (pom poms)
____ Manual Pickup  ____ Absorbents (pads, rolls, etc)
X ____ Bioremediation  ____ Spot Washing: ___ Wands
____ Tarmat: ____ Breakup  ____ Beach Cleaner
____ Removal  ____ Other (see comments)

COMMENTS: Recommend bioremediation of subsurface oil as indicated on sketch map. Treatment should be conducted before 5/1 or with permission of USFWS after 5/1 due to presence of seabird colony.

TAG COMMENTS: 

TAG APPROVAL DATE: 4/20/90
ADEC  [Signature] DATE: 4-26-90
EXXON  [Signature]  
NOAA  [Signature]  
USCG  [Signature]

Due to the reason for not treating oil as per TAG comments, shoreline condition should be enhanced.
SUBDIVISION A

DATE 1/8/90

CHECKLIST

- N Anow
- Approx. Route
- Seg/Sub Bedry
- Oil Dist.
- Well
- Length
- % Cover
- Softrock Character
- Ext. INW/OUT
- SSL
- Profile Location(s)
- Profile(F)
- Pit Location(s)
- Photo Location(s)

LEGEND

1 A
- Pit - No Subsurface Oil

2 A
- Pit - Subsurface Oil

CT/C
- Continuous Distribution

CT/B
- Brokyn Distribution

CT/P
- Patchy Distribution

CT/S
- Splashed Distribution

Oiled Vegetation

1 ⊹
- Photo location, direction, and number

Oil Character Length (m): AP O PO O GV O CT 10 ST 10 MS O PT O TB O FL O NO 1906

No sketch
LIGHT IMPACT OF
MOSQUITES AND TRELMS
ON THIS MEDIUM CURVED
BENCH. MAJORITY OF
CONTAMINATION IS ON
THE HIGH PRESS LINE
WITH SLIGHTER IMPACT
ON THE MID PRESS
LINE.

30m x 3m
9 < 10%

10m x 10m

N

O

CT/S ST/S

OPEN TOOLS:

1 pt up to 50cm
(all BC) oil is ST
scattered on boulders
TO 25cm.

Distance In Meters

H = Heavy
M = Moderate
L = Light
VL = Very Light
N = None
NS = Not Surveyed

ADEC Sep/Oct 1990 Survey

Survey Post Treatment

Scarring Assessment

26 September 1990
CBBN: C. SHERIDAN
M. POTTER
L. PEARSON
G15: I don't have Exxon map
please fill it out yourself.
WORK PLAN ADDENDUM

Segment HR-003   Subdivision A   Dated 5/16/90

MODIFICATION

1. REASON FOR MODIFICATION

- FOSC requirement.
- Landowner recommendation.

2. ADJUSTMENT TO WORK PLAN

- No treatment recommended, due to sparseness of remaining oil and proximity of seabird colonies.

SHPO APPROVAL NEEDED

YES X NO

SHPO SIGNATURE ____________________________

TAG APPROVAL DATE 5/11/90

ADEC Art Weiler Art Weiler
EXXON Andy Talbot
NOAA Gary D'Esopo Ken Bannister

FOSC ____________________________ DATE 5/16/90

SCG ____________________________
SHORELINE EVALUATION

SEGMENT ST/HR-005  SUBDIVISION A (1 OF 1)  DATE 4/8/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R Seabird Colony (5/1 to 9/1)
4QQ National Wildlife Refuge  (no time constraint given)

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid disturbance/damage to unoiled substrate and biota.

ARCHAEOLOGICAL STRAINS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: [Signature]  DATE: April 14, 1990

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 415 m: No Oil 1744 m
Subsurface Oil Observed: Yes X No___ Maximum Depth 40cm

RECOMMENDATIONS:
X No Treatment Recommended ___ Snare/Absorbent Booms
____ Treatment Recommended ___ Oil Snares (pom poms)
____ Manual Pickup ___ Absorbents (pads, rolls, etc)
____ Bioremediation ___ Spot Washing: ___ Wands
____ Tarmat: ___ Breakup ___ Beach Cleaner
____ Removal ___ Other (see comments)

COMMENTS:

TAG COMMENTS:
TAG APPROVAL DATE: 4/14/90
ADEC [Signature]  DATE: 5-1-90
EXXON [Signature]  DATE: 5-1-90
NOAA [Signature]  DATE: 5-1-90
USCG [Signature]  DATE: 5-1-90
REGION: KENAI

SEGMENT: HR-005

SUBDIVISIONS: A (1 OF 1)
SEGMENT ST/ HR-005  SUBDIVISION A (1 OF 1)  DATE 4/8/90  

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R Seabird Colony (5/1 to 9/1)
4QQ National Wildlife Refuge (no time constraint given)

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid disturbance/damage to unoiled substrate and biota.

ARCHAEOLOGICAL STRAINS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: __________________________ DATE: __________________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 415 m: No Oil 1744 m
Subsurface Oil Observed: Yes X No ___  Maximum Depth 40cm

RECOMMENDATIONS:
___ X  No Treatment Recommended  _____ Snare/Absorbent Booms
___ Oil Snares (pom poms)
___ Manual Pickup  _____ Absorbents (pads, rolls, etc)
___ Bioremediation  _____ Spot Washing: Wands
___ Biomat: Breakup  _____ Beach Cleaner
___ Removal  _____ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: _____________
ADEC ___________________________
EXXON __________________________
NOAA ___________________________  FOSC: ______________ DATE: ___________
USCG ___________________________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1 HR 05 SUBDIVISION: A DATE 4/8/90

NAME: TROY MICHEL SIGNATURE: 

☑ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

Based on previous SCAT descriptions, this area has improved significantly by natural removal. The remaining oil was either 1) very widely scattered splatters or 2) pooled/cut in the cove that was originally heavily oiled. Natural removal is the most effective approach, even for the cove.

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

I am not recommending treatment due to the drastic change since last year. Natural removal has done a good job on this segment. I have read and agree with all done on S.S.H.T. Poems.

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

Some natural weathering and removal of oil has taken place in this segment. Oil remaining at Site 1 consists primarily of scattered coats, covers and stain most of which is present and between boulders on the N and S end of the beach. Several small areas of pooled oil and asphalt remain. The remainder of the segment consists of widely scattered ATP and ST/S.

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

ADEC

NAME: JOHN R. REED SIGNATURE: 

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

LAND MANAGER - USFWS

NAME: Mary Partner SIGNATURE: Mary Partner

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

REV No. 09/21/90
SHORELINE OILING SUMMARY

OG: Mann USCG NOAA Michell SEGMENT ST/ HR-5
BIO: Carf LAND REP Boulder USEWS SUBDIVISION A
EXXON: Boyer ADEC Reed TIME 9:20 to 10:20
AM NO.: 18 TIDE LEVEL: +1.6 to +6
SUBDIVISION LENGTH: 3223 m
UPLANDS DESCRIPTION: □ Grass □ Forest □ Rock
SURVEYED FROM: □ Foot □ Boat □ Helo WORKING DIRECTION: N to S
SURFACE SEDIMENTS: R 40 % B 20 % C 0 % P 0 % G 0 % S 0 % M 0 % V 0 %
SLOPE: Lang 40 % Hang 40 % Vent 20 % WAVE EXPOSURE: □ Low □ Mod □ High
OIL CATEGORY LENGTH: W 0 m M 0 m N 0 m VL 400 m NO 2623 m

SURFACE OIL

<table>
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<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<td>PATTIES</td>
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<tr>
<td>TARBALLS</td>
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PAVEMENT: H 0 S 3 8 1 sq. m by 3 cm
PATTIES / TARBALLS 0 BAGS
NEAR SHORE SHEEN? □ BR RW SL TL
OILED DEBRIS NO AMOUNT
AMOUNT

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Photographs:
Roll No. 5/8-5
Frames 13

SUBSURFACE OIL

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<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
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<th>OILED INTERVAL</th>
<th>BELOW</th>
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<th>ANA</th>
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COMMENTS: This is one of the more protected of the Glacier Island shorelines. The coastline is steep but not precipitous. Help and drift logs were observed offshore of the southern coast (sketch site 1). Oiling outside the cove consists of widely scattered SFS-StS. In the cove, surface oiling is sparse and shows signs of being eroded by waves and rolling boulders. Much of the remnant oil is in the subsurface but most of this is CT and ST. Pronounced natural self-cleaning has occurred here since 1989.
No sketch map

LEGEND

1 A
Fl - No Subsurface Oil

2 A
Fl - Subsurface Oil

CT/C
Continuous Distribution

CT/P
Broken Distribution

CT/S
Patchy Distribution

Splashed Distribution

Oiled Vegetation

Photo location, direction, and number

Oil Character Length (in): AP 1 PO 3 CV 50 CT 150 ST 200 MS 0 PT 0 TB 0 FL 0 NO 2623
SHORELINE ECOLOGICAL SUMMARY
Segment ST1 HR 5 Subdivision A (of A) Date (mo/day/yr) 4/8/80

Time (24 hr) 0920 Biologist M. CARR

Substrate type and % of segments:
(1) Bedrock 80 (2) Boulder 20 (3) Cobble (4) Pebble (5) Sand (6) Silt

Overall % cover of biota (% of segment): Dense 70 Moderate 20 Low 10

Density, substrate preference (by number from A, above), &
vertical zonation of major taxa: (upper-U; mid-M; low tidal-L);
juveniles / adults (X) & new settlement (3)

### BARNACLES

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### FUCUS

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</tbody>
</table>

Wildlife Observations/ General Comments:

Bald eagle (2) mature
Black-billed Killdeer (70) on rocks
Surf scoter (4)
Magpie (1)

Ecological Considerations:

Sensitivity codes: 4-QQ (Natural Wildlife Refuge), 5-R (Seabird colony).
REGION: KENAI

SEGMENT: ST/HR-007

SUBDIVISIONS: A (1 OF 1)
SEGMENT ST/ HR-007 SUBDIVISION A (1 OF 1) DATE 4/7/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
- 5R Seabird colony (5/1 to 9/1)
- 3N,3P Harbor seal and sea lion pupping (5/15 to 7/1)
- 30,3Q Harbor seal and sea lion molting (8/15 to 9/15)
- 4QQ National Wildlife Refuge
- 5T All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 to 9/1)

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoil biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ______________________ DATE: ______________________

OILING CATEGORIZATION:
- Wide 0 m: Medium 58 m: Narrow 0 m: V. Light 0 m: No Oil 4562 m
- Subsurface Oil Observed: Yes X No Maximum Depth 100+ cm

RECOMMENDATIONS:
- X No Treatment Recommended
- Treatment Recommended
- Manual Pickup
- Bioremediation
- Tarmat: Breakup
- Removal
- Snare/Absorbent Booms
- Oil Snares (pom poms)
- Absorbents (pads, rolls, etc)
- Spot Washing: Wands
- Beach Cleaner
- Other (see comments)

COMMENTS: __________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________

TAG COMMENTS: ______________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________

TAG APPROVAL DATE: __________
- ADEC
- EXXON
- NOAA
- USCG ______________________
Salmon stream mouth - fly outmigration (3/1 to 5/15)
Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage.
No bioremediation or other chemical application within 100m of stream. Contact ADF&G Habitat Division prior to treatment for permits.

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>1A</td>
<td>Salmon fry nursery area</td>
<td>(4/31 to 7/31)</td>
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<tr>
<td>1B</td>
<td>Esther Hatchery release</td>
<td>(4/15 to 6/1)</td>
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<td>1C</td>
<td>Main Bay Hatchery release</td>
<td>(4/20 to 5/10)</td>
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<tr>
<td>1D</td>
<td>Cannery Creek Hatchery release</td>
<td>(4/21 to 6/1)</td>
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<tr>
<td>1E</td>
<td>Salmon - mauhhelia</td>
<td>(7/10 to 8/31)</td>
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<td>1F</td>
<td>No disturbance of stream bed or banks unless</td>
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<td>authorized by ADF&amp;G. No beach flushing into</td>
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<tr>
<td></td>
<td>stream drainage.</td>
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<td>1G</td>
<td>No bioremediation or other chemical application within 100m of stream. Contact ADF&amp;G Habitat Division prior to treatment for permits.</td>
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<tr>
<td>1H</td>
<td>Remote release site</td>
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<td>1I</td>
<td>Gill net area</td>
<td>(6/7 to 8/31)</td>
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<tr>
<td>1J</td>
<td>Purse seine area</td>
<td>(7/20 to 9/30)</td>
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<tr>
<td>1K</td>
<td>Purse seine hook-off</td>
<td>(7/20 to 9/30)</td>
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<tr>
<td>1L</td>
<td>Set net sites</td>
<td>(6/11 to 7/25)</td>
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<td>For Codes 1C through 1L contact ADF&amp;G for specific dates, locations and constraints.</td>
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Herring spawning (4/1 to 6/15)
Restrict boat traffic to essential minimum. Avoid damage to uncoiled intertidal and subtidal algae and seagrass. Contact ADF&G for specific dates and locations.

Harbor seal and sea lion pupping (5/15 to 7/1)
Harbor seal and sea lion molting (8/15 to 9/15)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 500m horizontal and 300m vertical distance from haulouts.

Seabird colony (5/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.

Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic.

All Bald Eagle nests: (3/1 to 6/1)
Active Bald Eagle nests: (3/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

<table>
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<td>Forest Service cabins</td>
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<td>Lodge</td>
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<td>Special use destination</td>
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<td>Subsistence area: Salmon</td>
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<td>Finfish harvesting</td>
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<tr>
<td>Deer harvesting</td>
<td>(9/15 to 2/28)</td>
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<tr>
<td>Invertebrate harvesting</td>
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For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
FIELD SHORELINE COMMENT SHEET

SEGMENT ST/HR O7 SUBDIVISION: A DATE 4/7/90

NOAA NAME JACQUI MICHEL SIGNATURE

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

THIS SEGMENT WAS THE MOST RUGGED/EXPOSED SHORELINE SEEN TO DATE WITH LARGE NUMBERS OF SEABIRDS AND MARINE MAMMALS AND A RICH INTERTIDAL ZONE. MOST (95%) OF THE SHORELINE CONSISTED OF VERTICAL CLIFFS THAT WERE COVERED OF OIL. ONE AREA, A "NOSE" BOULDER BEACH, CONTAINED OIL-COVERED BOULDERS BELOW A CLEAN SURFACE. I WAS SURPRISED TO SEE OIL PERSIST ON THIS VERY HIGH ENERGY SHORELINE - YET THE LARGE SIZE OF THE BOULDERS HAS SLOWED THE PERMEATION OF OIL FROM BELOW THE SURFACE. THE RESIDUAL OIL IS STILL VERY LIGHT AND DOES NOT WARRANT TREATMENT.

ADEC NAME JOHN R. REED SIGNATURE

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

One small pocket beach of large boulders has a very small area of cover coat, and stain that does not warrant treatment. The majority of the segment is vertical cliffs. I have read and agree with all data on S.S.A.T. forms.

LAND MANAGER - USFW NAME MARY POTTIER SIGNATURE

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

Since the 1989 SCOT of this segment some weathering of the oil has occurred. The surface of the boulders and bedrock (see site sketch) has developed a layer of fine sand and mud. However, beneath this surface layer of cobbles and boulders the oil coverage is almost 100%. Large boulders have been oiling. Oil persists along the rock face and as coat over and stains. Oil persists along the rock face and as coat over and stains. Oriflow is currently in the upjet and over coat and stain. Oil, currently in the upper and over coat and stain. Oriflow is currently in the upjet and over coat and stain. Oil, currently in the upjet and over coat and stain. Oil, currently in the upjet and over coat and stain. Oil, currently in the upjet and over coat and stain. Oil, currently in the upjet and over coat and stain. Oil, currently in the upjet and over coat and stain. Oil, currently in the upjet and over coat and stain.

Due to the rich oystershells and presence of pinnipeds, this site should be reevaluated in steam throughout the summer.

REVISION NO. 03/27/92
SHORELINE OILING SUMMARY

Team No.: 18

Tide Level: +1 to +0.9

Estimated Subdivision Length: 6309 m

Surveyed From: Foot

Oil Category: W

Surface Oils:
- Asphalt Pavement
- Pole
- Cover
- Coat
- Stain
- Mousse
- Patties
- Tarballs
- Film
- No Oil

Subsurface Oils:
- Pit 1: Oil Interval 0-30 cm, No Oil
- Pit 2: Oil Interval 50-100 cm, No Oil
- Pit 3: Oil Interval 75 cm, No Oil

Vegetation:
- Presence or absence

Comments:
- This segment consists of a spectacular high cliff. Oil persists in one small pocket.
- This cliff face is composed of rounded to subrounded, granitic boulders (small to large). Oil is now at the surface here persists in the subsurface at abundant CT and ST apparently at depths below which the boulders have not moved since the oil arrived. Oil CT and ST on fringing rock walls has been wave abraded.
SEGMENT 37/HE 07

SUBDIVISION A

DATE 07/1.07 90

CHECKLIST

- N Acre
- Appx. Scale
- Seg/Sub Bedry
- Oil Dis.
- Width
- Length
- % Cover
- Substrate Character
- Est. HIMU, ML
- SSL
- Profile Location(s)
- Profile(s)
- Pit Location(s)
- Photo Location(s)

LEGEND

1 △
- Pit - No Subsurface Oil

2 △
- Pit - Subsurface Oil

CT/C
- Continuous Distribution

CT/O
- Broken Distribution

CT/P
- Patchy Distribution

CT/S
- Splashed Distribution

Oiled Vegetation

1 ➔
- Photo location, direction, and number

OIL Character Length (m): AP 0 PO 0 CV 75 CT 75 ST 75 MS 0 PT 0 TB 0 FL 0 NO 6234
SHORELINE ECOLOGICAL SUMMARY

Segment ST 1 Hr - 7 Subdivision A (of A) Date (mo/day/yr) 4/7/20

B & (24 hr) 1800 Biological M. CARR

(A) Substrate type and % of segments:
1. Bedrock 42%
2. Boulder 3%
3. Cobble 15%
4. Pebble 15%
5. Sand 15%
6. Slim 3%

(B) Overall % cover of biota (% of segment): Dense 90 Moderate 10 Low

(C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa: (upper-U; mid-M; low tidal-L); juveniles/adults (X), new settlement (3)

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Photographs: Roll No. 4/5 Frames 32-37/1-2

Wildlife Observations/General Comments:
Glacous-winged gull (500) Sea otter (1)
Bald eagle (3) immature (1) immature Red-faced currant
Oregon eider (5) Steller's

Ecological Considerations:
Sensitivity codes: 4-00 (National Wildlife Refuge), 5-R (seabird colony), 3-P (sea lion pupping), 3-Q (sea lion molting), 5-T (gull eagle nest)
**SENSITIVE SITES**

- **HR-8**
- **HR-5**
- **HR-6**
- **HR-7**
- **HR-4**

*ENTIRE SHORELINE IS INHABITED BY SEABIRD COLONIES*

---

Map Key: KEN-52
Name: **Mann**
Date: **4/7/90**

**RANGE**

- XXXX Wide
- /// Medium
- ---- Narrow
- TTTT Very Light
- no oil
SHORELINE EVALUATION

SEGMENT ST/ HR-007 SUBDIVISION A (1 OF 1) DATE 4/7/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R Seabird colony (5/1 to 9/1)
3N,3P Harbor seal and sea lion pupping (5/15 to 7/1)
3O,3Q Harbor seal and sea lion molting (8/15 to 9/15)
4QQ National Wildlife Refuge
5T All bald eagle nests (3/1 to 6/1)-Active eagle nests (3/1 to 9/1)

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoi led biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ___________________________________________ DATE: 4/23/90

OILING CATEGORIZATION:

Wide 0 m: Medium 58 m: Narrow 0 m: V.Light 0 m: No Oil 4562 m
Subsurface Oil Observed: Yes X No Maximum Depth 100+ cm

RECOMMENDATIONS:

X No Treatment Recommended       ____ Snare/Absorbent Booms
_____ Treatment Recommended       ____ Oil Snares (pom poms)
_____ Manual Pickup              ____ Absorbents (pads, rolls, etc)
_____ Bioremediation             ____ Spot Washing: ____ Wands
_____ Tarmat: ____ Breakup ______ Beach Cleaner
_____ Removal                    ____ Other (see comments)

COMMENTS:  ____________________________________________________________

________________________________________________________

TAG COMMENTS: ______________________________________________________

________________________________________________________

TAG APPROVAL DATE: 4/21/90
EXXON  [signature] [signature]  Pay particular note to DOE's request
NOAA  [signature] [signature]  concerning slewing.
USCG  [signature] [signature]  [signature]
No SEGMENT SKETCH
REGION: KENAI

SEGMENT: HR-009

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/HR-009 SUBDIVISION A (1 OF 1) DATE 4/8/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R Seabird colony (5/1 to 9/1)
5T Active eagle nest (3/1 to 9/1)
4QQ National Wildlife Refuge (no time constraint given)

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to uncoiled biota and substrate. See attached Ecological Constraints Sheet.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: ____________________ DATE: ______________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 150 m: No Oil 5606 m
Subsurface Oil Observed: Yes X No Maximum Depth 100 cm

RECOMMENDATIONS:
X No Treatment Recommended
____ Treatment Recommended
____ Manual Pickup
____ Bioremediation
____ Tarmat: ____ Breakup
____ Removal
____ Snare/Absorbent Booms
____ Oil Snares (pom poms)
____ Absorbents (pads, rolls, etc)
____ Spot Washing: _____ Wands
____ Beach Cleaner
____ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: __________
ADEC EXXON NOAA USCG

FOSC: ______ DATE: ______
FIELD SHORELINE COMMENT SHEET

SEGMENT #1 HR-9 SUBDIVISION: A DATE 4/8/90

USCG NAME: Jacqui Michel SIGNATURE: (signature)

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS:

This segment was free of oil except for site 1. A boulder beach that was originally heavily oiled. Although the surface sediments were nearly clear, the subsurface boulders were still coated (20-40%) with a thin oil layer along the upper 1 to 2 meters. This was a discontinuous band - even on the very exposed shoreline. However, no further cleanup is warranted - natural removal will be most effective.

ADEC NAME: John R. Reed SIGNATURE: (signature)

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS:

This segment is mostly vertical cliffs that show no signs of oil. There was some oil at site #1 (see sketch) that consisted mainly of coat in the form of splatters on the large boulder beach. I have read and agree with all data on S.S.H.T. forms.

LAND MANAGER/USFWS NAME: Mary Perkins SIGNATURE: (signature)

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS:

Oil present in this segment at site 1 (see sketch). Surface oil present on these boulders was also seen improved. Since September 1989, oil remains between and beneath

revision NO. 08/21/90
NO TREATMENT RECOMMENDED

This segment is mostly vertical cliffs that show no signs of oil. There was some oil at site #1 (see sketch) that consisted mainly of coat in the form of splatters on the large boulder's beach. I have read and agree with all data on S.S.M.T. Form.

NAME: Mary Parker

TREATMENT SUGGESTED

Oil persists in this segment at site 1 (see sketch). Surface oil patches in this segment at site 1 (see sketch). Surface oil must be treated based on the state of boulders and cobbles. The surface oil must be treated.

NAME: Mary Parker
SHORELINE OILING SUMMARY

ST. SUBDIVISION LENGTH: 6281 m
UPLANDS DESCRIPTION: Grass Forest Rock
SURVEYED FROM: Foot Boat Helo
WORKING DIRECTION: North to South
SLOPE: Lang 5% Hang 15% Vert 90%
WAVE EXPOSURE: Low Med High
OIL CATEGORY LENGTH: W 70 m M 0 m N 9 m VL 10 m NO 671 m

### SURFACE OIL

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### SUBSURFACE OIL

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### COMMENTS

Much of this segment is vertical, granite wall. Oil persists only at site 1. In pits, oil at and cv amount to a 10-40% coverage over subsurface substrates. Surface cover by oil is low (~5%) and shows significant removal cleaning since 1988. Oil persists in the subsurface at CT, CV, and ST but is not abundant and probably will not be a source for continued recontamination of this area.
No sketch map

Oil Character Length (ft): AP_ | FO_ | CV_40 | CT_80 | ST_120 | MS_0 | PT_0 | TB_0 | FL_0 | NO_6171
**SHORELINE ECOLOGICAL SUMMARY**

**Segment ST**  
**HR-9**  
**Subdivision**  
**(A)** of **(A)**  
**Date (mo/day/yr)**  
**4/8/90**

**Time (24 hr)**  
**07**/11  
**Bioligist**  
**M. CARR**

---

**Substrate type and % of segments:**  
1. Bedrock  
2. Boulder  
3. Cobbles  
4. Pebbles  
5. Sand  
6. Silt

**Overall % cover of biota (% of segment):**  
- Dense  
- Moderate  
- Low

**Density, substrate preference (by number from A, above), & vertical zonation of major taxa:**  
(upper-U; mid-M; low tidal-L); juveniles/adults (X), new settlement (3)

---

### BARNACLES

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**Wildlife Observations/General Comments:**

- Harlequin ducks (6)
- Loon & loon (4)
- Bald eagle (3) mature w/ nest

---

**Ecological Considerations:**

- **Sensitivity codes:**  
  - 4-QQ (Natural Wildlife Refuge)  
  - 5-T (Bald Eagle nest)  
  - 5-R (Seabird colony)  
  - Pigeon guillemot (13)  
  - NA: croos (10)  
  - Red-faced comorant (8)
PWS, SEWARD AND HOMER ECOLOGICAL CONSTRAINTS

1A
Salmon stream mouth - fry outmigration (3/1 to 5/15)
Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream. Contact ADF&G Habitat Division prior to treatment for permits.

1C
Salmon fry nursery area (4/31 to 7/31)

1D
Esther Hatchery release (4/15 to 6/1)

1E
Main Bay Hatchery release (4/10 to 5/10)

1F
Sawmill Bay Hatchery release (4/15 to 6/1)

1G
Cannery Creek Hatchery release (4/1 to 6/1)

1H
Remote release site

1I
Gill net area (6/7 to 8/31)

1J
Purse seine area (7/20 to 9/30)

1K
Purse seine hook-off (7/20 to 9/30)

1L
Set net sites (6/11 to 7/25)
For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.

2M
Herring spawning (4/1 to 6/15)
Restrict boat traffic to essential minimum. Avoid damage to unveiled intertidal and subtidal algae and seagrass. Contact ADF&G for specific dates and locations.

3N, 3P
Harbor seal and sea lion pupping (5/15 to 7/1)

3O, 3Q
Harbor seal and sea lion molting (8/15 to 9/15)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.

5R
Seabird colony (5/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.

5S
Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic.

5T
All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

6U
Recreation:
Tent sites (6/1 to 9/15)

6V
Anchorges (6/1 to 9/15)

6W
Forest Service cabins (6/1 to 9/15)

6X
Lodge (6/1 to 9/15)

6Y
Special use destination

7Z
Subsistence area:
Salmon harvesting (5/1 to 9/30)

7HH
Finfish harvesting

7II
Deer harvesting (9/15 to 2/28)

7JJ
Invertebrate harvesting
For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
Sensitivity sites

HR-9 (Harbor Island, North)
- Bald Eagle Nest (1)
- Entire shoreline (including impacted beach) inhabited by seabird colonies.

HR-3 (Harbor Island, South) Entire shoreline inhabited by seabird colonies

HR-5 (Natoa Island)
- Bald Eagle Nest (1)
- Entire shoreline inhabited by seabird colonies.
HR-1

**Sketch site #1**

(see other map for soil type categories)
PWS ECOLOGICAL CONSTRAINTS

1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream. Contact ADF&G Habitat Division prior to treatment for permits.

1C Salmon fry nursery area (4/31 to 7/31)
1D Esther Hatchery release (4/15 to 6/1)
1E Main Bay Hatchery release (4/20 to 5/10)
1F Sawmill Bay Hatchery release (4/20 to 5/10)
1G Cannery Creek Hatchery release (4/21 to 6/1)
1H Remote release site
1I Gill net area (6/7 to 6/31)
1J Purse seine area (7/21 to 9/30)
1K Purse seine hook-off (7/20 to 9/30)
1L Set net sites (6/11 to 7/25)
For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.

2M Herring spawning (4/1 to 6/15)
Restrict boat traffic to essential minimum. Avoid damage to unveiled intertidal and subtidal algae and seagrass.
Contact ADF&G for specific dates and locations.

3N, 3P Harbor seal and sea lion pupping (5/15 to 7/1)
3O, 3Q Harbor seal and sea lion molting (8/15 to 9/15)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.

5R Seabird colony (5/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.

5S Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic.

5T All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

6U Recreation:
Tent sites (6/1 to 9/15)
Anchorages (6/1 to 9/15)
Forest Service cabins (6/1 to 9/15)
Lodge (6/1 to 9/15)
Special use destinations

7Z Subsistence area: Salmon harvesting (5/1 to 9/30)
7HH Fish harvesting
7II Deer harvesting (8/15 to 2/28)
7JJ Invertebrate harvesting
For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
SHORELINE EVALUATION

SEGMENT ST/HR-009 SUBDIVISION A (1 OF 1) DATE 4/8/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R Seabird colony (5/1 to 9/1)
5T Active eagle nest (3/1 to 9/1)
4QQ National Wildlife Refuge (no time constraint given)

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate. See attached Ecological Constraints Sheet.

ARCHAEOLOGICAL CONSTRAINTS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE:  DATE: 4/17/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 150 m: No Oil 5606 m
Subsurface Oil Observed: Yes X No Maximum Depth 100 cm

RECOMMENDATIONS:
X No Treatment Recommended Snare/Absorbent Booms
Treatment Recommended Oil Snare (pom poms)
Manual Pickup Absorbents (pads, rolls, etc)
Bioremediation Spot Washing: Wands
Tarmat: Breakup Beach Cleaner
Removal Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 4/16/90
ADEC
EXXON
NOAA
USCG

DATE: 4/20/90

FOSC:
Note: subsurface oil occurs intermittently throughout the band of remnant surface oil. Its coverage is ≈ 40% of subsurface boulders and it is most abundant in areas on either side of the BC portion of this beach.
Sensitivity sites

HR-9 (HARBOUR ISLAND, NORTH)
- BALD EAGLE NEST (1)
- ENTIRE SHORELINE (INCLUDING IMPACTED BEACH) INHABITED BY SEABIRD COLONIES.

HR-3 (HARBOUR ISLAND, SOUTH) ENTIRE SHORELINE INHABITED BY SEABIRD COLONIES

HR-5 (NATO A ISLAND)
- BALD EAGLE NEST (1)
- ENTIRE SHORELINE INHABITED BY SEABIRD COLONIES
REGION: KENAI

SEGMENT: MR-001

SUBDIVISIONS: C (3 OF 3)
SEGMENT ST/ MR-001      SUBDIVISION_C (3 OF 3) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

Active bald eagle nest (ST) - 3/1 to 6/1. Restrict air traffic to essential minimum. Air approach and takeoff from and to seaward only. Contact USFWS prior to treatment for confirmation of dates and avoidance minimums. Kenai Fjords National Park (4LL).

SUBDIVISION ECOLOGICAL CONSTRAINTS: Treatment should proceed with minimum disturbance to substrate.

ARCHAEOLOGICAL CONSTRAINTS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ___________________________ DATE: ___________________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 872 m: No Oil 0 m
Subsurface Oil Observed: Yes No X
Maximum Depth

RECOMMENDATIONS:
X No Treatment Recommended
___ Treatment Recommended
___ Manual Pickup
___ Bioremediation
___ Tarmat: Breakup
___ Removal

COMMENTS: _____________________________

TAG COMMENTS: ____________________________

TAG APPROVAL DATE: ____________________________
ADEC
EXXON
NOAA
USCG

FOSC: ____________________________ DATE: ____________________________
GOOD SURVEY. VERY LIGHT SPATTERS & DRIED COVER COAT. CLEANING WOULD BE DIFFICULT AND WOULD BE PRIMARILY COSMETIC.
FIELD SHORELINE COMMENT SHEET

SEGMENT ST: MR-1
SUBDIVISION: C
DATE: 3/31/70

USCG NAME: JACQUI MIGUEL
SIGNATURE: 

NO TREATMENT RECOMMENDED
TREATMENT SUGGESTED

COMMENTS:
The light distribution of oil on rocky outcrops does not warrant any treatment.

ADEC NAME: JOHN R. REED
SIGNATURE: 

NO TREATMENT RECOMMENDED
TREATMENT SUGGESTED

COMMENTS:
Very light bateau ring on granite bedrock and boulders. I have read and agree with all information on S.S.A.T. Forms.

LAND MANAGER NAME: Peter Zollors
SIGNATURE:

NO TREATMENT RECOMMENDED
TREATMENT SUGGESTED

COMMENTS:
The intermittent presence of covercoat type oil in subdivision C doesn't, in my opinion, warrant a treatment effort. This is subject to review by CAC later this year. I presently agree with SSAT's still regarding this area. If cleanup is implemented MR-01's archaeological integrity would not be threatened.
SHORELINE OILING SUMMARY

OG Mann
USCG, Michel
(SENSING ST/ MP-1)

BIO: Exxon
LAND REP: Tidewell (USNR)

EXXON: Cover
ADEC: Reed

TEAM NO: 18
TIDE LEVEL: +1 to -1

EST. SUBDIVISION LENGTH: 850 m

SURVEYED FROM: Foot

WORKING DIRECTION: W to E

SURFACE SEDIMENTS: R 75% B 25% C 0% P 0% G 0% S 0% M 0% V 0%

SLOPE: Lang 50% Hang 50% Vert 0%

WAVE EXPOSURE: Low Med High

OIL CATEGORY

LENGTH: W 0 m M 0 m N 0 m V 0.85 m NO 0 m

SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<tr>
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PAVEMENT: H F S 0 sq. m by 0 cm

NEAR SHORE SHEEN? (NO) BR RW SL TL

Photographs:
Roll No. none
Frames none

OILED DEBRIS

No

AMOUNT

SM MD LG

DEBRIS COLLECTED

Log

Vegetation

Trash

Debris

#BAGS

COMMENTS

This subdivision lies east of subdivision A. This shoreline is very similar to that of subdivision B - the shoreline is bedrock slabs of granite with angular boulders that have weathered out locally. The forest presses close to the sea and weathered snags are common.
SHORELINE ECOLOGICAL SUMMARY

Segment ST  MR-1  Subdivision C (of A-C)  Date (mo/day/yr) 3/31/90

Time (24 hr) 0:30  Biologist M. CARR

Subdivision

A) Substrate type and % of segments:
   (1) Bedrock 95 (2) Boulder 25 (3) Cobble 4 (4) Pebble 6 (5) Sand 6 (6) Silt

B) Overall % cover of biota (% of segment):
   Dense 70  Moderate 20  Low 10

C) Density, substrate preference (by number from A, above), &
   vertical zonation of major taxa: (upper-U; mid-M; low tidal-L);
   juveniles/adults (X), new settlement (3)

<table>
<thead>
<tr>
<th>BARNACLES</th>
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</table>

Wildlife Observations/General Comments:

Photographs:

Roll No.

Frames NO USE

Ecological Considerations:

Sensitivity codes: 5T (Bold eagle nest)
4LL - Keri's Fjords National Park
Note that subdivision B occurs on either side of subdivision A. If this is unacceptable, simply use the data page for B for a new subdiv. C.
SHORELINE EVALUATION

SEGMENT ST/MR-001 SUBDIVISION B (2 OF 3) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

Active bald eagle nest (5Tl - 3/1 to 6/1. Restrict air traffic to essential minimum. Air approach and takeoff from and to seaward only. Contact USFWS prior to treatment for confirmation of dates and avoidance minimums. Kenai Fjords National Park (4LL).

SUBDIVISION ECOLOGICAL CONSTRAINTS: Treatment should proceed with minimum disturbance to substrate.

ARCHAEOLOGICAL CONSTRAINTS: If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: ______ DATE: ____________

OILING CATEGORIZATION:
Wide_0 m: Medium_0 m: Narrow_0 m: V.Light 414 m: No Oil_0 m
Subsurface Oil Observed: Yes____ No X____ Maximum Depth ______

RECOMMENDATIONS:
_____No Treatment Recommended _____Snare/Absorbent Booms
_____Treatment Recommended _____Oil Snares (pom poms)
_____Manual Pickup _____Absorbents (pads, rolls, etc)
_____Bioremediation _____Spot Washing: ______Wands
_____Tarmat: _____Breakup _____Spot Washing: ______Wands
_____Removal: _____Other (see comments)
_____Removal

COMMENTS: Manual removal of pooled oil with absorbents and bioremediation in same area. Work is to be conducted after 6/1.

TAG COMMENTS: Treatment is recommended pending resolution of cultural resources issues. If cultural resource issues cannot be resolved a no treatment recommendation is the preferred option.

This recommendation was revised by TAG on 4/19/90 and supercedes the recommendation forwarded to FOSC on 4/12/90.

TAG APPROVAL DATE: 4/19/90
ADEC JOHN BAEGER JOHNTHAN
EXXON _____ Bioremediation
NOAA _______ Removal
USCG

Concide with TAG comments however IN 1990 not authorized.
MR-1, Subdivision B, site sketch, Mann 4/3/10 (see attached map for location)

**KEY**
- $c1p, \frac{1}{2} m \times 8m$ on vertical face
- $c1p + cvp + PO/s$ (total oil coverage $f_{o/o} = 40\%$)

**Notes:** we visited this site at 1140-1200 on 4/3/10 with tide level at +5'. Coverage by PO/s is 25% in the 2m x 4m area.
Note that subdivision B occurs on either side of subdivision A. If this is unacceptable, simply use the data page for B for a new subdiv. C.
SHORELINE EVALUATION

SEGMENT ST/ MR-001     SUBDIVISION C (3 OF 3) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Active bald eagle nest (5T) - 3/1 to 6/1. Restrict air traffic to essential minimum. Air approach and takeoff from and to seaward only. Contact USFWS prior to treatment for confirmation of dates and avoidance minimums. Kenai Fjords National Park (4LL).

SUBDIVISION ECOLOGICAL CONSTRAINTS: Treatment should proceed with minimum disturbance to substrate.

ARCHAEOLOGICAL CONSTRAINTS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: [Signature] DATE: April 12, 1990

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 872 m: No Oil 0 m
Subsurface Oil Observed: Yes No X Maximum Depth ___

RECOMMENDATIONS:
  X No Treatment Recommended ___ Snare/Absorbent Booms
 ___ Treatment Recommended ___ Oil Snares (pom poms)
 ___ Manual Pickup ___ Absorbents (pads, rolls, etc)
 ___ Bioremediation ___ Spot Washing: Wands
 ___ Tartmat: ___ Breakup ___ Beach Cleaner
 ___ Removal ___ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 4/23/90
ADEC [Signature] EXXON [Signature]
NOAA [Signature] USCG [Signature]

FOSC: [Signature] DATE: 4.23-90
Do not treat unless land management concerns match bioremediation.
Note that subdivision B occurs on either side of subdivision A. If this is unacceptable, simply use the data page for B for a new subdiv. C.
SEGMENT ST/ MR-001 SUBDIVISION C (3 OF 3) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Active bald eagle nest (5Tt - 3/1 to 6/1. Restrict air traffic to essential minimum. Air approach and takeoff from and to seaward only. Contact USFWS prior to treatment for confirmation of dates and avoidance minimums. Kenai Fjords National Park (4LL).

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SHPO SIGNATURE: [Signature] DATE: April 12, 1990

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V. Light 872 m: No Oil 0 m
Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:
X No Treatment Recommended Snare/Absorbent Booms
___ Treatment Recommended Oil Snares (pom poms)
___ Manual Pickup Absorbents (pads, rolls, etc)
___ Bioremediation Spot Washing: Wands
___ Tarmat: Breakup Beach Cleaner
___ Removal Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 4/12/90
ADEC [Signature] [Signature]
EXXON [Signature] [Signature]
NOAA [Signature] [Signature]
USCG [Signature] [Signature]
Note that subdivision B occurs on either side of subdivision A. If this is unacceptable, simply use the data page for B for a new subdiv. C.

Site Sketch 4/3/90
1991 MAYSAP EVALUATION

SEGMENT: MR 001  SUB: B  REGION: KEN  SURVEY DATE: 5/12/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: Timothy A. Smith  Date: 6/13/91

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
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<tbody>
<tr>
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</tbody>
</table>

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other

COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: May 31, 1991
ADEC  John Dene
EXXON  Reel
USCG  E. W. Maltz
NOAA  E. E. Page, CDR, USCG
CHIEF OF STAFF, FOSC

FOSC APPROVAL DATE: 6/13/91
MAVSAP FIELD SHORELINE COMMENT SHEET

TEAM NO. 4    SEGMENT: MR-1    SUBDIVISION: B    DATE: May 12, 1991

ADEC
NAME: Clara S. Crosby    SIGNATURE: Clara S. Crosby

☐ NTR

Along within this Subdivision would be very difficult to recover. (at base of SP B
& CV CT ST.)

EXXON
NAME: George E. Stiles    SIGNATURE: George E. Stiles 3/14/91

☐ NTR

The oil remaining has a patchy to slash distribution. The MS is located around the sheltered edges of
boulders and in bedrock crevices. Recovery would be very low with trowels (cosmetic).

LANDMANAGER
NAME: Michael O. Tetreau    OF: NPS    SIGNATURE: Michael O. Tetreau

☐ NTR

There is still mousse remaining in the interstitial spaces in the area adjacent to subdivision A, however this oil
would be extremely difficult to recover. It is weathering very slowly. On the rocky point where most of the treatment
was concentrated, there is very little oil remaining. The treatment in 1990 was very effective in removing the deeply pooled mousse
at this site.

USCG/NOAA
NAME: CW02 J. McManus    SIGNATURE: J. McManus

☐ NTR

Very scattered distribution in a round of t
"Signatures cleaned up by 1999 crew.
Not feasible environmentally or economically
To consider for type A pickup.
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO.:** [Redacted]

**O.G.:** [Redacted]  
**DEC.:** [Redacted]  
**EXXON:** [Redacted]

**BIO.:** [Redacted]  
**LANDMANAGER:** [Redacted]  
**USCG/NOAA:** [Redacted]

**TIME:** 16:40 to 17:10  
**DATE:** 7/13/91

**SURVEYED FROM:**  
- [X] Foot  
- [ ] Boat  
- [ ] Helo

**WEATHER:**  
- [ ] Sun  
- [X] Clouds  
- [ ] Fog  
- [ ] Rain  
- [ ] Snow

**TOTAL LENGTH SHORELINE SURVEYED:** 414 m  
**NEAR SHORE SHEEN:**  
- [ ] BR  
- [ ] RB  
- [ ] SL  
- [X] None

**EST. OIL CATEGORY LENGTH:**  
- [ ] W - m  
- [ ] M - 4.0 m  
- [ ] N - m  
- [ ] VL - 37.4 m  
- [ ] NO - m  
- [ ] US - m

**SURFACE OIL CHARACTER**  
- [ ] A1  
- [ ] A2  
- [ ] A3

**SURFACE SEDIMENT TYPE**  
- [ ] VHML

**SLOPE**  
- [ ] Vertical  
- [ ] High Angle  
- [ ] Medium Angle  
- [ ] Low Angle

**WIDTH**  
- [ ] 8 m  
- [ ] 324 m

**LENGTH**  
- [ ] 50 m

**ZONE**  
- [ ] S  
- [ ] UI  
- [ ] MI  
- [ ] LI

**NOTES**

**DISTRIBUTION:**  
- [ ] C = 61-100%  
- [ ] B = 51-90%  
- [ ] P = 11-50%  
- [ ] S = 1-10%  
- [ ] T = <1%

**SLOPE:**  
- [ ] Vertical  
- [ ] High Angle  
- [ ] Medium Angle  
- [ ] Low Angle

**PHOTO:**  
- [ ] Roll  
- [ ] Frames  
- [ ] MAYSAP - 4  
- [ ] 2  
- [ ] 7

**SUBSURFACE OIL CHARACTER**  
- [ ] No Pits  
- [ ] Redoil  
- [ ] Bevelers

**OILED ZONE**  
- [ ] Clean Below

**H2O LEVEL**  
- [ ] No

**SHEEN COLOR**  
- [ ] Brown  
- [ ] Rainbow  
- [ ] Silver  
- [ ] None

**ZONE**  
- [ ] Subsurface

**NOTES**

**OG COMMENTS:**  
- [ ] See map

**REVIEWED:**  
- [ ] CD 16 MAY
Sketch Map

MA.001.B
IM. Families
May 12/91
1649 - 1710

Legend

- Bedrock
- Boulder Talus
- Vegetated Debris

(Steep)

Map: 4.3.7

Legend:

- On bedrock surface: < 20 cm dia.
- In fractures and small air voids: 3 to 5 cm dia.
- In fractures: 9 to 15 cm dia.
- In fractures and small air voids: < 5 cm dia.

A1

4 x 40

A2

c1 < 1% 2 x 32

A3

c1 < 5% 8 x 50

Stop bedrock talus design grading
into talus of large angular boulders to the
east. c1 = c2, small on bedrock and boulder
surfaces, r15 also small (< 20 cm) in fractures and sheltered
depressions.

Note: width of boulders to scale. Average width of interbeded is 10 m.

Labeled: Reviewed 5-7-92
COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

This subdivision is composed primarily of high angle bedrock outcrops and cliffs, and boulder beaches. The biota are similar to MR001-A and are not particularly variable along the subdivision. Oiled locations throughout the segment are found in the upper intertidal zone. The biota along this segment appear to be healthy. Most species show evidence of growth or recent recruitment. No evidence of recent oil-related impacts are evident.

Biota are generally scarce at the tidal level of the oiled areas. Black lichen is sparsely distributed in this zone, and scattered limpets and barnacles are present. Littorines are moderately abundant in the vicinity of the oil, and, like limpets, are occasionally found directly on the oil. Fucus also is found near the oiled areas, and in a few cases, juveniles can be found directly in contact with oil.

Below the level of the oiling, the typical zonation continues. Filamentous green algae are abundant in the middle to high zone. Barnacles are moderate to dense, with few to moderate abundances of juveniles. Mussels form dense patches within crevices, and are present as distinct mussel beds on a few of the exposed headlands or boulder outcrops. Juvenile mussels are abundant under the Fucus beds in the middle intertidal zone. Barnacles are dense in scattered patches from the high to low intertidal, and are otherwise moderately abundant. Barnacle spat are not abundant, but are present in the middle to lower intertidal zone. The lowest intertidal was underwater during the survey, but is dominated by red and brown algae. Bull kelp is present in the subtidal at the western end of the subdivision.

Cleanup activities, if performed, will not adversely impact this intertidal zone. Hot water wash should not be used, so as to prevent disturbance to the Fucus beds.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
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<tr>
<th>BIRDS</th>
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<th>LAND MAMMALS</th>
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Shoreline subdivision map showing important biological features attached.
MR001-A Biology Report, continued

Biota     Tide Level: Supratidal High  Medium  Low  Subtidal

Black Lichen  ********++--
Green Algae (Urospora) -+++++++***+++*+++***
Barnacles (sparse) -++++++***+++***
Fucus
Littorines/limpets -++***++--
Mussels
Brown Algae
Red Algae

Oiled Areas

Common Species Observed or Expected at MR001-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Nereocystis leutkeana,
   Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Anfelia plicata, Bossiella sp., Calliarthron sp., Corallina sp.,
   Cryptosiphonia woodii, Endocladia muricata, Halosaccion glandiforme, Iridaea
   sp., Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria
   palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants
   Zostera marina (eel grass), Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera
   Halichondria sp., Halichondria panicea, Ophlitaspongia pennata, Tethys sp.
2. Anemones
   Anthopleura artemisia, Epiactis ritteri, Metridium senile, Urticina
   crassicornis
3. Hydroids - Sertulariidae - Sertularella?
4. Flatworms - Platyhelminthes - Polyclads
5. Nemertean Worms - Ribbon Worms - Emplectonema gracile
6. Polyplacate worms
   Glyceridae
   Nephthidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Eudistylia polymorpha
   Spirorbidae - Spirorbis sp.
7. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
   d. Isopods - Idotea wosnesenskii, Gnirimorsphaeraea oregonensis
8. Mollusca
   a. Chitons
      Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata.
      Tonicella lineata,
   b. Snails - Gastropods
c. Limpets
   Acmaea mitra, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites

e. Mussels and Clams
   Chlamys hastata, Modiolus modiolus, Mytilus edulis, Pododesmus cepio, Prototheca staminea

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Leptasterias hexactis, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.,
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Stichaeidae - Xiphister atropurpureus, X. mucosus
Filamentous green & brown algae sparsely distributed around oil. Some black lighter.
Scattered limpets & limpets on oil. Lower zones partially overlap oiled areas, with Fucus becoming abundant in the mid-shore. Mussels is present & in crevices and under the Fucus as juveniles & small adults. Lower zone dominated by red/brown algae. This is a healthy intertidal community.
1991 MAYSAP EVALUATION

SEGMENT: MR 001  SUB: A  REGION: KEN  SURVEY DATE: 5/12/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  OPEN

Ecological/Constraints (see page two for details)  NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: ______________________ Date: __________________

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N)  N

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other__________________________
Other__________________________

COMMENTS:
INITIAL: _______________________

TAG: __________________________

FOSC: _________________________

TAG APPROVAL DATE: __________ FOSC APPROVAL DATE: __________

ADEC________________________ FOSC_____________________________

EXXON______________________

USCG_______________________

NOAA_______________________
MANUAL REMOVAL OF ASPHALT & MFS. The asphalt is fairly well defined & easily removed. There are areas where the asphalt has been covered by a thin layer < 2 cm of Clean Sediment & depth of pore in = 5 cm. These areas should be followed & removed.

The survey was hampered slightly by the fragility of the area & there is the possibility of more oiling being on site than was actually documented in this survey.

The 10 team members and 2 archeologists, I feel adequately recorded the remaining subsurface and surface oiling. The MS, CV/RT has a patchy distribution. The moose is located around edges of boulders and in bedrock cracks. The asphalt/tar mat is well defined. Any work in this area will be very time consuming due to the constraints.

The distribution of oil is the same as in 1990 however the amount of oil present is much less. The only recoverable oil remaining is in the area of the asphalt/tar mat where some patches were missed in 1990 and some SOR has returned into asphalt just below the surface sediments. The treatment in 1990 appears to have been very effective in removing the pooled oil from the crevices.
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO.** 4  
**BIO** J. Barry  
**ADEC** Clara Crosby  
**SOCON** George R. Stiles  
**LANDMANAGER** John Hardenhor  
**USCG/NOAA** John McMahon

**DATE** May 12, 1991

**TIME** 16:07 to 16:48  
**TIDE LEVEL** +5.5 ft to 4.8 ft  
**ENERGY LEVEL**  

**SURVEY FROM**: FOOT BOAT HELO  
**WEATHER**: SUN CLOUDS FOG RAIN SNOW

**TOTAL LENGTH SHORELINE SURVEYED:** 360 m

**NEAR SHORE SHEEN:** BR RB SL X

**EST. OIL CATEGORY LENGTH:**

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<thead>
<tr>
<th>L</th>
<th>OIL CATEGORY LENGTH</th>
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<tbody>
<tr>
<td>W</td>
<td>260 m</td>
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<td>M</td>
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<td>N</td>
<td>10 m</td>
</tr>
<tr>
<td>V</td>
<td>40 m</td>
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<tr>
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**SURFACE OIL CHARACTER**

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<th>LOC</th>
<th>AP</th>
<th>MS</th>
<th>TB</th>
<th>SOR</th>
<th>CV</th>
<th>CT</th>
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<th>TYPE</th>
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<td>Mud/Ind</td>
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<tr>
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<td>X</td>
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<tr>
<td>A3</td>
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<td>M</td>
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<td>5</td>
<td>X</td>
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<tr>
<td>A4</td>
<td>P</td>
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<td>D</td>
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<td>Mud/Ind</td>
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<td>6</td>
<td>155</td>
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**DISTRIBUTION:**
- C = 91-100%
- B = 51-90%
- P = 11-50%
- S = 1-10%
- T = <1%

**SLOPE:**
- V = VERTICAL
- H = HIGH ANGLE
- M = MEDIUM ANGLE
- L = LOW ANGLE

**PHOTO ROLL #:** MAYSAP-

**FRAMES:**

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<tr>
<th>PIT</th>
<th>PIT DEPTH</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN</th>
<th>H20</th>
<th>SHEEN</th>
<th>ZONE</th>
<th>PIT</th>
<th>SURFACE-SUBSURFACE SEDIMENTS</th>
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<tr>
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<td>25</td>
<td>Y</td>
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<td>10</td>
<td>5</td>
<td>X</td>
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<td>cph 5d</td>
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**SHEEN COLOR:**
- B = BROWN
- R = RAINBOW
- S = SILVER
- N = NONE

**OG COMMENTS:**
Shoreline consists of moderately steep, fractured bedrock often with recent debris, angular boulders/ch. A few small areas of fine sediment. Oil occurs in a wide band 4 to 15 m
- ch. ch. etc. 2 docs are boulders. Petrol is ap estimated
- and small areas of 15 m in oil sheen.
- Also many thin slicks are seen.
MYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4
SEGMENT # MRO01
SUBDIVISION A
SEA STATE Calm
DATE/TIME May 12, 1991 1619 - 1639
TIDAL HEIGHT (Range) +5.5 => +4.8
BIOLeGST JIM BARRY
WIND SPEED/DIRECTION Calm

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

This short subdivision is located on a protected shore. The shore varies from steep sloped bedrock outcrops to medium sloped boulder and cobble shores. Several types of oil categories were present along this shore.

The biota vary from very sparse or absent in the extreme upper zones to a fairly dense cover of Fucus, barnacles, and other species in the middle zone. The tide was not particularly low during the survey and the low intertidal zone was not observed. The distribution of biota was similar along the entire subdivision.

Location I - (A1 - A4
This site area, with patchy asphalt and HSOR. Some biota are present directly upon the oil. These include filamentous green algae (Urospora ?), occasional limpets and littorine snails, as well as a few juvenile barnacles. Even still, there is little biota at the upper extent of the oiled area, due to its position in the high tidal range. Near the lower part of the upper intertidal zone, the oiling is less apparent, but present. At this location the oiled sites also have similar biota as described above, but in somewhat higher densities. Fucus is sparse in this slightly lower zone.

Biota at tidal levels below, but near the oiled area are denser than in the upper intertidal. The middle zone has sparse to moderate cover of Fucus, with young mussels found attached under the Fucus cover, either to bedrock or Fucus. Barnacles (Balanus) are moderately to sparsely abundant within the Fucus zone, and somewhat more abundant on bedrock outcrops where Fucus is not present. Branched red algae (Endocladia or Gigartina

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
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<td>Gulls/Kittiwakes</td>
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<td>Shorebirds</td>
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</tr>
<tr>
<td>Corvids</td>
<td></td>
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<tr>
<td>Other Birds</td>
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<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS</th>
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<td>Pinnipeds (specify)</td>
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<tr>
<td>Whales (specify)</td>
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</table>

Shoreline subdivision map showing important biological features attached.
sp.) are abundant in a zone slightly above the mussels zone, with moderate to dense abundance of littorine snails and limpets.

Biota

Tide Level: Supratidal High Medium Low Subtidal

Black Lichen
Green Algae (Urospora)
Barnacles (sparse)
Fucus
Littorines/limpets
Mussels
Brown Algae
Red Algae

Oiled Areas

Clean up activities on this beach, if performed, will have a nearly negligible impact on the present biota, unless methods more invasive or toxic than manual cleanup are used.

Common Species Observed or Expected at MR001-A

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Nereocystis leutkeana, Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Anfelta plicata, Bossiella sp., Calliarthon sp., Corallina sp., Cryptosiphonia woodii, Endocladia muricata, Haloasscion glandiforme, Iridae sp., Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants
   Zostera marina (eel grass), Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera
   Halichondria sp., Halichondria panicea, Ophlitaspongia pennata, Tethys sp.
2. Anemones
   Anthopleura artemesia, Epiactis ritteri, Metridium senile, Urticina crassicornis
3. Hydras - Sertulariidae - Sertularella?
4. Flatworms - Platyhelminthes - Polyclads
5. Nematode Worms - Ribbon Worms - Emplectonema gracile
6. Polychaete worms
   Glyceridae
   Nepthyidae
   Nereidae - Nereis spp.
   Serpolidae - Serpula sp., Eudistyli polimorpha
   Spriorbidae - Spirobranchus sp.
7. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs - Hemigrapsus oregonensis, Paguridae (hermit crabs),
   d. Isopods - Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
11. Mollusca
   a. Chitons
      Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata.
   b. Snails - Gastropods
      Littorina sp., Natica clausa, N. lima
   c. Limpets
      Acmaea mitra, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
   e. Mussels and Clams
      Chlamys hastata, Modiolus modiolus, Mytilus edulis, Pododesmus cepio, Prototheca staminea

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Leptasterias hexactis, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.,
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
    Stichaeidae - Xiphister atropurpureus, X. mucosus
1991 MAYSAP EVALUATION

SEGMENT: MR 001  SUB: C  REGION: KEN  SURVEY DATE: 5/12/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: ___________________________ Date: __________________

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
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<tr>
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Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other ___________________
Other ___________________

COMMENTS:

INITIAL: _______________________________ 

TAG: ___________________________________

FOSC: ___________________________________

TAG APPROVAL DATE: ___________  FOSC APPROVAL DATE: ___________

ADEC__________________________  FOSC ____________________________

EXXON________________________

USCG________________________

NOAA________________________
MAYSAP FIELD SHORELINE COMMENT SHEET

TEAM NO. 4 SEGMENT MR-1 SUBDIVISION C DATE 5/1/91

ADEC
NAME Clara E. Crosby  SIGNATURE Clara E. Crosby

☐ NTR ☑ TREATMENT RECOMMENDED.

Ms - Suggest removal - manual - using shovels; puppoms.
The landmanagers comments pertaining to crew size are applicable.

EXXON
NAME George P. Stiles  SIGNATURE George P. Stiles 5/4/91

☑ NTR The oil remaining has a patchy distribution. The
ms is located around the edges of the large boulders
and in the bedrock cracks. Travels will be required
to recover the remaining ms. The actual percent recovery
will be low due to the size of the boulders (cosmetic).

LANDMANAGER
NAME Michael D. Betoon OF NPS  SIGNATURE Michael D. Betoon

☐ NTR Oil in this subdivision is sparsely distributed. There is
some pooled mousse in crevices that is recoverable with a
travel; however I do not feel that an entire crew is
warranted for work at This site. The pockets of recoverable
oil are few and far between.

USCG/NOAA
NAME 2802-L. Mc-MH HN  SIGNATURE L. Mc-MH HN

☑ NTR Very little in segment. VEOO crew picked up 1p available 1p 1p.

NOAA / Donald A. MacDonald - for Donald A. Mac Donald
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. J001

BIO. Jim Berry

LANDMANAGER. John Meadors

USCG/NOAA John V. Blakes

DATE May 12, 1991

TIME 17:17 to 17:56

TIDE LEVEL +3.4 ft. to +2.4 ft.

ENERGY LEVEL: L M H

SURVEYED FROM: FOOT BOAT HELO

WEATHER: RAIN FOG CLOUDS SUN

TOTAL LENGTH SHORELINE SURVEYED: 872 m

NEAR SHORE SHEEN: XB BR RB SL X

EST. OIL CATEGORY LENGTH: W - m M 13 m N - m VL 100 m NO 459 m US - m

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<tr>
<th>L O</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT SLOPE</th>
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DISTRIBUTION: C = 91-100%; B = 51-90%; P = 11-50%; S = 1-10%; T = <1%

SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE

PHOTO ROLL # MAYSAP

FRAMES

<table>
<thead>
<tr>
<th>PIT</th>
<th>PIT NO.</th>
<th>DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN Below</th>
<th>H2O SHEEN</th>
<th>OIL COLOR</th>
<th>FIT ZONE</th>
<th>SUBSURFACE SEDIMENTS</th>
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</table>

SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

OG COMMENTS: See map.

REVISED CD 13 MA
OG Sketch Map

MR 031 C
D. J. Semple
MAY 12, 1971
1717 R - 1756 P.

Legend

1 Step bedrock
2 Step bedrock
occasional angular
boulders 1 cu
3 Step vegetated
limicoid

MS in fracture and
trace of large boulders

A1

CV MS { 3 x 8 } 15%

CV MS 3 x 5

CV MS 3 x 5

CV MS plating
30 cm dia

1953 Outset
30 cm dia

A2

CV MS plating
30 cm dia

C l } 2 x 400

A3

CV MS plating
30 cm dia

Step bedrock shingle, sometimes with angular
boulders, cobble and short helix.

Notes:

Aaron stream not to scale. Average tidal width 20 m.

REVIEWED by: W. A. J. W.
**MAYSAP BIOLOGICAL SUMMARY FORM**

<table>
<thead>
<tr>
<th>TEAM #</th>
<th>SEGMENT #</th>
<th>SUBDIVISION</th>
<th>DATE/TIME</th>
<th>TIDAL HEIGHT (Range)</th>
<th>BIOLOGIST</th>
<th>WIND SPEED/DIRECTION</th>
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<tr>
<td>4</td>
<td>MR001</td>
<td>C</td>
<td>May 12, 1991 1721 - 1800</td>
<td>+3.4 =&gt; +2.4</td>
<td>Jim Barry</td>
<td>Calm</td>
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**COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS**

This subdivision is composed primarily of high angle bedrock outcrops and cliffs, and boulder beaches. The biota are similar to MR001-A/B and are somewhat similar throughout the subdivision. The biota along this segment appear to be healthy. Most species show evidence of growth or recent recruitment.

Biota are generally scarce at the tidal level of the oiled areas. Black lichen is sparsely distributed in this zone, with scattered limpets and barnacles. Littorines and limpets are moderately abundant in the vicinity of the oil, and occasionally are directly on oil. Fucus also is found near the oiled areas, and in a few cases, juveniles can be found directly in contact with oil.

Below the level of the oiled substrata filamentous green algae are abundant in the middle to high zone. Barnacles are moderate to dense, with few to moderate abundances of juveniles. Mussels form dense patches within crevices, and are present as distinct mussel beds on a few of the exposed headlands or boulder outcrops. Juvenile mussels are abundant under the Fucus beds in the middle intertidal zone. Barnacles are dense in scattered patches from the high to low intertidal, and are otherwise moderately abundant. Barnacle spat are not abundant, but are present in the middle to lower intertidal zone. The lowest intertidal was underwater during the survey, but is dominated by red and brown algae. Bull kelp is present in the subtidal at several locations along the subdivision.

Cleanup activities, if performed, will not adversely impact this intertidal zone. Hot water wash should not be used, so as to prevent disturbance to the Fucus beds.

(continued)

**WILDLIFE OBSERVATIONS - Completed on all subdivisions**

<table>
<thead>
<tr>
<th>BIRDS</th>
<th>NO. OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
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<tr>
<td>Eagles</td>
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<td>Waterfowl</td>
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<td>Gulls/Kittiwakes</td>
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<td>Shorebirds</td>
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<td>Corvids</td>
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<td>Other Birds</td>
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**FISH OBSERVED**

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**MARINE MAMMALS**

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<td>Whales (specify)</td>
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**LAND MAMMALS**

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<th>SPECIES</th>
<th>NO. OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>River Otter</td>
<td>1</td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
### Biota Tide Level: Supratidal High Medium Low Subtidal

<table>
<thead>
<tr>
<th>Black Lichen</th>
<th>Green Algae (Urospora)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+ + + + + + + + + + +</td>
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</table>

<table>
<thead>
<tr>
<th>Barnacles (sparse)</th>
<th>Fucus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Littorines/limpets</th>
<th>Mussels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Brown Algae</th>
<th>Red Algae</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+ + + + + + + + + + + +</td>
</tr>
</tbody>
</table>

### Common Species Observed or Expected at MROI-1-B

### A. Marine Plants

1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   - Cladophora sp., Enteromorpha sp., Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   - Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Nereocystis leutkeana, Ralfsia sp., Sycosiphon lomentaria
4. Red Algae - Rhodophyta
   - Anfelia plicata, Bossiella sp., Calliarthon sp., Corallina sp., Cryptosiphonia woodii, Endocladia muriatica, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants
   - Zostera marina (eel grass), Leymus mollis (beach rye grass)

### II. Marine Animals

1. Sponges - Porifera
   - Halichondria sp., Halichondria panicea, Ophlitaspongia pennata, Tethys sp.
2. Anemones
   - Anthopleura artemesia, Epiactis ritteri, Metridium senile, Urticina crassicornis
3. Hydroids - Sertularidae - Sertularella?
4. Flatworms - Platelmintes - Polyclads
5. Nemertean Worms - Ribbon Worms - Emplectonema gracile
6. Polychaete worms
   - Glycygeridae
   - Nephthyidae
   - Nereidae - Nereis spp.
   - Serpulidae - Serpula sp., Eudistylia polymorpha
   - Spirobidae - Spirorbis sp.
7. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles
   - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
   - Hemigrapsus oregonensis, Paguridae (hermit crabs),
   d. Isopods - Idotea wosnesenskii, Gnorimorsphaera oregonensis
8. Mollusca
   a. Chitons
   - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata,
   b. Snails - Gastropods
Littorina sp., Natica clausa, N. lima

c. Limpets
   Acmaea mitra, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites

e. Mussels and Clams
   Chlamys hastata, Modiolus modiolus, Mytilus edulis, Pododesmus cepio, Prototheca staminea

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Leptasterias hexactis, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians - Euptacta sp.,
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Stichaeidae - Xiphister atropurpureus, X. mucosus
Scattered boulders & littorines, sparse to moderate filamentous green algae near oil.
Lower Zones: Fucus abundant to absent in mid to low shore. Mytilus patchy between boulders & in crevices. Low Zones with red & brown algae.
This is a healthy intertidal zone. Recruitment is evident, in varying degrees, for most species.
1991 MAYSAP EVALUATION

SEGMENT: MR 001  SUB: B  REGION: KEN  SURVEY DATE: 5/12/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: ___________________________ Date: ____________________

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N)  N  INITIAL  TAG  FOSC
Manual Pickup (Check as Req.)  ______  ______  ______
Spot Washing  ______  ______  ______
Bio-Customblen Only  ______  ______  ______
Bio-Inipol/Customblen  ______  ______  ______
Other  ______________________  ______  ______
Other  ________________________  ______  ______

COMMENTS:
INITIAL: ____________________________________________

TAG: ______________________________________________

FOSC: _____________________________________________

TAG APPROVAL DATE: ___________  FOSC APPROVAL DATE: ___________

ADEC ____________________________________________
EXXON __________________________________________
USCG _____________________________________________
NOAA ____________________________________________
ADEC
NAME: Clara S. Crosby
SIGNATURE: Clara S. Crosby

NTR
Along within this Subdivision would be very
difficult to recover - [as was of 9g, 7b, & cv. cr. sf.]

EXXON
NAME: George B. Stiles
SIGNATURE: George B. Stiles

NTR
The oil remaining has a patchy to slash distribution.
The MS is located around the sheltered edges of
boulders and in bed rock cracks. Recovery would be
very low with towels (cosmetic).

LANDMANAGER
NAME: Michael O. Tetreau OF NPS
SIGNATURE: Michael O. Tetreau

NTR
There is still mousse remaining in the interstitial spaces
in the area adjacent to subdivision A, however this oil
would be extremely difficult to recover. It is weathering
very slowly. On the rocky point where most of the treatment
was concentrated, there is very little oil remaining. The treatment
in 1990 was very effective in removing the deeply pooled mousse
at this site.

USCG/NOAA
NAME: CW2 J. M. McCaughan
SIGNATURE: J. M. McCaughan

NTR
Very dispersed distribution in a around 9g
trifleders! Some cleared up by Vogel crew.
Not seen as environmentally or economica
to continue- get type A check-up.

[Handwritten note: Down A. McQuade]
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 4
OG: Jim Smith
ADEC: Clara Crosby
SEGMENT: MR 801

BIO: J. Berry
SUBDIVISION: B

LANDMANAGER: John Headstler
USCG/NOAA: John McMahon

DATE: July 19, 1991

TIME: 16:40 to 17:10
TIDE LEVEL: 4.8 ft. to 3.7 ft.
ENERGY LEVEL: H [M] [L]

SURVEYED FROM: [ ] FOOT [ ] BOAT [ ] HELO
WEATHER: [ ] SUN [ ] CLOUDS [ ] FOG [ ] RAIN [ ] SNOW

TOTAL LENGTH SHORELINE SURVEYED: 414 m
NEAR SHORE SHEEN: [ ] BR [ ] RB [ ] SL [ ] NONE

EST. OIL CATEGORY LENGTH:

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT TYPE</th>
<th>SHORE SLOPE</th>
<th>AREA WIDTH</th>
<th>AREA LENGTH</th>
<th>ZONE S</th>
<th>UI</th>
<th>MI</th>
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</tbody>
</table>

DISTRIBUTION: C = 01-100%; B = 11-90%; P = 11-60%; S = 1-10%; T = <1%
SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE
PHOTO ROLL: MAYSAP-4-2-7 FRAMES

OG COMMENTS:

See map.
OG Sketch Map
MA-001-B
May 12/93
1649 - 1710

Legend
1) Bedrock
2) Boulder Field
3) Vegetation

Step:

MAY 98

Step Bedrock incised zone grading
into talus of large angular boulders to the
S.W. C1 & C2 small on bedrock and boulder
surfaces, also small (<50 cm) in fractures and sheltered
depressions.

Note width of lines not to scale. Allowing width of incised
10 m.

Reviewed 6-16-93
REVISED 5.22.94
REVIEWED (D 10 MAY)
This subdivision is composed primarily of high angle bedrock outcrops and cliffs, and boulder beaches. The biota are similar to MR001-A and are not particularly variable along the subdivision. Oiled locations throughout the segment are found in the upper intertidal zone. The biota along this segment appear to be healthy. Most species show evidence of growth or recent recruitment. No evidence of recent oil-related impacts are evident.

Biota are generally scarce at the tidal level of the oiled areas. Black lichen is sparsely distributed in this zone, and scattered limpets and barnacles are present. Littorines are moderately abundant in the vicinity of the oil, and, like limpets, are occasionally found directly on the oil. Fucus also is found near the oiled areas, and in a few cases, juveniles can be found directly in contact with oil.

Below the level of the oiling, the typical zonation continues. Filamentous green algae are abundant in the middle to high zone. Barnacles are moderate to dense, with few to moderate abundances of juveniles. Mussels form dense patches within crevices, and are present as distinct mussel beds on a few of the exposed headlands or boulder outcrops. Juvenile mussels are abundant under the Fucus beds in the middle intertidal zone. Barnacles are dense in scattered patches from the high to low intertidal, and are otherwise moderately abundant. Barnacle spat are not abundant, but are present in the middle to lower intertidal zone. The lowest intertidal was underwater during the survey, but is dominated by red and brown algae. Bull kelp is present in the subtidal at the western end of the subdivision.

Cleanup activities, if performed, will not adversely impact this intertidal zone. Hot water wash should not be used, so as to prevent disturbance to the Fucus beds.

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
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<tr>
<td>Eagles</td>
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<td>Seabirds</td>
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<td>Corvids</td>
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<td></td>
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<tr>
<td>Other Birds</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>LAND MAMMALS</th>
<th># OBSERVED</th>
<th>SPECIES</th>
<th># OBSERVED</th>
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<tbody>
<tr>
<td>Sea Otters</td>
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<td>River Otter</td>
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</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
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</tbody>
</table>

Shoreline subdivision map showing important biological features attached.

Reviewed 5/16 1991
Reviewed 5/31/91
Biota Tide Level: Supratidal High Medium Low Subtidal

Black Lichen
Green Algae (Urospora)
Barnacles (sparse)
Fucus
Littorines/limpets
Mussels
Brown Algae
Red Algae

Oiled Areas

Common Species Observed or Expected at MRO01-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Nereocystis leutkeana,
   Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Anfelia plicata, Bossiella sp., Calliarthron sp., Corallina sp.,
   Cryptosiphonia woodii, Endocladia muricata, Halosaccion glandiforme, Iridaea
   sp., Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria
   palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants
   Zostera marina (eel grass), Leymus mollis (beach rye grass)

B. Marine Animals
1. Sponges - Porifera
   Halichondria sp., Halichondria panicea, Ophlitaspongeia pennata, Tethys sp.
2. Anemones
   Anthopleura artemesia, Epiactis ritteri, Metridium senile, Urticina
   crassicornis
3. Hydroids - Sertulariidae - Sertulella?
4. Flatworms - Platytelminthes - Polyclads
5. Nemertean Worms - Ribbon Worms - Emplectonemella gracile
6. Polynoid worms
7. Echiuridae
8. Spinoidea - Nereis spp.
9. Serpulidae - Serpula sp., Eudistylia polymorpha
10. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
   d. Isopods - Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
11. Mollusca
   a. Chitons
   b. Snails - Gastropods
Littorina sp. Natica clausa, N. lima

c. Limpets
   Acmaea mitra, Lottia digitalis, L. persona, Tectura fenestrata, T.
   persona, T. scutum. Siphonaria thersites

e. Mussels and Clams
   Chlamys hastata, Modiolus modiolus, Mytilus edulis, Pododesmus cepio,
   Prototheca staminea

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Leptasterias hexactis, Pisaster ochraceus,
      Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.,
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Stichaeidae - Xiphister atropurpureus, X. mucosus
Filamentous green & brown algae, sparsely distributed around oil. Some black lighter.

Scattered Litorinae limpets on oil. Lower zones partially overlap oiled areas, with Fucus becoming abundant in the mid-shore. Mytilus is present & in crevices & under the Fucus as juveniles & small adults. Lower zone dominated by red/brown algae. This is a healthy intertidal community.
1991 MAYSAP EVALUATION

SEGMENT: MR 001  SUB: C  REGION: KEN  SURVEY DATE: 5/12/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: Rachel Date: 5/34/91

RECOMMENDATIONS:
TREATMENT REQUIRED (Y or N) N N Y

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblend Only
Bio-Inipol/Customblend
Other

COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: MAY 24 1991  FOssc APPROVAL DATE: 5/29/91

ADEC

EXXON

USCG

NOAA

E. E. PAGE, COR, USCG
CHIEF OF STAFF, FOSC
**MAYSAP FIELD SHORELINE COMMENT SHEET**

| TEAM NO. | 4 |
| SEGMENT | MR-1 |
| SUBDIVISION | C |
| DATE | 5/12/91 |

### ADEC

**Name:** Clara E. Crosby  
**Signature:** Clara E. Crosby

- [ ] NTR  
- [ ] Treatment recommended

**MS - Suggest removal - manual using trowels, pumps. The landmanagers comments pertaining to crew size are applicable.**

### EXXON

**Name:** George L. Stiles  
**Signature:** George L. Stiles 5/4/91

- [x] NTR

**The oil remaining has a patchy distribution. The ms is located around the edges of the large boulders and in the bedrock cracks. Trowels will be required to recover the remaining ms. The actual percent recovery will be low due to the size of the boulders (cosmetic).**

### LANDMANAGER

**Name:** Michael D. Tetreau of NPS  
**Signature:** Michael D. Tetreau

- [ ] NTR

**Oil in this subdivision is sparsely distributed. There is some pooled mousse in crevices that is recoverable with a trowel; however I do not feel that an entire crew is warranted for work at this site. The pockets of recoverable oil are few and far between.**

### USCG/NOAA

**Name:** Capt. J. MaHale  
**Signature:** Capt. J. MaHale

- [x] NTR

**Very little in segment, VECO crew picked up available TF/AP.**

- **NOAA/Dr. Donald A. McDonald**  
- **Signature:** Donald A. McDonald
**MAYSAP SHORELINE OILING SUMMARY**

SEGMENT: MR 801

DATE: MAY 12, 1991

TIME: 17:17 to 17:56

TIDE LEVEL: +3.4 ft. to +2.4 ft.

ENERGY LEVEL: [ ] H [ ] M [ ] L

SURVEYED FROM: [ ] FOOT [ ] BOAT [ ] HELO

WEATHER: [ ] SUN [ ] CLOUDS [ ] FOG [ ] RAIN [ ] SNOW

TOTAL LENGTH SHORELINE SURVEYED: 872 m

NEAR SHORE SHEEN: [ ] BR [ ] RB [ ] SL [ ] NONE

EST. OIL CATEGORY LENGTH: W: - m M: 13 m N: - m V: 40 m US: 459 m

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<tr>
<th>L</th>
<th>OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>AREA</th>
<th>NOTES</th>
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<tr>
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<td>AP</td>
<td>MS</td>
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<tr>
<td>A3</td>
<td>P</td>
<td>P</td>
<td>P</td>
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</tr>
</tbody>
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DISTRIBUTION: C = 91-100%; B = 81-90%; P = 71-80%; S = 61-70%; T = 51-60%

SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE

PHOTO POLL # MAYSAP-

FRAMES

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<table>
<thead>
<tr>
<th>PIT</th>
<th>NO.</th>
<th>DEPTH</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN BELOW</th>
<th>H2O LEVEL</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE-SUBSURFACE SEDIMENTS</th>
<th>NOTES</th>
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</thead>
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</tbody>
</table>

SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

---

OG COMMENTS:

"See map.

---

REvised on: 18 May 1991

REvised by: KG
Steep bedrock slope, sometimes with angular boulders/cobbles very short falls.

Note: Aaundur distance not to scale. Average inturalil width: 20 m
This subdivision is composed primarily of high angle bedrock outcrops and cliffs, and boulder beaches. The biota are similar to MR001-A/B and are somewhat similar throughout the subdivision. The biota along this segment appear to be healthy. Most species show evidence of growth or recent recruitment.

Biota are generally scarce at the tidal level of the oiled areas. Black lichen is sparsely distributed in this zone, with scattered limpets and barnacles. Littorines and limpets are moderately abundant in the vicinity of the oil, and occasionally are directly on oil. Fucus also is found near the oiled areas, and in a few cases, juveniles can be found directly in contact with oil.

Below the level of the oiled substrata filamentous green algae are abundant in the middle to high zone. Barnacles are moderate to dense, with few to moderate abundances of juveniles. Mussels form dense patches within crevices, and are present as distinct mussel beds on a few of the exposed headlands or boulder outcrops. Juvenile mussels are abundant under the Fucus beds in the middle intertidal zone. Barnacles are dense in scattered patches from the high to low intertidal, and are otherwise moderately abundant. Barnacle spat are not abundant, but are present in the middle to lower intertidal zone. The lowest intertidal was underwater during the survey, but is dominated by red and brown algae. Bull kelp is present in the subtidal at several locations along the subdivision.

Cleanup activities, if performed, will not adversely impact this intertidal zone. Hot water wash should not be used, so as to prevent disturbance to the Fucus beds.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
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<tr>
<td>Seabirds</td>
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<td>Gulls/Kittiwakes</td>
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<tr>
<td>Corvids</td>
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<tr>
<td>Other Birds</td>
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<tr>
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<th>LAND MAMMALS</th>
<th>SPECIES</th>
<th># OBSERVED</th>
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<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td>River Otter</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
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<tr>
<td>Whales (specify)</td>
<td></td>
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</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
MRO01-A  Biology Report, continued

Biota  Tide Level: Supratidal  High  Medium  Low  Subtidal

Black Lichen  
Green Algae (Urospora) 
Barnacles (sparse)  
Fucus  
Littorines/limpets  
Mussels  
Brown Algae  
Red Algae  

Oiled Areas

Common Species Observed or Expected at MRO01-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Nereocystis leutkeana, Ralsfia sp., Sycosiphon lomentaria
4. Red Algae - Rhodophyta
   Anfeltia plicata, Bossiella sp., Calliarthron sp., Corallina sp., Cryptosiphonia woodii, Endocladiad mucicarta, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoperta dimorpha, Odonthalia floccosa, Palmaria palmata, Petiothelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants
   Zostera marina (eel grass), Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera
   Halichondria sp., Halichondria panicea, Ophlitaspongia pennata, Tethys sp.
2. Anemones
   Anthopleura artemesia, Epiactis ritterii, Metridium senile, Urticina crassicornis
3. Hydroids - Sertularidae - Sertularella?
4. Flatworms - Platylminthes - Polyclads
5. Nemertean Worms - Ribbon Worms - Emplectonema gracile
6. Polychaete worms
   Glyceridae
   Nephthyidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Eudistylia polymorpha
   Spiorbidae - Spiorbis sp.
10. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
   Hemigrapsus oregonensis, Paguridae (hermit crabs),
   d. Isopods - Idotea wosnesenskii, Onorimorphaera oregonensis
11. Mollusca
   a. Chitons
      Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata,
      Tonicella lineata,
   b. Snails - Gastropods

Reviewed M. I. S. H. M.
Littorina sp., Natica clausa, N. lima

c. Limpets
   Acmaea mitra, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites

e. Mussels and Clams
   Chlamys hastata, Modiolus modiolus, Mytilus edulis, Pododesmus cepio, Prototheca stamnea

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Leptasterias hexactis, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.,
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Stichaeidae - Xiphister atropurpureus, X. mucosus
c. A1, A2, A3:

Scattered barnacles + limpetines, sparse to. Moderate filamentous green algae near oil. 

Lower zones: focus abundant to sparse in mid to low shore. Mytilus patchy between boulders & in crevices. low 

Zones with red + brown algae. 

This is a healthy intertidal zone. 

Recruitment is evident in varying 

diseases, for most species.
1991 MAYSAP EVALUATION

SEGMENT: MR 001  SUB: A  REGION: KEN  SURVEY DATE: 5/12/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: [Signature] Date: 5/24/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N) N N

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other

COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: MAY 24 1991  FOSC APPROVAL DATE: 7/29/91

ADEC  FOSC
EXXON
USCG
NOAA
MAYSAP FIELD SHORELINE COMMENT SHEET

TEAM NO. 4 SEGMENT MR-1 SUBDIVISION A DATE 1/1/91

ADEC NAME George K. Crosby SIGNATURE George K. Crosby

☐ NTR ☑ Treatment Recommended

Manual removal of Asphalt & MSS. The asphalt is fairly well defined & easily removed. There are areas where the asphalt has been covered by a thin layer (2 cm) of Clean Sediment - depth of pile is ~5cm. Figs #1. These 'piles' should be followed & removed.

The survey was hampered slightly by the sensitivity of the area & there is the possibility of more debris/objects on site than was actually documented in this survey.

EXXON
NAME George S. Shives SIGNATURE George S. Shives 1/14/91

☐ NTR ☐ The 10 team members & 2 archeologists I feel adequately recorded the remaining subsurface and surface oiling. The MSS, CV, VCT has a patchy distribution. The moose is located around edges of boulders and in bed rock crevices. The Asphalt, tar mat is well defined. Any work in this area will be very time consuming due to the constraints.

LANDMANAGER
NAME Michael D. Tetreau OF NPS SIGNATURE Michael D. Tetreau

☐ NTR ☑ The distribution of oil is the same as in 1990 however the amount of oil present is much less. The only recoverable oil remaining is in the area of the asphalt/tar mat where some patches were missed in 1990 and some SOR has reform into asphalt just below the surface sediments. The treatment in 1990 appears to have been very effective in removing the pooled oil from the crevices.

USCG/NOAA
NAME J. McMahon SIGNATURE J. McMahon

☐ NTR ☑ very specialized distribution of TR + AP. Much taken off the segments by bozo crew.

NOAA/Donald A. Macdonald
Some asphalt left in place Donald A. Macdonald
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO.:** 4  
**OG:** C. Simpson  
**BIO:** J. Barry  
**ADEC:** Clara Crosby  
**LANDMANAGER:** John Hardister  
**USCG/NOAA:** George J. Stiles  
**EXXON:** John McMechan

**DATE:** May 13, 1991

**TIME:** 16:07 to 16:48  
**TIDE LEVEL:** +5.5 ft to 1.8 ft  
**ENERGY LEVEL:** [X] H [X] M [ ] L  
**SURVEYED FROM:** [ ] FOOT [ ] BOAT [ ] HELO  
**WEATHER:** [ ] SUN [ ] CLOUDS [ ] FOG [ ] RAIN [ ] SNOW

**TOTAL LENGTH SHORELINE SURVEYED:** 960 m

**NEAR SHORE SHEEN:** [ ] BR [ ] RB [ ] SL [ ] NONE

**EST. OIL CATEGORY LENGTH:**
- [W] m
- [M] 60 m
- [N] m
- [V] m
- [L] m
- [U] m
- [S] m

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**DISTRIBUTION:** C = 81-100%; B = 51-90%; P = 11-50%; S = 1-10%; T = <1%

**SLOPE:** V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE

**PHOTO ROLL # MAYSAP-**__-__

**FRAMES**

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**SHEEN COLOR:** B = BROWN; R = RAINBOW; S = SILVER; N = NONE

**OG COMMENTS:** Shoreline consists of moderately steep, fractured bedrock often with locally derived angular boulders/CL. A few small areas of fine sediments. Oil occurs in a wide band 4 to 15 m of CL, CV, on bedrock and boulders. Patch of Ap estimated 4.5 m and small areas of 178 in rock fractures. Also many trenches are present.
Note: width of intertidal zone not at scale. Average width of intertidal 15.3m.
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4   DATE/TIME  May 12, 1991  1619 - 1639
SEGMENT # N001   TIDAL HEIGHT (Range) +5.5 => +4.8
SUBDIVISION A   BIOLOGIST  JIM BARRY
SEA STATE Calm   WIND SPEED/DIRECTION Calm

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

This short subdivision is located on a protected shore. The shore varies from steep sloped bedrock outcrops to medium sloped boulder and cobble shores. Several types of oil categories were present along this shore.

The biota vary from very sparse or absent in the extreme upper zones to a fairly dense cover of Fucus, barnacles, and other species in the middle zone. The tide was not particularly low during the survey and the low intertidal zone was not observed. The distribution of biota was similar along the entire subdivision.

Location I - (A1 - A4)

This site, area, with patchy asphalt and HSOR. Some biota are present directly upon the oil. These include filamentous green algae (Urospora ?), occasional limpets and littorine snails, as well as a few juvenile barnacles. Even still, there is little biota at the upper extent of the oiled area, due to its position in the high tidal range. Near the lower part of the upper intertidal zone, the oiling is less apparent, but present. At this location the oiled sites also have similar biota as described above, but in somewhat higher densities. Fucus is sparse in this slightly lower zone.

Biota at tidal levels below, but near the oiled area are denser than in the upper intertidal. The middle zone has sparse to moderate cover of Fucus, with young mussels found attached under the Fucus cover, either to bedrock or Fucus. Barnacles (Balanus) are moderately to sparsely abundant within the Fucus zone, and somewhat more abundant on bedrock outcrops where Fucus is not present. Branched red algae (Endocladia or Gigartina)

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

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<th>BIRDS</th>
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<td>Whales (specify)</td>
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Shoreline subdivision map showing important biological features attached.
sp.? are abundant in a zone slightly above the mussels zone, with moderate to dense abundance of littorine snails and limpets.

Biota

Tide Level: Supratidal High Medium Low Subtidal

Black Lichen
Green Algae (Urospora)
Barnacles (sparse)
Fucus
Littorines/limpets
Mussels
Brown Algae
Red Algae

Clean up activities on this beach, if performed, will have a nearly negligible impact on the present biota, unless methods more invasive or toxic than manual cleanup are used.

Common Species Observed or Expected at MR001-A

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Nereocystis leutkeana, Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Anfeltia plicata, Bossiella sp., Calliarthron sp., Corallina sp., Cryptosiphonia woodii, Endocladia muricata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants
   Zostera marina (eel grass), Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera
   Halichondria sp., Halichondria panicea, Ophlitaspongia pennata, Tethys sp.
2. Anemones
   Anthopleura artemesia, Epiactis ritteri, Metridium senile, Urticina crassicornis
3. Hydrojets - Sertulariidae - Sertularella?
4. Flatworms - Platyhelminthes - Polyclads
5. Nemertean Worms - Ribbon Worms - Emplectonema gracile
6. Polychaete worms
   Glyceridae
   Nephyidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Eudistylia polymorpha
   Spionidae - Spirobranchus sp.
7. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
   Hemigrapsus oregonensis, Paguridae (hermit crabs),
   d. Isopods - Idotea wosnesenskii, Gnorimosphaeroma oregonensis

Reviews M. B. 5/2/84
11. Mollusca
   a. Chitons
      Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata,
      Tonicella lineata.
   b. Snails - Gastropods
      Littorina sp. Natica clausa, N. lima
   c. Limpets
      Acmaea mitra, Lottia digitalis, L. persona, Tectura fenestrata, T.
      persona, T. scutum, Siphonaria thersites
   e. Mussels and Clams
      Chlamys hastata, Modiolus modiolus, Mytilus edulis, Pododesmus cepio,
      Prototheca staminea

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Leptasterias hexactis, Pisaster ochraceus,
      Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.,
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
    Stichaeidae - Xiphister atropurpureus, X. mucosus
Bio Sketch Map
MR001-A
J.P. Barry
12 May 1991
1607 - 1648h

Dead trees
Bedrock
Vegetated Backshore
Angular boulders
Cb/bol/bol

A - Salum throughout Sublittoral
High you near oil
At tidal area - Filamentous
green algae, limpets, hollow tooth
juvenile barnacles. (High you
Slightly lower - Sparse fish
barnacles, limpets, anemones

Sub Tidal Zone
> Laminar Break 0.6d
1991 MAYSAP EVALUATION

SEGMENT: MR 001 SUB: C REGION: KEN SURVEY DATE: 5/12/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: Rachel Date: 5/24/91

RECOMMENDATIONS:

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<th>TREATMENT REQUIRED (Y or N)</th>
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<td>N</td>
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Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other

COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: MAY 24 1991
FOSC APPROVAL DATE: 5/29/91

ADEC
EXXON
USCG
NOAA

E. E. PAGE, CDR, USCG CHIEF OF STAFF, FOSC
MAYSAP FIELD SHORELINE COMMENT SHEET

TEAM NO. 4  SEGMENT MR-1  SUBDIVISION C  DATE 5/12/91

ADEC
NAME  Clara S. Crosby  SIGNATURE  Clara S. Crosby

[ ] NTR  [ ] TREATMENT RECOMMENDED

ms - Suggest removal - manual - using trowels, pumpons.

The landmanagers comments pertaining to crew size are applicable.

EXXON
NAME  George P. Stiles  SIGNATURE  George P. Stiles  5/14/91

[ ] NTR  [ ] The oil remaining has a patchy distribution. The

ms is located around the edges of the large boulders

and in the bedrock cracks. Tools will be required
to recover the remaining ms. The actual percent recovery

will be low due to the size of the boulders (Cosmetic).

LANDMANAGER
NAME  Michael D. Tetreau of NPS  SIGNATURE  Michael D. Tetreau

[ ] NTR  [ ] Oil in this subdivision is sparsely distributed. There is

some pooled mousse in crevices that is recoverable with a

towel, however I do not feel that an entire crew is

warranted for work at this site. The pockets of recoverable

oil are few and far between.

USCG/NOAA
NAME  W. J. McMillan  SIGNATURE  W. J. McMillan

[ ] NTR  [ ] 

very little in segment, VECO crew picked up available TR/AR.

NOAA  / Doreno A. MacDonald / 49
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO. 4**

**OG** J.M. Sample

**ADEC** Chera Crosby

**OXON** George P. Styles

**BIO** Jim Barry

**LANDMANAGER** John McDade for USFWS

**USCG/NOAA** John McMahon

**DATE** May 12, 1991

**SEGMENT** MRA01

**SUBDIVISION** C

**TIME** 17:17 to 17:55

**TIDE LEVEL** +3.4 ft. to +2.4 ft.

**ENERGY LEVEL:** □ H □ M □ L

**SURVEYED FROM:** □ FOOT □ BOAT □ HELO

**WEATHER:** □ SUN □ CLOUDS □ FOG □ RAIN □ SNOW

**TOTAL LENGTH SHORELINE SURVEYED:** 875 m

**NEAR SHORE SHEEN:** □ BR □ RB □ SL □ NONE

**EST. OIL CATEGORY LENGTH:** W — m M — 13 m N — m V — m 400 m NO — 459 m US — m

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**DISTRIBUTION:** C = 91-100%; B = 81-90%; P = 11-80%; S = 1-10%; T = <1%

**SLOPE:** V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE

**PHOTO ROLL:** MAYSAP-

**FRAMES**

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<th>H2O LEVEL</th>
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**SHEEN COLOR:** B = BROWN; R = RAINBOW; S = SILVER; N = NONE

**OG COMMENTS:**

See map.
Step bedrock shoreline, sometimes with angular boulders. Collapsing very short fallen.

Note: Anomaly distance not to scale. Average intertidal width: 20 m
This subdivision is composed primarily of high angle bedrock outcrops and cliffs, and boulder beaches. The biota are similar to MRO01-A/B and are somewhat similar throughout the subdivision. The biota along this segment appear to be healthy. Most species show evidence of growth or recent recruitment.

Biota are generally scarce at the tidal level of the oiled areas. Black lichen is sparsely distributed in this zone, with scattered limpets and barnacles. Littorines and limpets are moderately abundant in the vicinity of the oil, and occasionally are directly on oil. Fucus also is found near the oiled areas, and in a few cases, juveniles can be found directly in contact with oil.

Below the level of the oiled substrata filamentous green algae are abundant in the middle to high zone. Barnacles are moderate to dense, with few to moderate abundances of juveniles. Mussels form dense patches within crevices, and are present as distinct mussel beds on a few of the exposed headlands or boulder outcrops. Juvenile mussels are abundant under the Fucus beds in the middle intertidal zone. Barnacles are dense in scattered patches from the high to low intertidal, and are otherwise moderately abundant. Barnacle spat are not abundant, but are present in the middle to lower intertidal zone. The lowest intertidal was underwater during the survey, but is dominated by red and brown algae. Bull kelp is present in the subtidal at several locations along the subdivision.

Cleanup activities, if performed, will not adversely impact this intertidal zone. Hot water wash should not be used, so as to prevent disturbance to the Fucus beds.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
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<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
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</table>

Shoreline subdivision map showing important biological features attached.
Biota Tide Level: Supratidal High Medium Low Subtidal

Black Lichen

Green Algae (Urospora) ★★★★★★★★★★
Barnacles (sparse) + + + +
Fucus
Littorines/limpets - -+++ - + +
Mussels
Brown Algae
Red Algae

Oiled Areas ++ +

Common Species Observed or Expected at MR001-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Nereocystis leutkeana,
   Ralfsia sp., Sycosiphon lomentaria
4. Red Algae - Rhodophyta
   Anfelia plicata, Bossiella sp., Calliarthron sp., Corallina sp.,
   Cryptosiphonia woodii, Endocladium muricata, Halosaccion glandiforme, Iridaea
   sp., Lithothamnion sp., Membranoptera dinorpha, Odonthalia floccosa, Palmaria
   palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants
   Zostera marina (eel grass), Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera
   Halichondria sp., Halichondria panicea, Ophlitaspongia pennata, Tethys sp.
2. Anemones
   Anthopleura artemesia, Epiactis ritteri, Metridium senile, Urticina
   crassicornis
3. Hydroids - Sertulariidae - Sertularella?
4. Flatworms - Platyhelminthes - Polyclads
5. Nemerteans - Ribbon Worms - Emplectonema gracile
6. Polychaete worms
   Glyceridae - Nepthidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Eudistylia polymorpha
   Spiorbidae - Spiorbis sp.
7. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles
      Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
      Hemigrapsus oregonensis, Paguridae (hermit crabs),
   d. Isopods - Idotea wosnesenskii, Gonorrheora oregonensis
8. Mollusca
   a. Chitons
      Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata,
      Tonicella lineata,
   b. Snails - Gastropods
Littorina sp. Natica clausa, N. lima

c. Limpets
   Acmaea mitra, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites

e. Mussels and Clams
   Chlamys hastata, Modiolus modiolus, Mytilus edulis, Pododesmus cepio, Prototheca staminea

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Leptasterias hexactis, Pisaster ochraceus, Pycnopoida helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.,
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Stichaeidae - Xiphister atropurpureus, X. mucosus
10 Sketch Map
MR001-C
Jr Barry 12 May 91
17.17-17.56 P

Legend
1v3 Sleep breccia / Angela guild
I1 Vegetation

Scattered boulders & littorines, sparse to
moderate filamentous green algae near oil
Lower zones: Fucus abundant to sparse
in mid to low shore. Mytilus patches
between boulders & in crevices. Low
zones with red & brown algae.
This is a healthy intertidal zone.
Recruitment is evident in varying
degrees for most species.

Reviewed M.B. 5/16/91
ASAP TAG REVIEW SHEET

Segment: MRO001 Subd: A Site: 1 Date PRE-Review 17 Aug 90

Priority For Addressing In 1990

☐ HIGH ______ MEDIUM ______ LOW ______ NTR

Treatment Recommended:

SPOT WASH, M/P
POOL OIL, MOUSIE, SOR
LOW WAVE EXPERT

Priority Site For Reassessment In 1991

YES / NO YES / NO YES / NO YES / NO

CG _ ADEC _ EXXON _ LAND MGR _

TAG 22 AUG

Pickup pooled oil & equipment
w/ Audit 05 (MED)
ASAP FOLLOWUP RECOMMENDATIONS

Segment: AS/1181 Subd.: 13 Site: 1 Date: May 18, 1990

Conditions Observed: Puddle movie. Muddy/pump mouth up 4-6 feet. Thick oiling 80% of the segment.

Followup Recommendations: Pump the area manually for one hour to sort washing they did about linear ft. Also add short pump amount of oil this lady 10" which makes to be pumped.

Completed by Pickup Crew: [ ] YES [x] NO

Priority for Addressing in 1990: [x] High [ ] Mod. [ ] Low

ADEC John R. Reed

Comments: This area needs 3 or 4 days more work. Manual and spot washing should be most effective. Add resupply. As needed.

Exxon Joe Gueneli

Comments: Work is still going 07:45. I know we are not allowed.

USCG [x] Vandevels [ ] Vandevels

Comments: Recommend work + manual for this area.

Land Rep. Dave Wolfe

Comments: Concur W Exxon + Summary
SEGMENT AS 1 MR-1 SUBDIVISION: A SITE: 01 DATE 12 Aug 1990

SCG NAME AEC Vandepels SIGNATURE AEC Vandepels

YES ☐ NO PRIORITY SITE FOR REASSESSMENT IN 1991

ADEC NAME John R Reed SIGNATURE John R Reed

YES ☐ NO PRIORITY SITE FOR REASSESSMENT IN 1991
REASON: The entire segment is still covered with asphalt, mousse, coat, and cover. Could use more manual pit-up and hot water wash and reapplication of Customblen. This site needs worked in 1990 and reassed 1991.

LAND MANAGER NAME Dave Wolfe SIGNATURE Dave Wolfe

☑ YES ☐ NO PRIORITY SITE FOR REASSESSMENT IN 1991
REASON: Further hot wash with Flush & Pompon, preceded & followed by manual (by experienced manual crew), recommended.
See comments on MR-01-B.
Reassess in Spring '91.

EXXON NAME Jon Czarnecki SIGNATURE Jon Czarnecki

☑ YES ☐ NO PRIORITY SITE FOR REASSESSMENT IN 1991
REASON: The posted mouse on top and underlying the pitch surface needs to be checked 1991.
ASAP SHORELINE OILING SUMMARY

TEAM NO 04
OG K. M. Ary
ADEC Randy Reed
DATE 12/1Aug/90
TIME 04:50 09:05
TIDE LEVEL +5.5 -5'
TOTAL EST LENGTH OF SHORELINE SURVEYED: 260 m

SURVEYED FROM: Foot □ Boat □ Helo
WEATHER: ☀ Sun ☐ Clouds ☐ Fog ☐ Rain ☐ Snow
OIL CATEGORY LENGTH: W □ m M □ m N □ 260 m UL □ m NO □ m US □ m

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Photographs:
Roll-No. ASAP-04 - 5.
Frames  NONE

REVIEWED 8/14/90 Y/31

COMMENTS: Pure viscous mousse remains in cracks & in & under the rubble. The white granodiorite bedrock makes the oil much more visible than it would normally be on a darker substrate.
SEGMENT AS/ MR-1  SUBDIVISION:  A  SITE:  01  DATE:  12 Aug 1990

SCG  NAME:  AEC Vandepols  SIGNATURE:  AEC Vandepols

☐ YES  ☐ NO  PRIORITY SITE FOR REASSESSMENT IN 1991
REASON:  Entire segment is green coat/cover on or around cobble & boulder. Recommend hot wash + manual. Reassess in 91.

ADEC  NAME:  John R. Reed  SIGNATURE:  John R. Reed

☐ YES  ☐ NO  PRIORITY SITE FOR REASSESSMENT IN 1991
REASON:  The entire segment is still covered with asphalt, mousse, coat, and cover. Could use more manual pickup and hot water wash and reapplication of Customize. This site needs worked in 1990 and reassess 1991.

LAND MANAGER  NAME:  Dave Wolfe  SIGNATURE:  Dave Wolfe

☐ YES  ☐ NO  PRIORITY SITE FOR REASSESSMENT IN 1991
REASON:  Further hot wash with flush & pump, proceeded followed by manual (by experienced manual crew) recommended. See comments on MR-01-B. Reassess in Spring '91.

EXXON  NAME:  Jon Czarnecki  SIGNATURE:  Jon Czarnecki

☐ YES  ☐ NO  PRIORITY SITE FOR REASSESSMENT IN 1991
REASON:  The posted mousse on top and underlying the

REVISION NO. 7/26/90
ASAP SHORELINE OILING SUMMARY

TEAM NO. 04  EXXON J. Szarechki  SEGMENT AS. MK-1
OG  R. Martyn  USCG A.F.C. Vandenberg  SUBDIVISION A
ADEC  Randy Reed  LAND REP. Dave Wolfe  USGS  TOTAL NO. SITES 1
DATE 12 Aug. 90  TIME 09:45 to 09:05  TIDE LEVEL +5.5' to +5'
TOTAL EST LENGTH OF SHORELINE SURVEYED: 260 m
SURVEYED FROM: ☑ Foot ☐ Boat ☑ Helo  WEATHER: ☑ Sun ☐ Clouds ☐ Fog ☐ Rain ☐ Snow
OIL CATEGORY LENGTH: W m M m N 260 m VL m NO m US m

SURFACE OIL  

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EST. SITE LENGTH 260 m

SUBSURFACE OIL

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<th>PIT DEPTH (cm)</th>
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<th>OILED INTERVAL</th>
<th>CLEAN BELOW (YN)</th>
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<td>Photographs: Roll No. ASAP-04-</td>
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REVIEWED 8/14/90 J.W

COMMENTS Pure viscous mousse remains in cracks & in under the rubble. The white granodiorite bedrock makes the oil much more visible than it would normally be on a darker substrate.
ASAP Sketch map for subsections

MR1A
MR1B

SITE I
CV/6 on clamp
PO, MS11, U/B/P
in a 2m band
in the U12
above the
focus for
SOR/P where worked

SITE I
PO/S/E
in cracks in the
granite
0.1 m network, cracks
are 2-8 cm wide.

N

MR-1

Archaeologic
Site

SOR 260 PO 260 CV 260 MS 260

500 m
Subdivision Field Map

Map Key: KENMR-1A
Name: R. Marty
Date: 12 Aug 1990
Data Entered:

MR-1 A

ADEC Subsegment Length: 260m

METERS

Wide
Medium
Narrow
Very Light
No Oil

AK State Plane Zone 4

1:1887
ASAP TAG REVIEW SHEET

Segment: M2001  Subd: B  Site: 1  Date PRE-Review 17 Aug

Priority For Addressing In 1990

HIGH   MEDIUM   LOW   NTR

Treatment Recommended:

1. MfP of oil
2. Spot Wash

Pool oil - mouse

Priority Site For Reassessment In 1991

YES   NO
CG    ADEC

YES   NO
EXXON

YES   NO
LAND MGR

Put up pooled oil
CUSTOM-Released (MED)
ASAP FOLLOWUP RECOMMENDATIONS

Segment: AS/ MK-1 Subd.: 8 Size: 1 Date: Aug 12 1990

Conditions Observed: Packed mousse and underlying mousse

Followup Recommendations: Remove the beach momentarily in 90'

Completed by Pickup Crew: [ ] YES [X] NO

Priority for Addressing in 1990: [ ] High [X] Mod. [ ] Low

ADEC

Completed by Pickup Crew: John R. Reed

Exxon

Comments: Manual removal of mousse and spot washing of cover and cont.

Comments: This would amount to 2 to 3 day work for a 1 man to clean this up about 1,000 gal.

USCG

Comments: I recommend a washing + manual work in this area.

Land Rep.

Comments: Some spot hot washing of MK-1 B advised as well as manual pickup

V

USCG NAME  AEC Vandepels  SIGNATURE  AEC Vandepels

☑ YES  ☐ NO  PRIORITY SITE FOR REASSESSMENT IN 1991
REASON:
Found MS in around cobble and boulders. Work this area along with MR-1A this year reassess in 91.

ADEC NAME  John R. Reed  SIGNATURE  John R. Reed

☑ YES  ☐ NO  PRIORITY SITE FOR REASSESSMENT IN 1991
REASON:

LAND MANAGER
NAME  Dave Wolfe  SIGNATURE  Dave Wolfe

☑ YES  ☐ NO  PRIORITY SITE FOR REASSESSMENT IN 1991
REASON:
Removable mousse/asphalt tar mainly in center and at SW end of section. Hot wash with flush pompom followed (and preceded) by manual pick up. Recommend scheduling at least 3 days with an experiend manual team for MR-0.1/8. Reasses in Spring 91.

EXXON
NAME  Jon Czarnacki  SIGNATURE  Jon Czarnacki

☑ YES  ☐ NO  PRIORITY SITE FOR REASSESSMENT IN 1991
REASON:
There is still quite a bit of pooled mousse on the rocks and underneath them. This area needs to be reassessed in 91.

REVISION NO. 7/24/90
**ASAP SHORELINE OILING SUMMARY**

**TEAM NO.** 04  
**GO.** R. Marty  
**ADEC.** Randy Reed  
**DATE.** 12 Aug 90  
**TIME:** 08:30  
**TIDE LEVEL:** +4'  
**TOTAL NO. SITES:** 1

**TOTAL EST LENGTH OF SHORELINE SURVEYED:** 414 m

**SURVEYED FROM:** Foot  
**WEATHER:** Sun  
**CATEGORY LENGTH:** W  

**SITE 1**

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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>EST. SITE LENGTH</td>
<td>414</td>
<td></td>
</tr>
</tbody>
</table>

**SITE 2**

<table>
<thead>
<tr>
<th>DISTRIBUTION</th>
<th>OILED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SITE 3**

<table>
<thead>
<tr>
<th>DISTRIBUTION</th>
<th>OILED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SUBSURFACE OIL**

**SITE NO.**  
**PIT NO.**  
**PIT DEPTH (cm):**  
**SUBSURFACE OIL CHARACTER:**  
**OILED INTERVAL (cm):**  
**CLEAN BELOW (Y/N):**  
**PIT ZONE:**  
**SURFACE-SUBSURFACE SEDIMENTS:**

**PHOTOGRAPHS:**

**Photograph Roll No.** ASAP-04-  
**Frames:**

**COMMENTS:** The substrate consists of a jointed white granodiorite. Remaining oil shows up quite well. Pooled mousse remains in cracks in the bedrock. This oil is about the consistency of treacle and is free of in-mixed sediment.
ASAP Sketch map for subsections MR16, MR15

**SITE 1 CVB ~2m wide**
Po/l, U/P grades eastward to CT outside site.

**SITE 1 CVB on clasts Po, Ms/l, U/B/P**
in a 2m band in the U/P/T above the Ficus site.
So/R/P where worked

**Archaeological Site**

**SITE 1 Po/Cv**
in crooks in the granite 1.7m
Oil is muddy. Crooks are 2-8cm wide.

PO 414  CV 414
MR-1 B

Subdivision Field Map
Map Key: KENMR-1B
Name: R. Marty
Date: 12 Aug 1990

Subsegment Field Map

ADEC Subsegment Length: 414m
METERS

Wide
Medium
Narrow
Very Light
No Oil

AK State Plane Zone 4
kmr-18

SCG

NAME AEC Vandepels
SIGNATURE AEC Vandepels

☑ YES  ☐ NO
PRIORIT Y SITE FOR REASSESSMENT IN 1991

REASON:
Found MS in around crottle & boulder.
Mark this area along with MR 1A this year
Reassess in 91.

ADEC

NAME John R. Reed
SIGNATURE John R. Reed

☑ YES  ☐ NO
PRIORIT Y SITE FOR REASSESSMENT IN 1991

REASON:
Removable mouse still remains at this site.
Recommend manual pickup and possible hot water wash

LAND MANAGER

NAME Dave Wolfe
SIGNATURE Dave Wolfe

☑ YES  ☐ NO
PRIORIT Y SITE FOR REASSESSMENT IN 1991

REASON:
Removable mouse/jaunt rat mainly in center and
at 151 end of section. Hot wash with flush & pompon, followed
(and preceded) by manual pick up. Recommend scheduling at
least 3 days with an experienced manual team for MR-04VB.
Reassess in spring '91.

EXXON

NAME Jon Czerniaki
SIGNATURE Jon Czerniaki

☑ YES  ☐ NO
PRIORIT Y SITE FOR REASSESSMENT IN 1991

REASON:
There is still quite a bit of protected mouse on the
rocks and underneath them. This area needs to be
reassessed in '91.
# ASAP SHORELINE OILING SUMMARY

**TEAM NO.** 04  
**SEGMENT AS:** K  
**DATE:** 12 Aug 90  
**TIME:** 30 10:08:45  
**TIDE LEVEL:** +6'10+5.5'  
**TOTAL NO. SITES:** 1

**SURVEYED FROM:** Foot  
**WEATHER:** Sun  
**OIL CATEGORY LENGTH:** W—m M—m N—m VL—m  
**TOTAL EST LENGTH OF SHORELINE SURVEYED:** 414 m

### SURFACE OIL

#### SITE 1

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OILED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPHALT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.O.R.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOLED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COVER</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>COAT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOUSSE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PATTIES/T.B.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FILM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO OIL</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**EST. SITE LENGTH:** 414 m

#### SITE 2

<table>
<thead>
<tr>
<th>DISTRIBUTION</th>
<th>OILED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SITE 3

<table>
<thead>
<tr>
<th>DISTRIBUTION</th>
<th>OILED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SUBSURFACE OIL

<table>
<thead>
<tr>
<th>SITE NO.</th>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED (cm-3)</th>
<th>CLEAN BELOW (Y/N)</th>
<th>PIT ZONE</th>
<th>SURFACE-SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:** The substrate consists of a jointed white granodiorite. Remaining oil shows up quite well. Pooled mousse remains in cracks in the bedrock. This oil is about the consistency of treacle and is free of in-mixed sediment.

**PHOTOGRAPHS:**

- Roll No: ASAP-04-  
- Frames: 

**REVIEWED:** 8/14/90
Subdivision Field Map

Map Key: KENMR-1B

Name: R. Marty

Date: 12 Aug 1990

Data Entered:

ADEC Subsegment Length: 414m

WETERS

0 100 132

AK State Plane Zone 4 1:2502

Wide
Medium
Narrow
Very Light
No Oil
Subdivision Field Map

Name: R. Marty

Date: 12 Aug 1990

SIGNIFICANT OILING

Subdivision Field Map

ADEC Subsegment Length: 414m
Map Key: KENUR-18
WORK PLAN ADDENDUM

MODIFICATION

1. REASON FOR MODIFICATION

Request from the field (by phone) to add spot washing to aid in the removal of oil from boulder areas.

2. ADJUSTMENT TO WORK PLAN

Following manual removal of accessible oil (mousse + pooled oil) spot wash as required.

SHPO APPROVAL NEEDED YES X SHPO SIGNATURE [Signature] 2 Aug 70

TAG APPROVAL DATE 8/2/70

ADEC JOHAN BAUER [Signature] 

EXXON AMY TAYLOR [Signature] 

NOAA R. WESCOTT [Signature] 

USCG D.D. ROME [Signature]
SHORELINE EVALUATION

SEGMENT ST/ MR-001 SUBDIVISION A (1 OF 3) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Active bald eagle nest (5T) - 3/1 to 6/1. Restrict air traffic to essential minimum. Air approach and takeoff from and to seaward only. Contact USFWS prior to treatment for confirmation of dates and avoidance minimums. Kenai Fjords National Park (4LL).

SUBDIVISION ECOLOGICAL CONSTRAINTS: Treatment should proceed with minimum disturbance to substrate.

ARCHAEOLOGICAL CONSTRAINT: An Exxon archaeological monitor is required on-site during shoreline treatment.

>>> PHONE 564-3274 (Anchorage) OR 229-1508 (24 hrs.) <<<

SHPO SIGNATURE: DATE: 7/27/90

OILING CATEGORIZATION:
Wide 0 m: Medium 34 m: Narrow 180 m: V.Light 46 m: No Oil 0 m
Subsurface Oil Observed: Yes X No Maximum Depth 20

RECOMMENDATIONS:

No Treatment Recommended __ Snare/Absorbent Booms
X Treatment Recommended __ Oil Snakes (pom poms)
X Manual Pickup ___ Absorbents (pads, rolls, etc)
X Bioremediation _____ Spot Washing: Wands
X Tarmat: _ Breakup ___ Beach Cleaner
X Removal ___ Other (see comments)


TAG COMMENTS: Treatment is recommended pending resolution of cultural resources issues. If cultural resource issues cannot be resolved a no treatment recommendation is the preferred option.

This recommendation was revised by TAG on 4/19/90 and supersedes the recommendation forwarded to FOSC on 4/12/90.

TAG APPROVAL DATE: 4/19/90.

ADEC JOAN BAUER DATE: 7-30-90

EXXON _____

NOAA_____

USCG 3/90 Russia Classed
EXXON VALDEZ CULTURAL RESOURCE PROGRAM

WORK PLAN OUTLINE
FOR OIL SPILL CLEANUP AT MR-1A/C
July 27, 1990

The proposed steps of the treatment program are as follows:

1) Archaeological monitors to brief cleanup personnel prior to the cleanup crew's arrival to MR-1. Cleanup personnel will be briefed regarding the significance of the site, and on artifact types which may be encountered.

2) Archaeological monitors to orient cleanup personnel on site at MR-1 prior to the commencement of work.

3) Cleanup personnel manually recover pooled oil in MR 1A/C with trowels, spoons and other manual devices under the close supervision of archaeological monitors. Archaeological monitors to map, record and either replace or collect artifacts encountered during manual removal depending upon the artifact type and its susceptibility to illicit collection.

4) Cleanup personnel manually remove tarmat with shovels and spades. The broken-up asphalt and attached rocks and sediments will be inspected for artifacts by archaeological monitors prior to the removal of asphalt, rocks and sediments. Any artifacts observed in the tarmat debris will be collected and curated in accordance with the MOA.

5) Bioremediation crew will spray the beach under the close supervision of the archaeological monitors.

6) Concurrent with, or immediately after Exxon's work in the intertidal zone, Chugach Alaska Corporation and the NPS will be responsible for attempting a limited amount of surface and subsurface work in the site uplands. The key element of this work will be the re-excavation of the 1989 test pit and the recording of its stratigraphy. The purpose of this work is to aid interpretation of the data obtained in the intertidal zone in order to contextualize that data. As a result of this work, NPS will provide Exxon with pertinent information on the number of components present and comment on the nature of these components. Logistics will be coordinated through Exxon.

7) The principal archaeological monitor will describe the cleanup and monitoring processes and analyze the pertinent intertidal and uplands cultural resource findings in a comprehensive report.
Recommended Scope of Work for Monitoring Activity at MR-1A/C

Planned treatment activity recommended by TAG at MR-1A/C is limited to manual recovery (trowling) of pooled mousse located in bedrock and boulder crevices, bioremediation of pooled oil, cover and coat areas, and removal of the asphalt tarmat. Due to the sensitive nature of lithic artifacts in the intertidal zone, the recommended monitoring activity will differ according to the different treatment activities planned.

Prior to initiating treatment at MR-1A/C, an informal briefing session will be held for all personnel involved in treatment activity at MR-1A/C. Information will be presented regarding the sensitive nature of the work area, the level of care that must be exercised throughout treatment, the sequence and method of treatment, and the need for constant direction by an on-site archaeological monitor. Our intention is to prepare all treatment personnel for the sensitive nature of the undertaking prior to arriving on the beach. Once on the beach, treatment will proceed in the following manner:

**TASK 1)** The first task will be to manually recover the pooled oil trapped in bedrock crevices and between boulders in both A and C subdivisions. Trowels and large spoons will be used to scoop the pooled oil into containers. Archaeological monitors will map, record and either collect or replace any artifacts encountered during this task depending upon the artifact type and its susceptibility to illicit collection. Only pooled oil will be removed. Both the movement of treatment personnel in the intertidal zone and the manual removal process will be closely monitored.

**TASK 2)** The second task will be tarmat removal. The area intended for tarmat removal encompasses 32 square meters, 4 of which have been removed as part of the archaeological investigation conducted in April. The remaining 28 square meters will be removed with spades and shovels. Asphalt and attached rocks and sediments to be removed will be inspected for artifacts by monitors. Any artifacts present will be collected and curated in accordance with the MOA.

**TASK 3)** The third task is bioremediation. Direction will be given to treatment workers as they move in the intertidal zone applying the fertilizer where appropriate. All treatment personnel working in the intertidal zone will confine their movement wherever feasible to large boulders and bedrock outcroppings.

**TASK 4)** The final task will be analysis of the archaeological data collected during the cleanup. The principal archaeological monitor will produce a report describing the monitoring process, as well as the location, nature and significance of archaeological material observed in and/or collected from the intertidal zone at MR 1A/C.
SUMMARY

Effective on-site monitoring at MR-1A by professional archaeologists will ensure that the treatment recommended by TAG will take place and that the cultural remains present in the intertidal zone will receive the maximum degree of protection given the planned treatment. The scope of work recommended for on-site monitoring activity at MR-1A/C is consistent with the treatment planned at this location. We recommend that the scope of work outlined above be considered the appropriate archaeological constraint for this subdivision.
EXXON-VALDEZ CULTURAL RESOURCE SUMMARY SHEET

SEGMENT MR-001 A
Landowner: NPS
Region: SEWARD

AHRS: Number
1: SEL-188 FCR,PAG,HTD
2:
3:
4:

Type
ITZ
Upland Features:
[X] [X] MCARTHUR PASS

SCAT: YARBOUROUGH
SSAT:

Metres: 9000
Minutes: 272
Methods: B,G

1990 WORK PLAN
No Treatment [ ]

Bioremediation [X]
Manual/Mechanical: MP,TR
Treatment Intensity [2]

1989
1989
1990
1990
CONSTRANTS
 ACTION
 Evaluation [ ]
 Pre-Evaluation & Post-cleanup
 Monitoring [ ]
 Monitoring [X]
 Other NO CLEAN

CONSTRANTS
 ACTION
 Standard [ ]
 Evaluation [ ]
 Pre-Evaluation & Post-cleanup
 Monitoring [ ]
 Monitoring [X]

CONSTRANTS
 ACTION
 Standard [ ]
 Evaluation [ ]
 Pre-Evaluation & Post-cleanup
 Monitoring [ ]
 Monitoring [X]

CONSTRANTS
 ACTION
 Standard [ ]
 Evaluation [ ]
 Pre-Evaluation & Post-cleanup
 Monitoring [ ]
 Monitoring [X]

COMMENTS

----------------------------------------------------------------
----------------------------------------------------------------
----------------------------------------------------------------
----------------------------------------------------------------
----------------------------------------------------------------
----------------------------------------------------------------

TRACKING

RECEIVED 04/08/90
FIELD SURVEY OUT 04/24/90
BACK 04/30/90
SHPO / /
DATE MONITORING
REUSED / /
PLANNED TREATMENT:
MONITORED

FOSC / /
COMPLETED / /
Monitor:

CTAG OUT 04/09/90
BACK / /

MANAGED INFORMED / /
SKETCH MAP
MacArthur Ross

- BIODEGRADABLE MEAL ONLY
- NATURAL PIEDMONT
- TAR MATT REMOVED MEAL * BIODEGRADABLE

CT/B to CV/B with
potted/pamed/S; total cover ~30%
RS/S to CV/S; total cover ~5%
Cobble/boulder surface sediments
CT/S to CV/S; total cover ~5%
dead trees

Note: where unmarked, the sediments are bedrock with a cover of sparse boulders

KEY

10 m length scale
Note that subdivision B occurs on either side of subdivision A. If this is unacceptable, simply use the data for B for a new subdiv. C.
ARCHAEOLOGICAL CONSTRAINT: An Exxon archaeological monitor is required on-site during shoreline treatment.

>>> PHONE 564-3274 (Anchorage) OR 229-1508 (24 hrs.) <<<

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

NO APPLICABLE ECOLOGICAL CONSTRAINTS

OTHER ECOLOGICAL CONSTRAINTS

AVOID ANY UNNECESSARY DISTURBANCE OR DAMAGE TO UNOILED BIOTA AND SUBSTRATE
ADDENDUM: SUBDIVISION CONSTRAINTS
SEGMENT MR-001 SUBDIVISION B (2 of 3)

WORK WINDOW

<table>
<thead>
<tr>
<th>Manual Pickup</th>
<th>OPEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tarmat Removal</td>
<td>OPEN</td>
</tr>
</tbody>
</table>

*No Inpol - Only Customblen as per FOSC

ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

5T Bald Eagle Nest NO CONSTRAINT. USFWS 6/10/90 map indicates no active nest within 400m of Subdivision B work site. No constraint to manual pickup, bioremediation and other approved treatments.

OTHER ECOLOGICAL CONSIDERATIONS

Avoid any unnecessary disturbance or damage to unooled biota and substrate.
SHORELINE EVALUATION

SEGMENT ST/ MR-001       SUBDIVISION B (2 OF 3) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Active bald eagle nest (5T) - 3/1 to 6/1. Restrict air traffic to essential minimum. Air approach and takeoff from and to seaward only. Contact USFWS prior to treatment for confirmation of dates and avoidance minimums. Kenai Fjords National Park (4IL).

SUBDIVISION ECOLOGICAL CONSTRAINTS: Treatment should proceed with minimum disturbance to substrate.

ARCHAEOLOGICAL CONSTRAINTS: If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: DATE: 4/20/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V. Light 414 m: No Oil 0 m
Subsurface Oil Observed: Yes ___ No X ___ Maximum Depth ___

RECOMMENDATIONS:
_____ No Treatment Recommended ___ Snare/Absorbent Booms
_____ Treatment Recommended ___ Oil Snare (pom poms)
_____ X Manual Pickup ___ X Absorbents (pads, rolls, etc)
_____ X Bioremediation ___ Spot Washing: ___ Wands
_____ Tarmat: ___ Breakup ___ Removal ___ Beach Cleaner
_____ X Removal ___ Other (see comments)

COMMENTS: Manual removal of pooled oil with absorbents and trowling and bioremediation in same area. Work is to be conducted after 6/1.

TAG COMMENTS: Treatment is recommended pending resolution of cultural resources issues. If cultural resource issues cannot be resolved a no treatment recommendation is the preferred option.

This recommendation was revised by TAG on 4/19/90 and supercedes the recommendation forwarded to FOSC on 4/12/90.

TAG APPROVAL DATE: 4/19/90

ADEC J. CALBER DATE: 4/26/90

EXXON F. COAKHILL

NOAA DATE:

USCG A. A. RITI

CONCUR WITH TAG COMMENTS, HOWEVER

INITIALS NOT AUTHORIZED.
REGION: KENAI

SEGMENT: MT-001

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ MT-001 SUBDIVISION A (1 OF 1) DATE 4/7/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R Seabird colony (5/1 to 9/1)
4QQ National Wildlife Refuge (no time constraints given)

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled substrate and biota. See attached Ecological Constraints Sheet.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ______________________ DATE: ______________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 38 m: V.Light 404 m: No Oil 747 m
Subsurface Oil Observed: Yes X No No Maximum Depth 30 cm

RECOMMENDATIONS:
X No Treatment Recommended Snare/Absorbent Booms
____ Treatment Recommended Oil Snakes (pom poms)
____ Manual Pickup Absorbents (pads, rolls, etc)
____ Bioremediation Spot Washing: Wands
____ Tarmat: Breakup Beach Cleaner
____ Removal Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE:___________
ADEC ________________________ FOSC: __________ DATE:___________
EXXON ________________________
NOAA ________________________
USCG ________________________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST / HT 01    SUBDIVISION: A    DATE 4/7/90

USCG/NOAA
NAME: JACQUI  MICHEL    SIGNATURE: 

☐ NO TREATMENT RECOMMENDED    ☐ TREATMENT SUGGESTED

COMMENTS

Oil was found at 2 sites within the segment: 1) stuck in subsurface in the Boulder Beach and 2) scattered bands/stripes on the more sheltered rock faces and behind offshore rocks. I was quite surprised to find any oil - this area is very high energy. Yet natural removal has been effective and the small amount of remaining oil does not warrant further treatment.

ADEC
NAME: JOHN R. REED    SIGNATURE: 

☐ NO TREATMENT RECOMMENDED    ☐ TREATMENT SUGGESTED

COMMENTS

Most of this segment is vertical granite bedrock with a few large granite boulder beaches. Very light oil of mostly stain found in granite boulders on site #1. Some coat and stain found in band on vertical wall. Does not require cleanup in this segment. I have read and agree with all data on S.S.A.T. Forms.

LAND MANAGER/USFWS
NAME: Mary Forbes    SIGNATURE: 

☐ NO TREATMENT RECOMMENDED    ☐ TREATMENT SUGGESTED

COMMENTS

Oil was present in 2 locations within this segment. At site 1, oil persisted on 8, 3-5 m. long x 2 m. wide patches of coat and stain. Subsurface oil was present as coat and stain to a depth of 25 cm. This beach is only accessible in very calm water. Oil was also present in this segment as a sporadic band of drips on the rock face.
**SHORELINE OILING SUMMARY**

**TIDE LEVEL:** EST. $13.5 \text{ m}$

**UPLANDS DESCRIPTION:** Grass & Forest

**SURVEYED FROM:** Foot & Boat & Helo

**SURFACE SEDIMENTS:** $0\%$ R, $10\%$ B, $20\%$ C, $0\%$ P, $0\%$ G, $0\%$ S, $0\%$ M, $0\%$ V, $0\%$

**SLOPE:**
- Lang $20\%$
- Hang $0\%$
- Var $20\%$

**WAVE EXPOSURE:**
- Low $\square$
- Med $\square$
- High $\square$

**OIL CATEGORY LENGTH:**
- W $0\text{ m}$
- M $0\text{ m}$
- N $3.0\text{ m}$
- V $4.0\text{ m}$
- L $8.4\text{ m}$

### SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPHALT PAVEMENT</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>POOLED</td>
<td></td>
<td></td>
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<tr>
<td>COVER</td>
<td>N</td>
<td></td>
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</tr>
<tr>
<td>COAT</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>STAIN</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>MOUSSE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PATTIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TARBALLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FILM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO OIL</td>
<td></td>
<td></td>
<td>Y</td>
</tr>
</tbody>
</table>

**PAVEMENT:**
- H $\square$
- F $\square$
- S $\square$

**PATTIES / TARBALLS:** $0$ (BAGS)

**NEAR SHORE SHEEN?:**
- No $\square$

**OILED DEBRIS AMOUNT**

<table>
<thead>
<tr>
<th>Debris</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logs</td>
<td>Sm</td>
</tr>
<tr>
<td>Vegetation</td>
<td>MO</td>
</tr>
<tr>
<td>Trash</td>
<td>LG</td>
</tr>
<tr>
<td>Debris</td>
<td>NA</td>
</tr>
</tbody>
</table>

**Debris Collected:**
- Yes $\square$
- No $\square$

**Type:**
- NA $\square$

**Photographs:**
- Roll No. 5T 18-4
- Frames 27-30

### SUBSURFACE OIL

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL (cm-CH)</th>
<th>BELOW OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>ANA</th>
<th>SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50</td>
<td>$\square$</td>
<td>0.30</td>
<td>$\square$</td>
<td>$\square$</td>
<td>NO</td>
<td>BC throughout</td>
</tr>
</tbody>
</table>

**COMMENTS:**

Patches of coat and cover exist on high angle, ledges on some cliffs.

This segment incorporates the inner, eastern shoreline of the cove or rather Matnaka Island. Its walls are near-vertical except when broken by steep, boulder beaches. Bedrock is granite. At the south end of the cove, we landed and observed remnants of oil. Most of the oil is a sparse ST and CT on boulders below the surface bottom of...
Sensitivity sites for segments MT-1, MT-3, & MT-4.

Entire shoreline of island is inhabited by seabird colonies.
SEGMENT ST/ MT-1

SUBDIVISION A

DATE 4/7/90

CHECKLIST

N Arrow
N Approb. Scale
N Seg/Slab Entry
N Oil Dist.
N Mark Length
N % Corer
N Subsurface Character
N Est. HWL/HL
N SSL
N Profile Location(s)
N Profile(s)
N Pit Location(s)
N Photo Location(s)

LEGEND

_ A

1 Pit - No Subsurface Oil

2 A

Pit - Subsurface Oil

CT/C Continuous Distribution

CT/B Broken Distribution

LT/P Patchy Distribution

LT/S Splashed Distribution

Old Vegetation

1 =>

Photo location, direction, and number

Oil Character Length (m): AP O PO O CV O CT 100 ST 100 MS O PT O TB O FL O NO 1257
**SHORELINE ECOLOGICAL SUMMARY**

**SHORELINE ECOLOGICAL SUMMARY**

<table>
<thead>
<tr>
<th>Segment ST</th>
<th>Subdivision</th>
<th>Date (mo/day/yr)</th>
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<tbody>
<tr>
<td>MT-1</td>
<td>A</td>
<td>4/7/80</td>
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**Home (24 hr)**: 1000

**Biolgest**: M. CARR

**Subdivision**

(A) **Substrate type and % of segments:**

1. Bedrock _90_
2. Boulder _20_
3. Cobble _3_
4. Pebble _5_
5. Sand _6_
6. Slit _8_

(B) **Overall % cover of biota (% of segment):**

- Dense _70_
- Moderate _20_
- Low _10_

(C) **Density, substrate preference (by number from A, above), & vertical zonation of major taxa:**

- (upper-U; mid-M; low tidal-L)
- Juveniles/adults: new settlement

**Photographs:**

- Roll No. 4
- Frames 27-30

**BARNACLES**

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**GASTROPODS**

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**Wildlife Observations/General Comments:**

- Bald eagle (1)
- Surf-sitter (1)
- Double-crested Glanumus winged gull (1)
- Shore was inaccessible, therefore all observations were made from skiff

**Ecological Considerations:**

- Sensitivity codes: 4-00 (National Wildlife Refuge), 5-E (Seabird colonies)
PWS ECOLOGICAL CONSTRAINTS

MT-COO 1

1A
Salmon stream mouth - fry outmigration (3/1 to 5/15)
Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream. Contact ADF&G Habitat Division prior to treatment for permits.

1C
Salmon fry nursery area (4/31 to 7/31)

1D
Estuar Hatchery release (4/15 to 6/11)

1E
Main Bay Hatchery release (4/20 to 5/10)

1F
Sawmill Bay Hatchery release (4/20 to 5/10)

1G
Cannery Creek Hatchery release (4/21 to 6/1)

1H
Remote release sites

1I
Gill net area (6/7 to 8/31)

1J
Purse seine area (7/21 to 9/30)

1K
Purse seine hook-off (7/20 to 9/30)

1L
Set net sites (6/11 to 7/25)
For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.

2M
Herring spawning (4/1 to 5/15)
Restrict boat traffic to essential minimum. Avoid damage to unveiled intertidal and subtidal algae and seagrass. Contact ADF&G for specific dates and locations.

3N, 3P
Harbor seal and sea lion pupping (5/15 to 7/1)
Harbor seal and sea lion molting (8/15 to 9/15)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.

5R
Seabird colony (5/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.

5S
Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic.

6U
Recreation:
- Tent sites (6/1 to 9/15)
- Anchorage (6/1 to 9/15)
- Forest Service cabins (6/1 to 9/15)
- Lodge (6/1 to 9/15)
- Special use destination

7Z
Subsistence area:
- Salmon harvesting (5/1 to 9/30)
- Finfish harvesting
- Deer harvesting (8/15 to 2/28)
- Invertebrates harvesting

For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.

PWS-CODE 4/10/90
Map Key: KEN-60
Name: Mann
Date: 4/7/90

XXX Wide
/// Medium
---- Narrow
TTTT Very Light
0000 No Oil

ADEC Segment Length: 1189m

MT-1'A

Sketch site #1

100 200 300 METERS
REGION: KENAI

SEGMENT: MT-003

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ MT-003 SUBDIVISION A (1 OF 1) DATE 4/7/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R Seabird colony (5/1 to 9/1)
4QQ National Wildlife Refuge (no time constraints given)

SUBDIVISION ECOCLOGICAL CONSTRAINTS:
Avoid disturbance/damage to uncoiled biota and substrate. See attached Ecological Constraints Sheet.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ______________________ DATE: ______________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 1202 m
Subsurface Oil Observed: Yes _ No _ X Maximum Depth

RECOMMENDATIONS:
X _ No Treatment Recommended
___ Treatment Recommended
___ Manual Pickup
___ Bioremediation
___ Tarmat: ___ Breakup
___ Removal

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: __________
ADEC ______________________
EXXON ______________________
NOAA ______________________
USCG ______________________

FOSC: __________ DATE: __________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST  MT 03  SUBDIVISION: A  DATE 4/7/90

NAME: TALOU, MICHEL  SIGNATURE: Michel

□ NO TREATMENT RECOMMENDED  □ TREATMENT SUGGESTED

COMMENTS:
WE WERE NOT ABLE TO INSPECT ANY OF THIS SEGMENT BY FOOT. However, most of the shoreline was composed of vertical rocky cliffs, which were free of oil. The one beach is likely to have had some small amount of oil, based on surveys of similar beaches. No further treatment is warranted along this high energy segment. It is quite a place!

NAME: JOHN R. REED  SIGNATURE: John R. Reed

□ NO TREATMENT RECOMMENDED  □ TREATMENT SUGGESTED

COMMENTS:
The majority of this segment is vertical granite cliffs with a large bird colony. No oil was observed in this segment. No treatment is needed. I have read and agree with all data on S.S.A.T. Forms.

NAME: MARY ALTNER  SIGNATURE: Mary Altner

□ NO TREATMENT RECOMMENDED  □ TREATMENT SUGGESTED

COMMENTS:
We were unable to inspect the small pocket beach in this segment, which was oiled in 1989. (See 1989 sect notes). The remainder of the segment is primarily vertical rock face with high wave energy. No oil was observed in this portion of the segment.
SHORELINE OILING SUMMARY

EST. SUBDIVISION LENGTH: 1869 m
SURVEYED FROM: Foot Boat Halo
SURFACE SEDIMENTS: R 95 % B 5 %
SLOPE: Lang 5 % Hang 30 % Vent 75 %

SURFACE OIL: NONE OBSERVED

OIL CATEGORY LENGTH: W 0 m M 0 m N 0 m V 0 m

OIL FILM COLOR:

ASPHALT PAVEMENT
POOLED
COVER
COAT
STAIN
MOUSSE
PATTIES
TAR BALLS
FILM
NO OIL

IMPACTED ZONES

PAVEMENT: H F S % sq. m by % cm
PATTIES/TARBALLS % BAGS

NEAR SHORE SHEEN? (O) BR RW SL TL

OILED DEBRIS NO AMOUNT

DEBRIS COLLECTED

TYPE

# BAGS

Photographs:

Roll No. NONE
Frames

SUBSURFACE OIL: NO PITS DUG BECAUSE OF INACCESSIBILITY OF THE SHORE AND SIMILAR ROCKY SHORES.

MT-3 is the roughest and most inaccessible of the Matushka Island segments. We had ocean swells of about 10 feet which made approach to the cliffs impossible at distances < 30-50 yards. Shorelines are steep and much wave energy is reflected. Judging from the fate and persistence of oil in a similar cave in MT-1, I think it unlikely.
Sensitivity sites for segments MT-1, MT-3, & MT-4.

Entire shoreline of island is inhabited by seabird colonies.
SKETCH MAP

NO SKETCH

LEGEND

1 △
- Pit - No Subsurface Oil

2 △
- Pit - Subsurface Oil

CT/C
- Continuous Distribution

CT/B
- Broken Distribution

CT/P
- Patchy Distribution

CT/S
- Splashed Distribution

Oiled Vegetation

1 •
- Phone location, direction, and number

Oil Character Length (m): AP ☐ PO ☐ CV ☐ CT ☐ ST ☐ MS ☐ PT ☐ TB ☐ FL ☐ NO 1839
**SHORELINE ECOLOGICAL SUMMARY**

**Segment ST / MT-3 Subdivision A (of A) Date (mo / day / yr) 1/7/80**

<table>
<thead>
<tr>
<th>(24 hr) 1639 Biologist</th>
<th>M. Carr</th>
</tr>
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</table>

(A) Substrate type and % of segment:

(B) Overall % cover of biota (% of segment): Dense 80% Moderate 10% Low __

(C) Density, substrate preference (by number from A, above), &
vertical zonation of major taxa: (upper-U; mid-M; low tidal-L);
juveniles / adults (X), new settlement (G)

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Photographs:

Roll No. __________

Frames __________

Wildlife Observations / General Comments:
- Bald eagle (2), both immature
- Glacier-winged gull (3), on rocks
- Black-legged kittiwake (20), on rocks

Ecological Considerations:
- Sensitivity codes: 4-00 (National Wildlife Refuge), 5-R (seabird colonies)
PWS ECOLOGICAL CONSTRAINTS

1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bio remediation or other chemical application within 100m of stream. Contact ADF&G Habitat Division prior to treatment for permits.

1C Salmon fry nursery area (4/31 to 7/31)
1D Finger Hatching release (4/15 to 6/1)
1E Main Bay Hatchery release (4/20 to 5/10)
1F Sawmill Bay Hatchery release (4/20 to 5/10)
1G Cannery Creek Hatchery release (4/21 to 6/1)
1H Remote release site

1I Gill net area (6/7 to 8/31)
1J Purse seine area (7/21 to 9/30)
1K Purse seine hook-off (7/20 to 9/30)
1L Set net sites (6/11 to 7/25)
For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.

2M Herring spawning (4/1 to 6/15)
Restrict boat traffic to essential, minimum. Avoid damage to uncoiled intertidal and subtidal algae and seagrass. Contact ADF&G for specific dates and locations.

3N, 3P Harbor seal and sea lion pupping (5/15 to 7/1)
3O, 3Q Harbor seal and sea lion molting (6/15 to 9/15)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.

4R Seabird colony (5/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.

5S Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic.

5T All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

6U Recreation:
6V Tent sites (6/1 to 9/15)
6W Anchorages (6/1 to 9/15)
6X Forest Service cabins (6/1 to 9/15)
6Y Lodge (6/1 to 9/15)
6Z Special use destination

7Z Subsistence area: Salmon harvesting (5/1 to 9/30)
7HH Finfish harvesting
7ll Deer harvesting (8/15 to 2/28)
7JJ Invertebrate harvesting
For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
not observed
(probably = "0")

G15 mapper: I don't have the adjoining map — please put "0" around this entire islet.

MT-3

MAP KEY: KEN-62
Name: Mann
Date: 4/7/90
SHORELINE EVALUATION

SEGMENT ST/MT-001  SUBDIVISION A (1 OF 1)  DATE 4/7/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R  Seabird colony (5/1 to 9/1)
4QQ  National Wildlife Refuge (no time constraints given)

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled substrate and biota. See attached Ecological Constraints Sheet.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: Daniel J. Dona  DATE: April 14, 1990

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 38 m: Very Light 404 m: No Oil 747 m
Subsurface Oil Observed: Yes X No maximum Depth 30 cm

RECOMMENDATIONS:
X No Treatment Recommended  ___ Snare/Absorbent Booms
____ Treatment Recommended  ___ Oil Snares (pom poms)
____ Manual Pickup  ___ Absorbents (pads, rolls, etc)
____ Bioremediation  ___ Spot Washing: ___ Wands
____ Tarmat: ___ Breakup  ______ Beach Cleaner
____ Removal  ____ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 4/14/90
ADEC JOHN BAUER
EXXON ANDY TAI
NOAA BYRON W bringen
USCG C.A. Niece C.A. Arte

DATE: 5-1-90

FOSC: ___
Sensitivity sites for segments MT-1, MT-3, & MT-4.

Entire shoreline of island is inhabited by seabird colonies.
SEGMENT ST/MT-1
SUBDIVISION A
DATE 4/7/90

CHECKLIST

- N Arrow
- Uplift, Scale
- SegID/L, Bldy
- Oil Delt.
- Msh
- Tracy
- % Cover
- Substrate Character
- Est. HFL/A.WL
- SRL
- Profile Location(s)
- Profile(s)
- PIT Location(s)
- Photo Location(s)

LEGEND

1 △
- Pit - No Subsurface Oil

2 △
- Pit - Subsurface Oil

CT/C
Continuous Distribution

CT/B
Broken Distribution

CT/P
Pinch Distribution

CT/S
Splashed Distribution

Oiled Vegetation

1 ←
- Photo location, direction, and number

Oil Character Length (m): AP O PO O CV O CT 100 ST 100 MS O PT O TB O FL O NO 1251

SKETCH MAP

NO Sketch
Sketch Site #1

MT-1  4/7/90

Man

20% coverage by
CT, ST in patches, each
3.5m long x 2m wide:
much evidence of wave
abrasion.

Subsurface oil = CT + ST to
depth of 25cm, locally
SHORELINE EVALUATION

SEGMENT ST/MT-003 SUBDIVISION A (1 OF 1) DATE 4/7/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R Seabird colony (5/1 to 9/1)
4QQ National Wildlife Refuge (no time constraints given)

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate. See attached Ecological Constraints Sheet.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: [Signature] DATE: April 14, 1990

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 1202 m
Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:
X No Treatment Recommended _____ Snare/Absorbent Booms
_____ Treatment Recommended _____ Oil Snares (pom poms)
_____ Manual Pickup _____ Absorbents (pads, rolls, etc)
_____ Bioremediation _____ Spot Washing: Wands
_____ Tarmat: ____ Breakup _____ Beach Cleaner
_____ Removal _____ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: [Signature] DATE: 5/1/90
ADEC [Signature] EXXON [Signature] NOAA [Signature]
USCG [Signature] FOSC [Signature]
Sensitivity sites for segments MT-1, MT-3, & MT-4.

The entire shoreline of the island is inhabited by seabird colonies.
REGION: KENAI

SEGMENT: MT-004

SUBDIVISIONS: A (1 OF 1)
SEGMENT ST/ MT-004 SUBDIVISION A (1 OF 1) DATE 4/7/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R Seabird colony (5/1 to 9/1)
4QQ National Wildlife Refuge (no time constraints given)

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate. See attached Ecological Constraint Sheet.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ______________________ DATE: ______________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 36 m: No Oil 2728 m
Subsurface Oil Observed: Yes X No Maximum Depth 50 cm

RECOMMENDATIONS:
X No Treatment Recommended
_____ Treatment Recommended
_____ Manual Pickup
_____ Bioremediation
_____ Tarmat: _____ Breakup
_____ Removal
_____ Snare/Absorbent Booms
_____ Oil Snares (pom poms)
_____ Absorbents (pads, rolls, etc)
_____ Spot Washing: _____ Wands
_____ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: __________
ADEC _______________________
EXXON _______________________
NOAA _______________________
USCG _______________________

FOSC: ______________________ DATE: __________
FIELD SHORELINE COMMENT SHEET

SUBDIVISION: A
DATE 4/7/90

NO TREATMENT RECOMMENDED

COMMENTS

No oil was observed along the vertical rocky shoreline. Small amounts of pooled oil/coal/stain were found at a previously oiled boulder beach, mostly within/below the boulder substrate. However, natural removal among this high energy shoreline is the most effective means of oil removal.

ADEC
NAME JOHN R. REED
SIGNATURE John R. Reed

NO TREATMENT RECOMMENDED

COMMENTS

No oil present on vertical granite shoreline. One small area of coat, stain, and very little mousse was present in a large boulder beach. No cleanup needed in this segment. Large bird colony present in this segment. I have read and agree with all data on S.S.A.T. Forms.

LAND MANAGER USFWS
NAME MARY PORTER
SIGNATURE Mary Porter

TREATMENT SUGGESTED

COMMENTS

Oil remaining as pooled, coat and stain at the small pocket beach described as Site 2 in the 1989 SCAT. The oil is concentrated in the NE corner of the beach where boulders sit upon the bedrock. This site is accessible only during calm weather. A rich avifauna is present in this segment.
SHORELINE OILING SUMMARY

OG MANN ---------------- USCG/NOAA MICHEL SEGMENT ST/ MT. 04
BIO CARR. ------------------ LAND REP. PURCHER - BUS SUBDIVISION A
EXXON BAYER ---------------- ADEC 2534D TIME 17:00 TO 17:50
TEAM NO.: 19 TIDE LEVEL: +2.8 TO +0.9 DATE 4/17/90
EST. SUBDIVISION LENGTH: 3030 M
UPLANDS DESCRIPTION: ☑ Grass ☐ Forest ☑ Rock
SURVEYED FROM: ☑ Foot ☐ Boat ☐ Halo WORKING DIRECTION: SOUTH TO NORTH
SURFACE SEDIMENTS: R 95 % B 5 % C 0 % P 0 % G 0 % S 0 % M 0 % V 0 %
SLOPE: Lang 5 % Hang 10 % Vert 85 % WAVE EXPOSURE: ☐ Low ☐ Med ☐ High
OIL CATEGORY LENGTH: W 0 m M 0 m N 0 m VL 30 m NO 3010 m

SURFACE OIL

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PAVEMENT: H F $\frac{1}{4}$ A sq. m by $\frac{1}{16}$ cm
PATTIES / TARBALLS $\frac{1}{4}$ $\frac{1}{8}$ $\frac{1}{8}$ BAGS
NEAR SHORE SHEEN? ☑ BR RW SL TL

OILED DEBRIS AMOUNT
Logs SM MD LG
Vegetation DEBRIS COLLECTED
Trash ☐ YES ☐ NO
Debris ☐ YES ☐ NO

Photographs:
Roll No. 51 18-4
Frames 31

SUBSURFACE OIL

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COMMENTS
This side of Matshka Island is mainly a high cliff infested with seabirds. Wave energy is very high and mainly reflected from the shore. Oil does occur at the middle end of the segment in a small pocket beach where we were able to land. Here it and still persists on bedrock and boulder surfaces but shows wave/boulder abrasion. A few areas of pooled mousse exist on bedrock where sheltered by stable boulders.

Page 1 of __________ Reviewed __________ Date __________
Sensitivity sites for segments MT-1, MT-3, & MT-4.

Entire shoreline of island is inhabited by seabird colonies.
SEGMENT ST / MT 04
SUBDIVISION A
DATE 4-17-90

CHECKLIST
- N Arrow
- Approx. Scale
- Geo/Sub Envy
- Oil Dist.
- Water
- Length
- % Cover
- Substrate Character
- Est. HW/AVL
- SSL
- Visible Location(s)
- Profile(s)
- Pit Location(s)
- Photo Location(s)

LEGEND
1 △
- Pit - No Subsurface Oil
2 △
- Pit - Subsurface Oil

No Sketch Provided

LEGEND

Oil Character Length (m): AP 0 PO 3 CV 0 CT 30 ST 30 MS 0 PT 0 TB 0 FL 0 NO 3010
### SHORELINE ECOCLOGICAL SUMMARY

**Segment ST1-MT-4**  
**Subdivision** A (of A)  
**Date** (mo/day/yr) 4/7/04

- **Biologist:** M. Carr  
- **Survey Time:** 1730 (24 hr)

#### (A) Substrate Type and % of Segment:
1. Bedrock 25%  
2. Boulder 5%  
3. Cobble 5%  
4. Pebble 5%  
5. Sand 5%  
6. Silt 5%

#### (B) Overall % Cover of Biota (% of Segment):
- Dense 50%  
- Moderate 15%  
- Low 35%

#### (C) Density, Substrate Preference (by number from A, above), &
Vertical Zonation of Major Taxa:

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**Wildlife Observations/General Comments:**
- Glaciers-winged gull (30)
- Red-footed booby (20)
- Common murres (20)
- Black-legged kittiwake (50)
- Harlequin duck (1)
- White (1), unidentified
- Oyster catcher (1)
- Bald eagle (1), mature

**Ecological Considerations:**
- Sensitivity: 4-00 (Natural Wildlife Refuge), 5-0 (Seabird colonies)
PWS ECOLOGICAL CONSTRAINTS

Salmon stream mouth - fry outmigration (3/1 to 5/15)
Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream. Contact ADF&G Habitat Division prior to treatment for permits.

Salmon fry nursery area (4/31 to 7/31)

Esther Hatchery release (4/15 to 6/1)
Main Bay Hatchery release (4/20 to 5/10)
Sawmill Bay Hatchery release (4/20 to 5/10)
Cannery Creek Hatchery release (4/21 to 6/1)
Remote release sites

Gill net area (6/7 to 8/31)
Purse seine area (7/21 to 9/30)
Purse seine hook-off (7/20 to 9/30)
Set net sites (6/11 to 7/25)

For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.

Herring spawning (4/1 to 6/15)
Restrict boat traffic to essential minimum. Avoid damage to unoiled intertidal and subtidal algae and seagrass. Contact ADF&G for specific dates and locations.

Harbor seal and sea lion pupping (5/15 to 7/1)
Harbor seal and sea lion molting (8/15 to 9/15)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.

Seabird colony (5/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.

Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic.

All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 400m. 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

Recreation:
Tent sites (6/1 to 9/15)
Anchorage (6/1 to 9/15)
Forest Service cabins (6/1 to 9/15)
Lodge (6/1 to 9/15)
Special use destination

Subsistence area:
Salmon harvesting (5/1 to 9/30)

Finfish harvesting

Deer harvesting (8/15 to 2/28)

Invertebrates harvesting

For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
SHORELINE EVALUATION

SEGMENT ST/MT-004 SUBDIVISION A (1 OF 1) DATE 4/7/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R Seabird colony (5/1 to 9/1)
4Q National Wildlife Refuge (no time constraints given)

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate. See attached Ecological Constraint Sheet.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: DATE: April 14, 1990

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 36 m: No Oil 2728 m
Subsurface Oil Observed: Yes X No Maximum Depth 50 cm

RECOMMENDATIONS:
X No Treatment Recommended ___ Snare/Absorbent Booms
_____Treatment Recommended ___ Oil Snare (pom poms)
_____Manual Pickup ___ Absorbents (pads, rolls, etc)
_____Bioremediation ___ Spot Washing: ___ Wands
_____Tarmat: _____ Breakup ___ Beach Cleaner
_____Removal ___ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 4/14/90
ADEC Art Weaver
EXXON
NOAA
USCG

FOSC:

DATE: 5-1-90
REGION: KENAI

SEGMENT: ST/NC-01

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ NC-01 SUBDIVISION A (1 OF 1) DATE 4/26/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

5T-1 All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 to 9/1)
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ___________________________ DATE: ___________________________

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 3067 m: No Oil 5688 m
Subsurface Oil Observed: Yes__ No X__ Maximum Depth ______

RECOMMENDATIONS:

X No Treatment Recommended ___ Snare/Absorbent Booms
___ Treatment Recommended ___ Oil Snares (pom poms)
___ Manual Pickup ___ Absorbents (pads, rolls, etc)
___ Bioremediation ___ Spot Washing: ___ Wands
___ Tarmat Removal ___ Beach Cleaner
___ Other (see comments)

COMMENTS: ______________________________

____________________________

________________________________

____________________________

TAG COMMENTS:_____________________

TAG APPROVAL DATE: ____________

ADEC ___________________ FOSC: ___________ DATE: ___________

EXXON ____________________

NOAA ____________________

USCG ____________________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST: NC-01-1  SUBDIVISION: A (ENTIRE SEGMENT)  DATE: 4/26/1

USCG NAME: JERRY SCHOLTZ  SIGNATURE: JERRY SCHOLTZ

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

ADEC NAME: MIKE EBEL  SIGNATURE: MIKE EBEL

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

NC-01-A  This segment is comprised of a 9429m perimeter of an unmarked bay having mostly steep bedrock cliffs with high angle debris slopes. The southern shore, extending around in an arched manner to the eastern shore, was found to be clean. The remainder of the eastern shore (forming the loop head) and extending around into the northern shoreline were found to contain tarballs, patties, and mousse in a splashed distribution (all were picked up) along with covers and coat splashes (very infrequent; refer to sketch). No further impact recommended.

LAND MANAGER

NAME: MIKE TETREAU NPS  SIGNATURE: MIKE TETREAU

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Good survey. Very sparse contamination in the form of tarballs, patties, and splashes of coat/cover. We picked up all retrievable oil during the survey. The staining left behind is very sparse. It appears that no further treatment at this site is needed. Very difficult to survey due to large boulders - requires a lot
**SHORELINE OILING SUMMARY**

**OG RANDY SIEGEL USCG**
**Terry Schultz SEGMENT STI: NC-001**
**LEWIS, Sherman LAND REP**
**TATEK (OSI) SUBDIVISION: A**
**EXXON Leonard Bertade DEC Mike Ebel TIME 08:00 10/12/90**

**TEAM NO. 12 TIDE LEVEL: 3.5 % Bld DATE: 4/25/90**

**EST. SUBDIVISION LENGTH: 94.29 m**

- Sun
- Clouds
- Fog
- Rain
- Snow

**UPLANDS DESCRIPTION:**
- Grass
- Forest
- Rock

**SURVEYED FROM:**
- Foot
- Boat
- Helo

**WORKING DIRECTION:**
- S
- N

**SURFACE OIL**

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**PAVEMENT**

- H
- F
- S

**NEAR SHORE SHEEN?**

- No

**OILED SHEEN?**

- Yes

**TYPE**

- TB
- P
- B
- T

- BAGS

**COMMENTS**

Large unamed bay surrounded by tri-angle granite cliffs and granite boulders along bench. Southern beach had no obvious oiling. Eastern and northern beaches had occasional (< 1%) tarball, patties, cover, coat on slate on/under boulders. We picked up all of them that we observed.

**REVIEWED DATE:**

4/29/90
SHORELINE ECOLOGICAL SUMMARY (Page 1 of 2)

Segment ST, NC-1 Subdivision A Date (mo/day/yr) 4/25/90

Time (24 hr) 06:10-12:45 Biologist SHARMAN

(A) Substrate type and % of segment:

1. Bedrock
2. Boulder
3. Cobble
4. Pebble
5. Sand
6. Silt

(B) Overall % cover of biota (% of segment): Dense (X) Moderate ( ) Low ( )

(C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa: (upper-U; mid-M; low tidal-L);
juveniles/adults (X), new settlement ( )

BARNACLES

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GASTROPODS (Nucella, Littorina, Lymnaea)

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FUCUS

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</table>

Wildlife Observations/General Comments: Herring gull, 4 adult seagulls, 2 crows, 2 Steller's jays, 6 pairs bankswallow, white swan, Common摇头鱼, Brandt's cormorant, 4 Eulachon sineola in front. 2 pairs green storks swimming. 7 in intertidal zone.

Finger the spot at low-tide stage. The general area appears somewhere in the 1964 earthquake. 2 had these along lower margins of intertidal zone. (Cont.)

Ecological Considerations:

We received no information regarding previously identified resource sensitivities for this segment. We observed no high-energy shorebreaks, strong rip tides, coastal erosion, beach contamination, etc. As with all highly productive and pristine intertidal communities, the area is extremely sensitive to human-induced physical disturbance. No ecological map attached. No specific sensitivities. This segment

-
General Comments (cont.):
The Shoreline Ecological Summary form data in probably not reflective of the very great diversity and abundance of intertidal life in this segment. This area is no less rich than any area in the oil-impacted portion of PWS I have observed since the spill. There are good stands of last year's "recuperated" off the rocky points, supporting a diverse algae community including an abundance of Pelvetia canaliculata. Therefore eelgrass also have a great abundance of amphipods, at this time, + occasional Rhizoclonium. Eelgrass is largely confined to MTZ and UTE beach because of competition with the proliferation of the algae. There are discontinuous rather thin bands of MTZ mussel. Eelgrass and mussel seem to be recruiting well (especially mussel) locally where populations are established. Fishes and limpets also are recruiting well. Barnacle settlement is relatively sparse compared to PWS, and is confined mostly to the MTZ and UTE. Seagrass seem to be lagging behind PWS, since there are sparse aggregations but very few actual metamorphosed crust. Judging from the appearance of the water and previous amphipods, however, the bloom is + has been well underway. The dominant bryophytes become leathery and extremely diverse. Barnacles dominate the nervous, pickelback, Draparnaldia, Bryozoans, limpet, Helichthys, Amphipods, polychaeta, nemertines, Terebralia, Barnacle, gastropods, etc. The entire MTZ is covered 100% by a diversity of algae: Costaria, various laminarians, ulvaceae, Enteromorpha, Porphyra, Polyph/oria, filamentous green (Charophyceae), Scytosiphon, coralline algae (pholadoeophyceae), erect articulated forms, Amenophylla, pedicellaria, forms, several felinae, etc. Animals include Porphyra, Picocia, kelp, kelp-like, Pedice, sabellaria, Medinula, Harpia, Asterotrocha, Terebralia, barnacles, N. linii, Stephanos, Acanthodoris, kelp, kelp-like, megula, telea, Asterotrocha (3 spp.), Pedoc*, Porphyra, Pedice, nemertines, polychaeta, Bryozoans, Cucumaria, macrobenthos, etc. etc. Exceedingly healthy and productive intertidal zone.
SHORELINE EVALUATION

SEGMENT ST/NC-01 SUBDIVISION A (1 OF 1) DATE 4/26/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
ST-1 All bald eagle nests (3/1 to 6/1)-Active eagle nests (3/1 to 9/1)
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to uncoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: Date: 5/8/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 3067 m: No Oil 5688 m
Subsurface Oil Observed: Yes___ No___ Maximum Depth_____

RECOMMENDATIONS:
___X No Treatment Recommended ___ Snare/Absorbent Booms
___ Manual Pickup ___ Oil Snare (pom poms)
___ Bioremediation ___ Absorbents (pads, rolls, etc)
___ Tarmat Removal ___ Spot Washing: Wands
___ Tarmat Removal ___ Beach Cleaner
___ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 5/7/90

ADEC Art Weimer, Dir. Envi.
EXXON Ann B. Brown
NOAA Gary Peterson, Navydate
USCG Capt. John Date
REGION: KENAI

SEGMENT: NK-001

SUBDIVISIONS: A (1 OF 1)
SEASONAL ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R Seabird Colony (5/1 to 9/1)
5T Active Bald Eagle Nest (3/1 to 6/1)
4GG Alaska State Park

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid disturbance/damage to unoiied substrate and biota.

ARCHAEOLOGICAL CONSTRAINTS: If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

OILING CATEGORIZATION:
Wide 0 m: Medium 56 m: Narrow 0 m: V.Light 360 m: No Oil 0 m

Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:
______No Treatment Recommended
X__Treatment Recommended
______Manual Pickup
X__Bioremediation
X__Tarmat: ____Breakup
____X Removal

COMMENTS: Recommend tarmat removal by shovel and hand trowels in asphalt area indicated on attached sketch map. Treatment activities should be conducted prior to May 1 and/or only after obtaining clearances from ADF&G and DNR.

TAG COMMENTS:

TAG APPROVAL DATE:__________

ADEC ____________________________

EXXON ____________________________ FOSC: ____________ DATE:__________

NOAA ____________________________

USCG ____________________________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST 1  NK 01 SUBDIVISION: A DATE 4/7/90

USCG/UNIT NAME  JACQUI MICKEL SIGNATURE  JACQUI MICKEL

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS
This area has two main zones of oil contamination: 1) very discrete patches of widely spaced pavements along the UITZ of the main beach; 2) a smaller beach on NE side w/larger pavements. The NE pocket beach had some sheens, even though the ground was frozen in places. These pavements should be removed manually. There is little/no concern for erosion. Care should be taken to not disturb the lower intertidal zone on the NE shore.

ADEC
NAME  JOAN R. REED SIGNATURE  JOAN R. REED

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS
I recommend using shovels and hand trowels to pickup the spread asphalt pavements. The main beach is very low angle and has an anadromous stream on the N/E end. The UITZ was mostly covered with snow and I feel like we were missing some of the contamination. I have read and agree with all data on SSA: RR.

LAND MANAGER-DNR/DOOR
NAME  JENNY S. JOHNSON SIGNATURE  JENNY S. JOHNSON

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS
Concur with above comments; concerned about sawed UITZ + recommend another look there later. No problem with native methods on this segment, but manual pickup of mats probably best. Melt no mud debris or driftwood, except for 1 saltwater pod. Note segment is a DNR priority due to STATE PARK designation, though access is limited by good weather, because of SE exposure.
SHORELINE OILING SUMMARY

Mann

USCG

Michel

SEGMENT STI NK-1

BIO

Carr

LAND REP

Johnson - DNR

TIME 11:45 to 12:55

TEAM NO.

18

TIDE LEVEL

+1 to +3

DATE 4/1/71

EST. SUBDIVISION LENGTH: 100 m

Sun ☐ Clouds ☐ Fog ☐ Rain ☐ Snow

UPLANDS DESCRIPTION: ☐ Grass ☐ Forest ☐ Rock

SURVEYED FROM: ☐ Foot ☐ Boat ☐ Helo

WORKING DIRECTION: all to ADV

SURFACE SEDIMENTS: R 5% B 5% C 90% P 10% Q 10% S 0% M 0% V 0%

SLOPE: Lang 100% Hang 0% Vert 0%

WAVE EXPOSURE: ☐ Low ☐ Med ☐ High

OIL CATEGORY LENGTH: W 0 m M 50 m N 0 m V 350 m N 0 0 m

SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<tr>
<td>ASPHALT</td>
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<td>TARBALLS</td>
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<td>FILM #</td>
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<td>NO OIL</td>
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</table>

* probably present but can not see under these conditions

NEAR SHORE SHEEN? ☐ BR RW SL TL

PAVEMENT:

H F ☑

PATTIES / TARBALLS: 10 bags asphalt

NO OIL

DEBRIS COLLECTED

Yes ☐ No ☑

TYPE asphalt BAGS

Photographs:

Roll No. 9-1-4

Frames (9-18)

SUBSURFACE OIL

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
<th>BELOW OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>AANA</th>
<th>SUBSURFACE SEDIMENTS</th>
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COMMENTS

* pit has oil on surface (asphalt)

Our temperature in upper 10's°F. Beach face is frozen tight. We are unable to observe about 1/3 of the U1T3 and upper tidal zone due to snow cover.

Oiling is mostly in the form of remnant mousse accumulations that now exist as patches of asphalt. Widely scattered, remnant mousse patches exist throughout the Middle and U1T3. This shoreline is very low -
SHORELINE OILING SUMMARY (PAGE 2 of 2)
SEGMENT STI  NK-1  SUBDIVISION  A

SUBSURFACE OIL (CONTINUED)

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<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL (cm-0cm)</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE</th>
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**COMMENTS**

No burial of oil was evident.

Angled. The size of the storm berm suggests that waves, at least occasionally, move sediment on and across this beach. Most of NR-1 consists of the intertidal portion of a pebble-cobble - small boulder delta formed by 2 streams at the head of a long, narrow cove. Our survey was not at an ideal time because of the snow cover in the upper portion of the cove.
Sensitive sites for segments NK-1 and NK-2
### Shoreline Ecological Summary

**Segment ST** / **NK** / **Subdivision A** (of A) / **Date (mo/day/yr)** 4/2/90

*The (24 hr) OGS Biologist M. CARR*

### Subdivision (A)

(A) Substrate type and % of segments:

1. Bedrock 5%
2. Boulder 5%
3. Cobble 50%
4. Pebble 5%
5. Sand 5%
6. Silt

(B) Overall % cover of biota (% of segment):
- Dense 50%
- Moderate 50%
- Low 50%

(C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa:
- BARNACLES:
  - Dense 1U 1L
  - Moderate 1U 1M 1L
  - Sparse 1U 1M 1L
  - Rare 1U 1M 1L

- MYTILUS:
  - Dense 1U 1L
  - Moderate 1U 1M 1L
  - Sparse 1U 1M 1L
  - Rare 1U 1M 1L

- GASTROPODS:
  - Dense 1U 1L
  - Moderate 1U 1M 1L
  - Sparse 1U 1M 1L
  - Rare 1U 1M 1L

- FUCUS:
  - Dense 1U 1L
  - Moderate 1U 1M 1L
  - Sparse 1U 1M 1L
  - Rare 1U 1M 1L

### Wildlife Observations/General Comments:

- Land Otter (1)
- Harbor Seal, Phoca vitulina (1)

### Ecological Considerations:

- Sensitivity codes: 4-05 (Alaska State Parks), 5-T (Bull eagle nest), 5-R (Seabird colonies).

Photographs:
- Roll No. 4
- Frames 9 - 18

---

**NPS-COM** 03/02/90

[Note: The original document contains line drawings and images that are not transcribed here.]
## PWS ECOLOGICAL CONSTRAINTS

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<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>1A</td>
<td>Salmon stream mouth - fry outmigration (3/1 to 5/15)</td>
</tr>
<tr>
<td>1B</td>
<td>Salmon stream mouth - spawning (7/10 to 8/31)</td>
</tr>
<tr>
<td></td>
<td>No disturbance of stream bed or banks unless authorized by ADF&amp;G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream. Contact ADF&amp;G Habitat Division prior to treatment for permits.</td>
</tr>
<tr>
<td>1C</td>
<td>Salmon fry nursery area (4/31 to 7/31)</td>
</tr>
<tr>
<td>1D</td>
<td>Esther Hatchery release (4/15 to 6/1)</td>
</tr>
<tr>
<td>1E</td>
<td>Main Bay Hatchery release (4/20 to 5/10)</td>
</tr>
<tr>
<td>1F</td>
<td>Sewmill Bay Hatchery release (4/20 to 5/10)</td>
</tr>
<tr>
<td>1G</td>
<td>Cannery Creek Hatchery release (4/21 to 6/1)</td>
</tr>
<tr>
<td>1H</td>
<td>Remote release site</td>
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<tr>
<td>1I</td>
<td>Gill net area (5/7 to 8/31)</td>
</tr>
<tr>
<td>1J</td>
<td>Purse seine area (7/21 to 9/30)</td>
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<tr>
<td>1K</td>
<td>Purse seine hook-off (7/20 to 9/30)</td>
</tr>
<tr>
<td>1L</td>
<td>Set net sites (6/11 to 7/25)</td>
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<td>For Codes 1C through 1L contact ADF&amp;G for specific dates, locations and constraints.</td>
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<tr>
<td>2M</td>
<td>Herring spawning (4/1 to 6/15)</td>
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<tr>
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<td>Restrict boat traffic to essential minimum. Avoid damage to unveiled intertidal and subtidal algae and seagrass. Contact ADF&amp;G for specific dates and locations.</td>
</tr>
<tr>
<td>3N, 3P</td>
<td>Harbor seal and sea lion pupping (5/15 to 7/1)</td>
</tr>
<tr>
<td>3O, 3Q</td>
<td>Harbor seal and sea lion molting (8/15 to 9/15)</td>
</tr>
<tr>
<td></td>
<td>Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.</td>
</tr>
<tr>
<td>5R</td>
<td>Seabird colony (5/1 to 9/1)</td>
</tr>
<tr>
<td></td>
<td>Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&amp;G and USFWS prior to treatment.</td>
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<tr>
<td>5S</td>
<td>Shorebird/waterfowl concentration (4/1 to 5/15)</td>
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<tr>
<td></td>
<td>Restrict all activity to essential minimum, especially air traffic.</td>
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<tr>
<td>5T</td>
<td>All Bald Eagle nests (3/1 to 6/1)</td>
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<tr>
<td></td>
<td>Active Bald Eagle nests (3/1 to 9/1)</td>
</tr>
<tr>
<td></td>
<td>Restrict air traffic to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.</td>
</tr>
<tr>
<td>6U</td>
<td>Recreation: Tent sites (6/1 to 9/15)</td>
</tr>
<tr>
<td>6V</td>
<td>Anchorage (6/1 to 9/15)</td>
</tr>
<tr>
<td>6W</td>
<td>Forest Service cabins (6/1 to 9/15)</td>
</tr>
<tr>
<td>6X</td>
<td>Lodge (6/1 to 9/15)</td>
</tr>
<tr>
<td>6Y</td>
<td>Special use destination</td>
</tr>
<tr>
<td>7Z</td>
<td>Subsistence area: Salmon harvesting (5/1 to 9/30)</td>
</tr>
<tr>
<td>7HH</td>
<td>Finfish harvesting</td>
</tr>
<tr>
<td>7II</td>
<td>Deer harvesting (8/15 to 2/28)</td>
</tr>
<tr>
<td>7JJ</td>
<td>Invertebrate harvesting</td>
</tr>
<tr>
<td></td>
<td>For Codes 7Z through 7JJ contact ADF&amp;G and Chenega Corporation for specific dates, locations, and constraints.</td>
</tr>
</tbody>
</table>
good luck!

XXX Wide
/// Medium
--- Narrow
TTTT Very Light
0000 No Oil

Map Key: KEN-64a
Name: Mann/NK-1
Date: 4/7/90
SHORELINE EVALUATION

SEGMENT ST/ NK-001  SUBDIVISION A (1 OF 1)  DATE  4/7/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R Seabird Colony (5/1 to 9/1)
5T Active Bald Eagle Nest (3/1 to 6/1)
4GG Alaska State Park

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid disturbance/damage to uncoiled substrate and biota.

ARCHAEOLOGICAL CONSTRAINTS: If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: DATE: April 14, 1990

OILING CATEGORIZATION:
Wide 0 m: Medium 56 m: Narrow 0 m: V. Light 360 m: No Oil 0 m
Subsurface Oil Observed: Yes___ No X___ Maximum Depth_____

RECOMMENDATIONS:
_____ No Treatment Recommended  _____ Snare/Absorbent Booms
X__ Treatment Recommended  _____ Oil Snare (pom poms)
_____ Manual Pickup  _____ Absorbers (pads, rolls, etc)
X__ Bioremediation  _____ Spot Washing: _____ Wands
X__ Tarmat: _____ Breakup  _____ Other (see comments)
_____ Removal  _____ Beach Cleaner

COMMENTS: Recommend tarmat removal by shovel and hand trowels in asphalt area indicated on attached sketch map. Treatment activities should be conducted prior to May 1 and/or only after obtaining clearances from ADF&G and DNR.

TAG COMMENTS: REVIEW AND EXAMINE UITZ/SUITZ FOR OILED DEBRIS BY MONITORS

TAG APPROVAL DATE:  4/14/90

ADEC Art Weiner DATE:  4/14/90
EXXON Andy Thel DATE:  5/1/90
NOAA Bud Weisburt DATE:  5/1/90
USCG CA. Review DATE:  5/1/90
Sensitive sites for Segments NK-1 and NK-2

SEA BIRD COLONY

Bald Eagle Nest
1991 MAYSAP EVALUATION

SEGMENT: NK 001  SUB: A  REGION: KEN  SURVEY DATE: 5/13/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  OPEN 5/1 - 7/10; RESTRICTED 7/10 - 9/15

Ecological/Constraints (see page two for details)  Fish harvest area, Anadromous stream

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: __________________________________________ Date: 5/24/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N)  N  Y  N

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipolf/Customblen
Other__________________________
Other__________________________

COMMENTS:
INITIAL: __________________________

TAG: __________________________

FOSC: __________________________

TAG APPROVAL DATE: 5/24/91  FOSC APPROVAL DATE: 5/29/91

ADEC  EXXON  USCG  NOAA

FOSC  CHIEF OF STAFF  FOSC

E. E. FAUL, CDR, USCG
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.

Anadromous Stream: Unlimited treatment up to stream bank between May 15 and July 10. ADF&G approval required for work after July 10. Fish Habitat Permit required for instream work. ADF&G approval required for bioremediation within 100 meters of anadromous stream after July 10.
TEAM NO. 6- HELO  SEGMENT NK-01  SUBDIVISION A  DATE 13 MAY 91

ADEC
NAME  D. Hill  of  ADFG
SIGNATURE  Douglas D. Hill

TR (Two anadromous streams exist in this segment as well as river otters and NTR sea otters. See ocher pots observed in the kill zone). The most heavily oiled portion of this segment is from the north end (pocket beach). During today’s survey, oil in 1990 the more the surface of the pocket beach was stirred/disrupted the more apparent the oil present became. I feel this beach holds more oil than is readily apparent. I am not suggesting that a large quantity of oil is present. I feel that because of the past experience noted above, today’s observation the fact that the beach exists within Kachemak Bay Wilderness park of refuge. The habitat the area provides for fish, otters and eagles etc. Further manual removal is warranted.

A few patches of light brown mousse (6”x6”) were observed after a 6” of excavating at the pocket beach—perhaps more will turn up with further manual removal.

EXXON
NAME  R Coulter
SIGNATURE  Roy R. Coulter

NTR

VERY LIGHT AND SPARADIC SOR WHICH WAS ONLY EVIDENT BY SEARCHING THIS AREA. THE BEACH WAS HEALTHY AND DENSE IN MOST AREAS OF THE BEACH. THERE IS NOTHING TO DO HERE OTHER THAN SCRATCH OR BRING THE SURFACE IN ISOLATED AREAS OF SOR. THERE ARE NO OTHER AREAS THAT WOULD BENEFIT FROM THIS TYPE OF BREAKUP AND IT WOULD ONLY DISRUPT ONGOING RECOVERY. VECO CREW BROKE UP AND REMOVED EVERYTHING WE FOUND IN ONE HOUR WITH 10 AMENITIES OF OIL鋪SEDIMENT.

LANDMANAGER
NAME  J. Johnson
SIGNATURE

NTR  TR

This Beach is within Kachemak Bay State Park, established for its high scenic value. This segment has high protection value. I recommend manual cleanup of mousse patches. Manual cleanup with shovels would do little harm to the miz, and could be accomplished easily & quickly. It is likely that some cleanup will be necessary in NK-2, and this segment could be done simultaneously.

USCG/NOAA
NAME  Chief Jensen / G. Shigenaka
SIGNATURE  John M. Jensen  Amy Shigek

NTR

1/4 bay safe picked up. Further removal operations would cause more environmental harm than the oil to be removed.

Surveyed portion of the segment is the head of a small embayment into which two streams flow. The head of the bay is characterized by a broad, low-sloping cobble beach. Scientists Schroeder noted that pink salmon which spawn in these streams do not use the intertidal but move into the streams themselves. Some portions of the cobble beach showed extensive cover of red and brown algae. Oil residues in the form of AP and SOR were observed in cobble substrate in the north east corner of the embayment and in an approximately 2 X 15 m band in the central part of the middle intertidal. In the northeast corner of the beach, silvery to rainbow sheen pooled in run off water when cobble were overturned. Sections of heaviest SOR appeared to penetrate to 2 cm max. Coat with spume needles was observed on the rock face approximately 1-2 m above the beach. Oiling was more or less limited to these two general areas, and VECO crew removed mousse and pavement as well as some SOR. Remnant of beach surveyed did not show evidence of oiling.
TIME: 6:47 to 7:46
TIDE LEVEL: -2 ft. to -1.3 ft.
ENERGY LEVEL: H M L

SURVEYED FROM: FOOT BOAT HELO
WEATHER: SUN CLOUDS FOG RAIN SNOW

TOTAL LENGTH SHORELINE SURVEYED: 415 m
NEAR SHORE SHEEN: BR RB SL NONE

EST. OIL CATEGORY LENGTH: W m M 30 m N m V1 100 m NO 285 m US m

DISTRIBUTION: C B P 11-100% B 51-60% P 11-50% S 1-10% T <1%
SLOPE: V VERTICAL H HIGH ANGLE M MEDIUM ANGLE L LOW ANGLE

OG COMMENTS: This site is located at the head of a deeply indented embayment with A and B streams entering the region. The oil occurs in a broad area in the landward portion of the intertidal zone and on the downdrift side of a small headland beach on the eastern side of the embayment. The brown oiled sediments were covered by trace amounts of oil, with occasional rainbow/silver sheens. The smaller beach site has an area of patchy sor with occasional rainbow/silver sheens. The smaller beach site has an area of patchy sor (thin) and an adjacent area of CT on a vertical bedrock face. Veco workers retrieved sor (thin) and an adjacent area of CT on a vertical bedrock face. Veco workers retrieved sor (thin) and an adjacent area of CT on a vertical bedrock face. Veco workers retrieved sor (thin) and an adjacent area of CT on a vertical bedrock face.
PHOTO SITES NK-1A
ROLL 6-13, FRAMES 1 THRU 6

SITE 1.

A. SOF
20-10 by 30m, < 15%
Rainbow Sheep
between r and under
angular clasts

B. CT/ST
1 by 30m, 20%
Bath tub rim
on vertical face

SITE 2.

A. SOF - S1/RB sheen
50 by 100m, < 15%
on and between clasts

* 1/4 bag of oil
was picked up
by VCGO worker

Sketch Maps (6)
NK-1A
0. Fitzgerald
13 May 1991
6:47 - 7:46

Reviewed 5/27/91 KG
9:45 a.m. 5/13
TEAM #: 5  DATE: 5/1/3/91
SEGMENT #: NK-001  TIDAL HEIGHT (Range): 2.4' to 7'6"
SUBDIVISION  BIOLOGIST: R A. Schreiber
SEA STATE  WIND SPEED/DIRECTION: Calm
PHOTOGRAPHS: ROLL #:  FRAME 

COMMENTS/OBSERVATIONS (to be completed in oiled subdivisions only):

(A, & B) = involved in a proposed agreement. The set of oil does not appear to be affecting the personnel. The area is breathing within the

area. The oil is spread evenly and is receiving additional water

remaining on the surface. The primary concern was in both distribution system

and the safety of personnel. Therefore, the area was protected from further

things are very inconsistent indicating that the

may not be consistent. A, B, and C are involved in

and a
class and very interested in the

things in mind. The area GR/IZ and LIZ are

are present. All areas are

ways and also suggested with dancing as

and other groups of 

were present throughout the

are also very abundant. Corvids and

To be concentrated in the more protected areas.

WILDLIFE OBSERVATIONS
TO BE COMPLETED IN ALL SUBDIVISIONS

BIRDS

Eagles

Seabirds

Waterfowl

Gulls/Kittiwakes

Shorebirds

Corvids

Other Birds

# OF SPECIES  TOTAL BIRDS  FISH OBSERVED

1  1  

1  1  

1  1  

1  "  

1  "  

1  "  

1  "  

1  "  

1  "  

10  "  

MARINE MAMMALS

Sea Otters

Pinnipeds (specify) 2 Harbor Seals

Whales (specify)

LAND MAMMALS

# OBSERVED SPECIES  # OBSERVED

Shoreline subdivision map showing important biological features attached.
# 1991 MAYSAP EVALUATION

**SEGMENT:** NK 001  **SUB:** A  **REGION:** KEN  **SURVEY DATE:** 5/13/91

**ENVIRONMENTAL SENSITIVITIES:**

Work Window(s)  **OPEN 5/1 - 7/10:**  **RESTRICTED 7/10 - 9/15**

Ecological/Constraints (see page two for details)  **Fish harvest area, Anadromous stream**

**ARCHAEOLOGICAL CONSTRAINTS:**

*If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.*

**SHPO Signature:** ______________________ ___  **Date:** __________________

**RECOMMENDATIONS:**

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Manual Pickup (Check as Req.)  ____  ____  ____
Spot Washing  ____  ____  ____
Bio-Customblen Only  ____  ____  ____
Bio-Inipol/Customblen  ____  ____  ____
Other ______________________ ____  ____
Other ______________________ ____  ____

**COMMENTS:**

**INITIAL:** ____________________________________________________

**TAG:**--------------------------------------------------------------

**FOSC:**________________________________________________________ __

**TAG APPROVAL DATE:**_________  **FOSC APPROVAL DATE:**_________

**ADEC**______________________ _

**EXXON**______________________ _

**USCG**________________________ _

**NOAA~-----------------------
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.

Anadromous Stream: Unlimited treatment up to stream bank between May 15 and July 10. ADF&G approval required for work after July 10. Fish Habitat Permit required for instream work. ADF&G approval required for bioremediation within 100 meters of anadromous stream after July 10.
**ADEC**

**NAME:** D. Hill of ADEG  
**SIGNATURE:** D 얘기a D hill

TR (Two anadromous streams exist in this segment and as river mouths and NTREa oiling. Seabirds other perishes observed in the LTZ). The most heavily oiled portion of this segment is found on the north end (cayk beach). During today's survey and in 1990 this portion of the north end of this beach was washed out/disrupted. The most apparent the oil present is. I felt this beach stills more oil than is readily apparent. I'm not suggesting that a large quantity of oil is present. I feel that because of the past experience mentioned above, today's survey shows the fact that the beach exists within Kachemak Bay Wilderness Park and takose of the habitat area in provides for fish, birds, and eagles. Further manual removal is warranted.

A few patches of light brown mosses (4"x 6") were observed after a bit of excavating. One pocket beach--perhaps more will turn up with further manual removal.

**EXXON**

**NAME:** R. Coulter  
**SIGNATURE:** Rex R. Coulter

☐ NTR  
VARY LIGHT AND SPORADIC SOR WHICH WAS ONLY EVIDENT BY SEARCHING THE AREA. THE BIOTA WAS HEALTHY AND DENSE IN MOST AREAS OF THE BEACH. THERE IS NOTHING TO DO OTHER THAN SCRATCH OR BORE IT INCISED AREAS OF SOR. THERE ARE NO OTHER AREAS THAT WOULD BENEFIT FROM THIS TYPE OF BREAKUP AND IT WOULD ONLY DISRUPT ONGOING RECOVERY. VECO CREW BROKE UP AND REMOVED EVERYTHING, WAS FOUND IN ONE HOUR WITH NO ADDITIONAL OIL FOUND SUBSEQUENTLY.

**LANDMANAGER**

**NAME:** J. Johnson  
**SIGNATURE:**

☐ NTR  
This beach is within Kachemak Bay State Park, established for its high scenic value. This segment has high retention value. Recommend manual cleanup of mussel parties. Manual cleanup with shovels would do little injury to the MZ, and could be accomplished easily & quickly. It is likely that some cleanup will be necessary in NK-2, and this segment could be done simultaneously.

**USCG/NOAA**

**NAME:** Chief Jess George Shigekuni  
**SIGNATURE:**

☒ NTR more environmental harm than the oil to be removed.

Surveyed portion of the segment is the head of a shall embayment into which two streams flow. The head of the bay is characterized by a broad, low-sloping, cobble beach. Biological Schroeder noted that pink salmon which spawn in the streams do not use the embayment, but move into it. The streams themselves, some portions of the embayment showed extensive cover of red and brown algae. Oil residues in the form of AP and SOR were observed in cobble substrate in the northeast corner of the embayment and in an approximately 2 X 150 m band in the central part of the middle embayment. In the northeast corner of the beach, silver to rainbow, shiny polished in runoff water when cobble were overturned. Sections of heaviest SOR appeared to penetrate to 2 cm max. Coat with spruce needles was observed on the rock face approximately 1 - 2 m above the beach. Oiling was more or less limited to these two general areas, and VECO crew removed parties and pavement as well as some SOR. Remainder of beach surveyed did not show evidence of oiling.
**Survey Details**

- **Segment:** NK-1
- **Subdivision:** 14
- **Date:** 13 May 1991
- **Time:** 6:47 to 7:46
- **Tide Level:** 2 ft. to -1.3 ft.
- **Energy Level:** ☐ X
- **Surveyed From:** ☐ Foot ☐ Boat ☐ Helo
- **Weather:** ☐ Sun ☐ Clouds ☐ Fog ☐ Rain ☐ Snow

**Surveyed Lengths:**
- **Total Length Shoreline Surveyed:** 415 m
- **Near Shore Sheen:** ☐ BR ☐ RB ☐ SL ☐ NONE
- **Est. Oil Category Length:**
  - W: __ m
  - M: 30 m
  - N: __ m
  - VL: 100 m
  - NO: 285 m
  - US: __ m

**Surface Oil Character**

<table>
<thead>
<tr>
<th>No.</th>
<th>Subsurface Oil Character</th>
<th>Oiled Zone</th>
<th>Clean</th>
<th>HRO</th>
<th>Sheen Color</th>
<th>Pit Zone</th>
<th>Surface-Subsurface Sediments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>P</td>
<td>C-H</td>
<td>L</td>
<td>15</td>
<td>30</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>1B</td>
<td>P P</td>
<td>BR</td>
<td>L</td>
<td>1</td>
<td>30</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3A</td>
<td>Y</td>
<td>C-H-P</td>
<td>L</td>
<td>50</td>
<td>100</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**Notes:**
- Light, 1/4 inch
- Bathing with one vent pipe
- Large area, trace amount

**Distribution:** C = 91-100%; B = 81-90%; P = 71-80%; M = 61-70%; L = 1-10%; T = <1%

**Slope:** V = Vertical; H = High Angle; M = Medium Angle; L = Low Angle

**Photo Roll # May 13:** Frames 1-6

**Sheen Color:**
- B = Brown
- R = Rainbow
- S = Silver
- N = None

**OG Comments:** This site is located at the head of a deeply incised embayment with two streams entering the region. The oil occurs in a broad area in the lowland portion of the intertidal zone and on the downwind side of a small headland beach on the eastern side of the embayment. The oil is oiled to very fine amounts of sand. The site contains a small area of CT on a vent pipe face. The site was further treated with oil and dispersed.

**Reviewed:** 5/18
SITE 1.

A. SOR - 5/18 Sheen
50 by 100 m, < 190
on and between clasts

B. CF/ST
1 by 30 m, 20%
Bathtub ring
On vertical fall

SITE 2.

A. SOR - 5/18 Sheen
50 by 30 m, < 15%
Rainbow sheen
between + under
angular clasts

* 1/2 bag of oils
was picked up
by worker

Stream

Flat-lying
B-C-P inter-tidal
area

Sunken Forest

Grassy area

Dead trees
Logs

Photo site

Sketch Maps
0
Nk-1-A
0. Fitzgerald
13 May 1991
6:47 - 7:16

revised 5/19
35 revised 5/15
PHOTO SITES, NK-1A
ROLL 6-13, FRAMES 1 THRU 6

SITE 1.

LIMIT OF FOCUS

SUNKEN FOREST

SITE 2.

SOR - S/LAB SHEEN
50 by 100m, < 1%
ON AND BETWEEN CLOTH

A. SOR - S/LAB SHEEN
20-30 by 30m, < 15%
RAINBOW SHEEN
BETWEEN FORMER
AND OTHER

B. CT/ST
1 by 30m, 20%
BATH TUB AIM
ON VERTICAL FACE

* 1/4 BAG OF OILS
WAS PICKED UP
BY OIL WORKER

REVISED: BAD HUM
13 MAY 1991
0. FITZGERALD
6:47 - 7:46
KAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 6
SEGMENT # NK-021
SUBDIVISION
SEA STATE Calm
PHOTOGRAPHS: ROLL #

DATE 5/13/91
TIDAL HEIGHT (Range) 2.4 ft to 2.6 ft
BIOLeGIST R. L. Schrock
WIND SPEED/DIRECTION Calm

COMMENTS/OBSERVATIONS (to be completed in oiled subdivisions only):

(A, B, C) = located in a protected cove. The SELs (TI) prefer this area. They are being protected for their
nests. The TIs are慈食is and are nesting in the area.

(4) Seals appear to be at risk due to oil memories that are
taking place. The seals are being protected.

Shoreline subdivision map showing important biological features attached.

WILDLIFE OBSERVATIONS
TO BE COMPLETED IN ALL SUBDIVISIONS

BIRDS | # OF SPECIES | TOTAL BIRDS | FISH OBSERVED
--- | --- | --- | ---
Eagles | 1 | Else | Species Present
Seabirds | | | |
Waterfowl | | | |
Gulls/Kittiwakes | | | |
Shorebirds | | | |
Corvids | | | |
Other Birds | 1 | Bald Eagle | |

LAND MAMMALS

MARINE MAMMALS | # OBSERVED | SPECIES | # OBSERVED
--- | --- | --- | ---
Sea Otters | | | |
Pinnipeds (specify) | | Harbor Seal | |
Sables (specify) | | | |

Shoreline subdivision map showing important biological features attached.
Extensive fungus hyphal mat with deeper roots, brown and black algae, litter, and boulders. Abandoned stream bed, especially along large rocks on NE corner. Mussels abundant but not plentiful.

Very dense muck and large rocks.
SEGMENT ST/ NK-001  STREAM NO: 232-21-10240  A DATE  4/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
1A  Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B  Salmon stream mouth - spawning (7/10 to 8/31)
1J  Purse seine area (7/1 to 8/30)
4GA  State Marine Park Alaska  State Wilderness Park

See attached Ecological Constraint sheet for specific constraints and contacts.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact Exxon's Cultural Resource Program immediately (564-3276 (Anchorage) or 229-1508 (24 hrs.)).

SHPO SIGNATURE:  Rachel  DATE:  5/22/90

Subsurface Oil Observed:  Yes  No  X  Maximum Depth

RECOMMENDATIONS:

No Treatment Recommended
X Treatment Recommended
X Manual Pickup
X Bioremediation
X Tarmat Removal

Snare/Absorbent Booms
Oil Snares (pom poms)
Absorbents (pads, rolls, etc)
Spot Washing: Wands
Beach Cleaner
Other (see comments)

COMMENTS: Recommend manual removal of tarmat in the UITZ as indicated on the attached sketch map. Contact ADNR for Wilderness Permit. Work form 5/16 to 7/1.

TAG COMMENTS:  

TAG APPROVAL DATE:  5/18/90  DATE:  MAY 25 1990

ADEC  EXXON  NOAA  USCG
Anadscat - Recommended

- Sample taken
- Photo frame # and

**Description**

- Aerosols at Tide Flats AE site mouth mouth of NE Cove. Boulder-mass, sheen, and oil slick common.
- NE Nuka Island Cove

**Frame(s)**

1, 2

**Synopses Stream Catalog Number**

232-21-10230
233-21-10240

**ANADSCAT - Recommended**
good luck!

Map Key: EEN-64
Name: Mann NK-
Date: 4/7/80

XXXX Wide
/// Medium
----- Narrow
TTTT Very Light
0000 No Oil
ANADROMOUS FISH STREAM EVALUATION ADDENDUM

CONSTRAINTS FOR STREAM NOS. 232-21-10230 & 232-21-10240
SEGMENT NK-001 SUBDIVISION A

WORK WINDOW

<table>
<thead>
<tr>
<th>Manual Pickup</th>
<th>OPEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tarnat Removal</td>
<td></td>
</tr>
</tbody>
</table>

Bioremediation Less Than 100m From Stream WORK PRIOR TO 7/10
(ADF&G MONITOR REQ.)

ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

1A, 1B Salmon Stream

ADF&G catalogued anadromous streams (232-21-10230 and 232-21-10240) are in Subdivision A. This subdivision is closed to bioremediation less than 100m from stream 7/10 to 8/31. Before 7/10, bioremediation is permitted less than 100m from stream with on-site ADF&G monitor or ADEC alternate present. No constraint to bioremediation more than 100m from stream. No constraint to manual pickup and tarnat removal.

1J Purse Seine Area

Closed to bioremediation after 7/20. No constraint to manual pickup and tarnat removal.

OTHER ECOLOGICAL CONSIDERATIONS

No disturbance to stream bed or banks. No flushing of pollutants or sediments into stream drainage; do not allow Inpol to enter stream flow. On-site examination and consultation by ADF&G monitor is required prior to bioremediation in order to authorize a setback distance from the stream during chemical application; if ADF&G monitor's presence is impossible, authorization may be given by the ADEC monitor. Restrict boat and air traffic to essential minimum 7/20.

SEE SUBDIVISION CONSTRAINT ADDENDUM NK-001A FOR ADDITIONAL Constraint INFORMATION.

FOSC [Signature] 6/3/90
Prepared by [Signature] 6/12/90
ANADROMOUS FISH STREAM EVALUATION

SEGMENT ST/ NK-001 STREAM NO: 232-21-10240 A DATE 4/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
1J Purse seine area (7/1 to 8/30)
4GA State Marine Park Alaska State Wilderness Park

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Subject streams are located within subdivision A (1 of 1). No additional ecological constraints.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact Exxon's Cultural Resource Program immediately (564-3276 (Anchorage) or 229-1508 (24 hrs.).)

SHPO SIGNATURE: Richard D. Orr DATE: 5/30/93

Subsurface Oil Observed: Yes ____ No ____ Maximum Depth ______

RECOMMENDATIONS:
____ No Treatment Recommended ______ Snare/Absorbent Booms
____ Treatment Recommended ______ Oil Snare (pom poms)
____ Manual Pickup ______ Absorbents (pads, rolls, etc)
____ Bioremediation ______ Spot Washing: Wands
____ Tarmat Removal ______ Beach Cleaner
____ Other (see comments)

COMMENTS: Recommend manual removal of tarmat in the UINIT as indicated on the attached sketch map. Contact ADNR for Wilderness Permit. Work form 6/16 to 7/1.

TAG APPROVAL DATE: 5/18/90.
ADEC Ant. W/ Env. Ant. W/ Env. FOSC. __________ DATE: MAY 25 __________
EXXON __________ DATE: __________
NOAA Gary Pettage __________ DATE: __________
USCG 23: 30: 14 __________ DATE: __________
ANADROMOUS FISH STREAM ASSESSMENT

REGION: KENAI
SEGMENT: NK001
SUBDIVISION: A
STREAM NO: 232-21-10230
         232-21-10240
ANADROMOUS FISH STREAM EVALUATION

SEGMENT ST/ NK-001 STREAM NO: 232-21-10240 A DATE 4/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
1J Purse seine area (7/1 to 8/30)
4GA State Marine Park Alaska State Wilderness Park

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Subject streams are located within subdivision A (1 of 1). No additional ecological constraints.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact Exxon's Cultural Resource Program immediately (564-3276 (Anchorage) or 229-1508 (24 hrs.)).

SHPO SIGNATURE: ___________________ DATE: __________________________

Subsurface Oil Observed: Yes_____ No X Maximum Depth_____

RECOMMENDATIONS:
_____ No Treatment Recommended  _____ Snare/Absorbent Booms
X Treatment Recommended  _____ Oil Snares (pom poms)
_____ Manual Pickup  _____ Absorbents (pads, rolls, etc)
_____ Bioremediation  _____ Spot Washing: _____ Wands
X Tarmat Removal  _____ Beach Cleaner
_____ Other (see comments)

COMMENTS: Recommend manual removal of tarmat in the UITZ as indicated on the attached sketch map. Contact ADNR for Wilderness Permit. Work form 5/16 to 7/1.

TAG COMMENTS: _______________________________________________________

TAG APPROVAL DATE: ____________
ADEC ___________________________ FOSC: ____________ DATE: _______
EXXON ___________________________ NOAA ___________________________
NOAA ___________________________ USCG ___________________________
PWS, SEWARD AND HOMER ECOLOGICAL CONSTRAINTS

Salmon stream mouth - fry outmigation (5/1 to 5/15)

Salmon stream mouth - spawning (7/10 to 8/31)

No disturbance of stream bed or banks unless authorized by AD&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream without authorization from AD&G. No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or lnipol application, prior to at least July 1 unless authorized by AD&G. Treatment which is not intrusive and which will not affect nearshore oil or toxicity levels, such as manual removal, can probably proceed without adherence to time constraints. In any case, contact AD&G and appropriate Native Corporation for specific dates, locations, and constraints. Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts. No application of lnipol within two weeks of arrival dates (work window at these sites is limited to 7/2 to 7/31). Contact AD&G and USFWS prior to treatment for confirmation.

AGENCY CONTACT PERSON: AD&G John Morison 267-3324

AGENCY CONTACT PERSON: USFWS Steve Zimmerman 586-7325

Salmon fry nursery area (4/31 to 7/31)

No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or lnipol application, prior to July 31 unless authorized by AD&G. Treatment which will not affect nearshore oil or toxicity levels, such as manual or mechanical removal, can probably proceed without adherence to time constraints. Contact AD&G prior to treatment for confirmation and advice.

AGENCY CONTACT PERSON: AD&G Larry Peitz 424-3314

Estuary Hatchery release (4/15 to 6/15)

Main Bay Hatchery release (4/20 to 6/15)

Swimmill Bay Hatchery release (4/15 to 6/1)

Cannery Creek Hatchery release (4/21 to 6/1)

Remote release sites

No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or lnipol application, prior to at least July 1 unless authorized by AD&G and/or PWS Aquaculture Association. Treatment which will not affect nearshore oil or toxicity levels, such as manual or mechanical removal, can probably proceed without adherence to time constraints. Contact AD&G or PWS Aquaculture Association for confirmation and authorization.

AGENCY CONTACT PERSON: AD&G Larry Peitz 424-3314

AGENCY CONTACT PERSON: PWS Aquaculture Association John McMillan or Bruce Suzomoto 424-7311

Gilnet area (6/7 to 8/31)

Purse seine area (7/20 to 9/30)

Purse seine hook-off (7/20 to 9/30)

Set net sites (6/11 to 7/25)

Contact AD&G for specific dates, locations and constraints. Restrict boat and air traffic to essential minimum. When set net sites are present (1) restrict boat operations to essential minimum as authorized by AD&G. If plans for treatment include methods such as hot water wash or lnipol application which might affect nearshore oil or toxicity levels, contact AD&G for consultation and authorization.

AGENCY CONTACT PERSON: AD&G James Brady 424-3312

Herring spawning (4/1 to 6/15)

Contact AD&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to unceded intertidal and subtidal algae and seagrass. If plans for treatment include methods such as hot water wash or lnipol application which might affect nearshore oil or toxicity levels, contact AD&G for consultation and authorization.

AGENCY CONTACT PERSON: AD&G Evelyn Biggs 424-3335

Harbor seal and sea lion pupping (5/15 to 7/1)

Harbor seal and sea lion molting (6/15 to 9/15)

Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts. No application of lnipol within two weeks of arrival dates (work window at these sites is limited to 7/2 to 7/31). Contact AD&G and USFWS prior to treatment for confirmation.

AGENCY CONTACT PERSON: US National Marine Fisheries Service Steve Zimmerman 586-7325

AGENCY CONTACT PERSON: AD&G Don Calkins 267-2403

Seabird colony (5/1 to 9/1)

Restrict air and boat traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance from colony. Contact USFWS prior to treatment.

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

Shorebird/waterfowl concentration (4/1 to 5/15)

Restrict all activity to essential minimum, especially air traffic. Contact USFWS and AD&G for confirmation.

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

AGENCY CONTACT PERSON: AD&G Tom Roth 267-2203

All Bald Eagle nests (3/1 to 6/1)

Active Bald Eagle nests (3/1 to 9/1)

Restrict air traffic and all disturbance to essential minimum. No personnel within 400m. 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

Recreation:

Tent sites (6/1 to 9/15)

Anchorage (6/1 to 9/15)

Forest Service cabins (6/1 to 9/15)

Lodge (6/1 to 9/15)

Special use destination

Subistence area: Salmon harvesting (5/1 to 9/30)

Pinnfish harvesting

Deer harvesting (8/15 to 2/28)

Invertebrates harvesting

Contact AD&G and appropriate Native Corporation for specific dates, locations, and constraints. Restrict boat and air traffic and beach disturbance to essential minimum. If plans for treatment include methods such as hot water wash or application of lnipol which might affect intertidal or nearshore oil or toxicity levels, contact AD&G and appropriate Native Corporation for authorization - see Native Corporation Contact List for each Native Corporation's contact person.

AGENCY CONTACT PERSON: AD&G Jim Fall 267-2359
SEGMENT ST / NK-1     SUBDIVISION:      DATE 4/30/90

USCG

NAME ____________________________ SIGNATURE __________

☐ NO TREATMENT RECOMMENDED       ☐ TREATMENT SUGGESTED

COMMENTS

☐ NO TREATMENT RECOMMENDED       ☐ TREATMENT SUGGESTED

COMMENTS

Recommend Manual pickup and removal of tarballs and tar galls/tar mats from North shore and from west shore.
(Tar galls near South Salmon stream mouth).
(See attached maps).

Two salmon streams exist at the head of NE Cove Nuka.

- A substantial amount of oil still exist at the eastern end of NK-1 (Beach was pressure washed in 1989).

LAND MANAGER

NAME ____________________________ SIGNATURE ____________________________

☐ NO TREATMENT RECOMMENDED       ☐ TREATMENT SUGGESTED

COMMENTS

☐ NO TREATMENT RECOMMENDED       ☐ TREATMENT SUGGESTED

COMMENTS

NAME _________________ SIGNATURE ____________________________

REVISION NO. 8137
Exxon Command Center (Homer)
P.O. Box 4848
4014 Lake St.
Homer, AK 99603
Tel: 235-6444
Fax: 235-5963

08.30.1990

The attached is a copy of SSAT NK-001 plus comments from ANAD.
stream 232-21-10230 and 232-21-10240. This should be used
the other NK-001. Refer to SSAT NK-001 file for operations notes.

This was copied by Daryl Yoles but very difficult to read after being faxed. junk.
FIELD SHORELINE COMMENT SHEET

SEGMENT ST / UKO1  SUBDIVISION: A  DATE 4/7/01

USCG  NAME: MIGUEL  SIGNATURE: [Signature]

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS

This area has two main zones of oil containment. The small patches of widely spaced pavements along the WITZ of the main beach is a smaller beach on the NE side of larger pavement. The NE point beach had some sheets, even though the ground was frozen in places. These pavements should be removed manually. There is little/no concern for erosion. Care should be taken to not disturb the lower intertidal zone in the NE shore.

ADEC  NAME: JOHN R. REED  SIGNATURE: [Signature]

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

I recommend using shovels and hand shovels to pickup the small asphalt pavements. The main beach is very low angle and has an erodible stream on the NE end. The WITZ was mostly covered with snow and I feel like we were missing some of the contamination. I have read and agree with all data on S.S.H.R. LAND MANAGER-Director

NAME: JOHNNY JOHNSON  SIGNATURE: [Signature]

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

I concur with above comments. Concerned about sawed WITZ and recommend another look later. I do not feel with intrusive methods in this segment, but manual pickup of masts probably best. Avoid no mild debris or driftwood, except for 1 salvation pad. Note segment is a one priority due to STATE PARK designation, though access is limited by god weather because of SE exposure.
SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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*probable, present but can not see under these conditions

SUBSURFACE OIL

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<th>PIT</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
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COMMENTS: Oil on asphalt

Oil is mostly in the form of remnant mouse accumulations that exist as patches of asphalt. Widely-scarred, remnant mouse paths exist throughout the middle and upper zone. The shoreline is very low.

Page 1 of 2
### Subsurface Oil (Continued)

<table>
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<tr>
<th>Pit No.</th>
<th>Pit Depth (cm)</th>
<th>Subsurface Oil Character</th>
<th>Oiled Interval (Cal-Cam)</th>
<th>Below Oil/Film Color</th>
<th>Pit Zone</th>
<th>Ana</th>
<th>Subsurface Sediments</th>
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**Comments**

No buried oil was evident.

Angled. The rise of the storm beach suggests that waves, at least occasionally, move sediment on and across this beach. Most of NK-1 consists of the intertidal portion of a pebble-cobble-small boulder delta formed by a stream at the head of a long, narrow cove. Our survey was not at an ideal time because of the snow cover in the upper portion of the unit.
**Group A**

**ADFAG Multi-Assessment Data Form**

1. **Survey Types**: Survey
   - Method: Aerial
   - Ground: Foot

2. **Date**: 14-14-90
3. **Start Time**: 09:33
4. **Stop Time**: 10:46
5. **Section**: NK-1
6. **Station #:**
7. **Tide Ht at Survey**: 1.0
8. **K-Units**:
9. **Stat Area**: 232-21
10. **Lat**: 59° 23.6 N
11. **Long**: W 150° 38.4
12. **Source Map**:
13. **Location**: ACS-232-21-10230, Nuka Island, NW portion of NE Cove Sediment
14. **Description**: North Corner of Bay (NE face 150°)

<table>
<thead>
<tr>
<th>Extent of Oil</th>
<th>Oil in Stream Bed</th>
<th>Oil in Stream Banks</th>
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</thead>
<tbody>
<tr>
<td>L</td>
<td>Y</td>
<td>Y</td>
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<td>V</td>
<td>N</td>
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<tr>
<td>W</td>
<td>N</td>
<td>N</td>
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| CATALOGED ANIMAL/FISH STREAMS | CATALOGED 232-21-10230
|------------------------------|-------------------|

15. **Surface Coverage**:
16. **Surface Thickness**:
17. **Penetration**:
18. **Overall Oil Impact**: N Y L M N
19. **Oil Type**: Pooled, Spotted, Asphalt, Sticky
20. **Oiled Debris**: Y N
21. **Shoreline Types**: Headland, Low-lying Rocks, Beac
22. **Wave Exposure**: High, Moderate, Low
23. **Substrate Types**: Bedrock, Boulder, Cobble, Gravel, Sand, Mud/Shell

**Comments**: N. E. Nuka seems little changed since last Fall.

There were fewer observed taxa now in the stream than before.

The side pocket beaches contain significant amounts of mussels between rocks, and on rock walls. No differences were observed between before and after.

**Prescreening**:

<table>
<thead>
<tr>
<th>Aerial</th>
<th>Ground</th>
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</table>
**ANADSCAT - Recommended**

- Sample taken
- Photo frame # and

---

**FRAME(S)**
1.2
d.3
6.7

**DESCRIPTION**
Aerials of Tide Plates + AES mouths/buttes/Head of NE Cove + Overthrown Boulder + marine shear + Todd Lignite + Common in oil

Dean McNane (ADES) holding oiled pump + with pump kept on Pressure

*Photo Frame 1* and

**NE NUKA ISLAND COVE**

*Anadromous Stream Catalog Number*
232-21-10230
232-21-10240

- TAR Patches
  - 4" x 4" to 12" x 12"
  - < 1/2" thick

- Forested area
- Valley trees
- Driftwood

- TAR PATCHES
- LITZ

- Oiled rock face
- Oiled Tan P. P.

- Tar Patches, No. 4 found beneath cobble and cowl and visible in interstices

- Pressure washed in 1984
**SHORELINE ECOLOGICAL SUMMARY**

**Segment ST I**
**Subdivision A**
**Date (mo/day/yr)** 4/17/70

**Time (24 hr)** 0645
**Biologist** M. CARR

(A) Substrate type and % of segments:
- (1) Bedrock 5%
- (2) Boulder 5%
- (3) Cobble 40%
- (4) Pebble 50%
- (5) Sand (6) Silt

(B) Overall % cover of biota (% of segment):
- Dense 50%
- Moderate
- Low 50%

(C) Density, substrate preference (by number from A, above), &
vertical zonation of major taxa: (upper-U; mid-M; low tidal-L);
juveniles/adults (X), new settlement (6)

### EARNACLES

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### MYTILUS

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### FUCUS

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**Wildlife Observations/General Comments:**
- LAND OTTER (1)
- HARBOR SEAL, Phoca vitulina (3)

**Ecological Considerations:**
- Sensitivity codes: 4-OS (Alaska State Acts), 5-T (Bald eagle rest), 5-R (Seabird colonies).
### Ecological Summary

**Segment ST**

**Subdivision** A (of A)

**Date (mo/day/yr)** 4/7/90

**Time (24 hr)** 0645

**Biologist** M. Carr

##### (A) Substrate type and % of segments:

<table>
<thead>
<tr>
<th>Substrate Type</th>
<th>% of Segments</th>
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<tbody>
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<td>Bedrock</td>
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<td>Pebble</td>
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<td>Sand</td>
<td>10</td>
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<tr>
<td>Shells</td>
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##### (B) Overall % cover of biota (% of Segment):

- Dense: 50
- Moderate: 50
- Low: 50

##### (C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa:

<table>
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</tbody>
</table>

**Wildlife Observations/General Comments:**
- Land Otter (1)
- Harbor Seal (1)

**Ecological Considerations:**
- Marine birds: 5-8 (Alaska State Park), 5-8 (Bald Eagle Nest)
- 5-8 (Seabird colony)
good luck!

XXX Wide
/// Medium
---- Narrow
TTTT Very Light
0000 No Oil

Map Key: HCN-644
Name: Mann/NK
Date: 4/7/90
Date Entered:
ADDENDUM: SUBDIVISION CONSTRAINTS
SEGMENT NK-1 SUBDIVISION A (1 of 1)

WORK WINDOW

<table>
<thead>
<tr>
<th>Tarmat Removal</th>
<th>OPEN</th>
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</thead>
</table>

Bioremediation More Than 100m From Stream WORK PRIOR TO 7/20
Bioremediation Less Than 100m From Stream WORK PRIOR TO 7/10
(ADF&G MONITOR REQ.)

ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

1A,1B Salmon Streams
Four ADF&G catalogued anadromous streams (232-21-2010, 232-21-2006, 232-21-10240 and 232-21-10230) are present in Subdivision A. This subdivision is closed to bioremediation less than 100m from stream 7/10 to 8/31. Before 7/10, bioremediation is permitted less than 100m from stream with on-site ADF&G monitor or ADEC alternate present. No constraint to bioremediation more than 100m from stream. No constraint to tarmat removal.

1J Purse Seine Hook-off
No constraint to tarmat removal. Closed to bioremediation after 7/20.

5R Seabird Colony
No constraint; colony is outside of Segment NK-01A and more than 800m from recommended treatment area.

5T Bald Eagle Nest
NO CONSTRAINT. Eagle nest more than 400m from recommended treatment area.

OTHER ECOLOGICAL CONSIDERATIONS

No disturbance to stream bed or bank. No flushing of pollutants or sediments into stream drainage; do not allow inlet to enter stream flow. On-site examination and consultation by ADF&G monitor is required prior to bioremediation in order to authorize a setback distance from the stream during chemical application; if ADF&G monitor's presence is impossible, authorization may be given by the ADEC monitor. Restrict boat and air traffic to essential minimum after 7/20. Avoid any unnecessary disturbance or damage to unciled biota and substrate.

FOSC

Prepared by

Date 06/01/90

Date 06/14/90
ECOLOGY MAP
SEGMENT NK-1
SUBDIVISION A (____ of ____)

EXXON
Exxon Company, USA

- Seabird Colony
- Eagle Nest

Anadromous Streams
(332-21-10240, 2010; 2006, 10230)
100 m Zone

TREATMENT AREAS
SHORELINE EVALUATION

SEGMENT ST/ NK-001 SUBDIVISION A (3 OF 1) DATE 4/7/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R Seabird Colony (5/1 to 9/1)
5T Active Bald Eagle Nest (3/1 to 6/1)
4GG Alaska State Park

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid disturbance/damage to unoiled substrate and biota.

ARCHAEOLOGICAL CONSTRAINTS: If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: [Signature] DATE: April 14, 1990

OIILING CATEGORIZATION:

Wide 0 m: Medium 56 m: Narrow 0 m: V.Light 360 m: No Oil 0 m

Subsurface Oil Observed: Yes  No X Maximum Depth____

RECOMMENDATIONS:

___ No Treatment Recommended  ___ Snare/Absorbent Booms
X Treatment Recommended  ___ Oil Snares (pom poms)
___ Manual Pickup  ___ Absorbents (pads, rolls, etc)
X Bioremediation  ___ Spot Washing: Wands
X Tarmat: Breakup  ___ Beach Cleaner
X Removal  ___ Other (see comments)

COMMENTS: Recommend tarmat removal by shovel and hand trowels in asphalt area indicated on attached sketch map. Treatment activities should be conducted prior to May 1 and/or only after obtaining clearances from ADF&G and DNR.

TAG COMMENTS: Review and examine UITZ/SUITZ for oiled debris by monitors.

TAG APPROVAL DATE: 4/14/90

ADEC Art Weiser  Net Wheeler

EXXON [Signature]  FOSC: [Signature] DATE: 5-1-90

NOAA [Signature]  [Signature]

USCG [Signature]  [Signature]
REGION: KENAI

SEGMENT: ST/NK-002

SUBDIVISIONS: A (1 OF 2)
SHORELINE EVALUATION

SEGMENT ST/ NK-002  SUBDIVISION A (1 OF 2)  DATE  4/7/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R  Seabird colony (5/1 to 9/1)
5T  Bald eagle nest (3/1 to 6/1)
4GG  Alaska State Park

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE:________________________ DATE:________________________

OILING CATEGORIZATION:
Wide 0 m: Medium 182 m: Narrow 204 m: V.Light 0 m: No Oil 163 m
Subsurface Oil Observed: Yes____ No X_____ Maximum Depth________

RECOMMENDATIONS:
___No Treatment Recommended  ___Snare/Absorbent Booms
X Treatment Recommended  ___Oil Snares (pom poms)
___Manual Pickup  ___Absorbents (pads, rolls, etc)
X Bioremediation  ___Spot Washing:_______ Wands
X Tarmat: ____Breakup  ___Beach Cleaner
__X Removal  ___Other (see comments)

COMMENTS: Recommend tarmat removal in areas shown on attached sketch map and bioremediation in areas of broken cover and coat, also shown on map. Work to be conducted after 6/1 based on above eagle constraint and with approval of ADF&G and USFWS concerning seabird colony.

TAG COMMENTS:

TAG APPROVAL DATE:______________
ADEC ____________________________  FOSC:______________ DATE:________
EXXON __________________________
NOAA ____________________________
USCG ____________________________
FIELD SHORELINE COMMENT SHEET

SUBDIVISION: A  DATE: 4/7/90

NAME: JACQUI  SIGNATURE: JACQUI

NO TREATMENT RECOMMENDED  ☒ TREATMENT SUGGESTED

COMMENTS:

The oil stains on the rocky headlands do not warrant further treatment; however, the pavements should be removed manually. There were abundant sheens (up to 20' at times) on the unincised sediments. On some beaches, the pavements were 10-12 cm thick and very soft. These areas are difficult to clean because of the scattered veneer of cobbles. It is as if the upper half of the oil was removed (during "B" cleanup last year), leaving behind a thin, lower zone. Pneumatics is limited to 12 cm in well-packed sediments.

NAME: JOHN R. REED  SIGNATURE: JOHN R. REED

NO TREATMENT RECOMMENDED  ☒ TREATMENT SUGGESTED

COMMENTS:

Asphalt pavements should be removed manually with a shovel or hand trowel. This area was warm water wash last summer. There is an unsalted layer of cobbles sitting on top of the 8-10 cm thick pavements that would need to be moved in order to get to the asphalt. Some sheening was noticed. Utica was covered with snow. I have read and agree with all data on SSAT forms.

NAME: JOSEPH S. JOHNSON  SIGNATURE: JOSEPH S. JOHNSON

NO TREATMENT RECOMMENDED  ☒ TREATMENT SUGGESTED

COMMENTS:

Agree with SSAT data, and concur with the above comments. Manual removal recommended, but will be difficult. May want to use pumps on the oil; warm up & lighter more. No opposition to pneumatic treatment, but should be careful; not to disturb healthy marine biota in the Utica. A direct driftwood debris. Oil band high on the beach, indicates a strong possibility of oil in the snow covered Utica as well.
SHORELINE OILING SUMMARY

OG: Mann
BIO: Care
TEAM NO.: 18

EST. SUBDIVISION LENGTH: 545 m
TIDE LEVEL: +3 to +4
DATE: 4/17/90

SURFACE OIL

CHARACTER | DISTRIBUTION | OIL/FILM COLOR | IMPACTED ZONES
--- | --- | --- | ---
Asphalt pavement | ✓ ✓ ✓ | | ✓ ✓ ✓
Pool | ✓ ✓ ✓ | | ✓ ✓ ✓
Cover | ✓ ✓ ✓ | | ✓ ✓ ✓
Stain | ✓ ✓ ✓ | | ✓ ✓ ✓
Mousse | ✓ ✓ ✓ | | ✓ ✓ ✓
Patties | ✓ ✓ ✓ | | ✓ ✓ ✓
Tarballs | ✓ ✓ ✓ | | ✓ ✓ ✓
Film | ✓ ✓ ✓ | | ✓ ✓ ✓
No oil | ✓ ✓ ✓ | | ✓ ✓ ✓

PAVEMENT: H F (5) 200 sq. m by 6 cm

PATTIES/TARBALLS: None

NEAR SHORE SHEEN? No

SURFACE SEDIMENTS: R 50% B 10% C 30% P 10% G 0% S 0% M 0% V 0%

OIL CATEGORY LENGTH: W 0 m M 240 m N 240 m V 0 m NO 65 m

OILED DEBRIS NO AMOUNT

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<tr>
<td>Debris</td>
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</tbody>
</table>

Debris collected: Yes

Photographs:
Roll No.: 18-4
Frames: 19-26

SUBSURFACE OIL

See separate map of segment for oil locations

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
<th>BELOW</th>
<th>OIL/FILM COLOR</th>
<th>PIT ZONE</th>
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COMMENTS

The coastline here consists of small (20-50m wide) coves separated by steep bedrock headlands. The coves have oil, the headlands do not—except on some leeward faces. The oil in the coves is partly hidden under a scattered armor of cobbles and small boulders. This situation makes the oil hard to see without a shovel and will complicate clean-up efforts. (continued)
Note that the VITZ was partly (~1/3 of width) covered by snow during this survey. Air temperatures were in the upper 20°F so that ice covered much of the beach face.

Pits were usually placed in areas of surface oiling.

In regard to subsurface oiling, remember that where an asphalt exists, the subsurface begins below the pavement. It is possible that buried oil could exist in recent berms now covered by snow in the VITZ.
No sketch map

Oil Character Length (m): AP 180 PO 0 CV 240 CT 240 ST 50 MS 0 PT 0 TB 0 FL 180 NO 125
**SHORELINE ECOLOGICAL SUMMARY**

Segment STA NK-2 Subdivision A (of A-B) Date (mo/day/yr) 4/7/90

**B) 0800 Biologist M. CARR**

(A) Substrate type and % of segments:
- Bedrock 60
- Boulder 10
- Cobble 30
- Pebble 20
- Sand 10
- Silt

(B) Overall % cover of biota (% of segment):
- Dense 50
- Moderate 20
- Low 50

(C) Density, substrate preference (by number from A, above), &
vertical zonation of major taxa: (upper-U; mid-M; low tidal-L);
juveniles / adults (X), new settlement (3)

**Antithesis Observations/ General Comments:**
- Steller's Jay (1)
- Bald Eagle (1)
- Common Murre (1)

**Ecological Considerations:**
- Sensitivity codes: 4-6 (Alaska State Parks), 5-T (Bald Eagle nest),
  5-R (Seabird colonies)

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| **MYTILUS** |       |          |        |      |
| 1U      | 2     | 2        | 1L     |      |
| 1M      | 3     | 3        | 1L     |      |
| 1L      | 5     | 5        | 1L     |      |
| 1U      | 6     | 6        | 1L     |      |
| 1M      | 6     | 6        | 1L     |      |
| 1L      | 6     | 6        | 1L     |      |

| **GASTROPODS** |       |          |        |      |
| 1U      | 2     | 2        | 1L     |      |
| 1M      | 3     | 3        | 1L     |      |
| 1L      | 5     | 5        | 1L     |      |
| 1U      | 6     | 6        | 1L     |      |
| 1M      | 6     | 6        | 1L     |      |
| 1L      | 6     | 6        | 1L     |      |

| **FUCUS** |       |          |        |      |
| 1U      | 2     | 2        | 1L     |      |
| 1M      | 3     | 3        | 1L     |      |
| 1L      | 5     | 5        | 1L     |      |
| 1U      | 6     | 6        | 1L     |      |
| 1M      | 6     | 6        | 1L     |      |
| 1L      | 6     | 6        | 1L     |      |

Photographs:
- Roll No. 4
- Frames 19-26
Sensitive sites for Segments NK-1 and NK-2

SEA BIRD COLONY

BALD EAGLE NEST
* GIS operator: if you have to simplify this area, make it all medium.

Map Key: PWS-NK-2
Name: Moore
Date: 4/7/90
Pit Locations
photographs (1

NK-2 19-4 (19-26)
Subdivision A

XXXX Wide
/// Medium
----- Narrow
TTTT Very Light
0000 No Oil
REGION: KENAI

SEGMENT: ST/NK-002

SUBDIVISIONS: B (2 OF 2)
SHORELINE EVALUATION

SEGMENT ST/ NK-002 SUBDIVISION B (2 OF 2) DATE 4/10/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R  Seabird colony (5/1 to 9/1)
5T  Bald eagle nest (3/1 to 6/1)
4GG  Alaska State Park
See attached Ecological Constraint Sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: __________________________ DATE:____________________

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 486 m
Subsurface Oil Observed: Yes____ No X__ Maximum Depth ______

RECOMMENDATIONS:

X  No Treatment Recommended  __  Snare/Absorbent Booms
   Treatment Recommended  __  Oil Snares (pom poms)
   Manual Pickup  __  Absorbents (pads, rolls, etc)
   Bioremediation  __  Spot Washing: Wands
   Tarimat: Breakup  __  Spot Washing: Wands
   Removal  __  Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: __________
ADEC  __________________________
EXXON  __________________________
NOAA  __________________________
USCG  __________________________

FOSC: __________________ DATE: __________
PWS ECOLOGICAL CONSTRAINTS

Salmon stream mouth - fry outmigration (3/1 to 5/15)
Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage.
No bioremediation or other chemical application within 100m of stream. Contact ADF&G Habitat Division prior to treatment for permits.

Salmon fry nursery area (4/31 to 7/31)

Esther Hatchery release (4/15 to 6/1)
Main Bay Hatchery release (4/20 to 5/10)
Sawmill Bay Hatchery release (4/20 to 5/10)
Cannery Creek Hatchery release (4/21 to 6/1)
Remote release site

Gill net area (6/7 to 8/31)
Purse seine area (7/21 to 9/30)
Purse seine hook-off (7/20 to 9/30)
Set net sites (6/11 to 7/25)
For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.

Salmon fry - nursery (4/31 to 7/31)

Harbor seal and sea lion pupping (5/15 to 7/1)
Harbor seal and sea lion molting (8/15 to 9/15)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.

Seabird colony (5/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.

Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic.

All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (6/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

Recreation:
Tent sites (6/1 to 9/15)
Anchorage (6/1 to 9/15)
Forest Service cabins (6/1 to 9/15)
Lodge (6/1 to 9/15)
Special use destination

Subsistence area:
Salmon harvesting (5/1 to 9/30)
Finfish harvesting
Deer harvesting (8/15 to 2/28)
Invertebrate harvesting

For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1  NK 02  SUBDIVISION: B  DATE 4/1/00

USCG/NMTA NAME JACQUI MICHEL  SIGNATURE

☑ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

No oil was observed, even in the very few/small pocket boulder beaches. The rocky shores are exposed to moderate wave energy, with numerous caves and eroded slots in the bedrock.

ADEC
NAME JOHN R. REED  SIGNATURE

☑ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

No oil was observed. I have read and agree with all data on SSAT Forms.

LAND MANAGER/DNR
NAME JEFF J. JOHNSON  SIGNATURE

☑ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Bedrock faces, no obvious oiling. State Park segment. Agree with SSAT observations, bedrock & high energy rock faces.
SHORELINE OILING SUMMARY

OG: Mono
USCG Noa: N/A
Michel SEGMENT ST: NK-2

O: Carr
LAND REP: Johnson SUBDIVISION: B

XON: COVER
ADEC: Pink

TEAM NO.: 14
TIME: 7:45 to 9:00
DATE: 4/17/90

EST. SUBDIVISION LENGTH: 503 m
TIDE LEVEL: +4 to +5

UPLANDS DESCRIPTION: □ Grass □ Forest □ Rock

SURVEYED FROM: □ Foot □ Boat □ Helo WORKING DIRECTION: W to E

SURFACE SEDIMENTS: R 90% B 8% C 2% P 0% G 0% S 0% M 0% V 0% O 0%

SLOPE: Lang 5% Hang 15% Vert 80% WAVE EXPOSURE: □ Low □ Med □ High

OIL CATEGORY LENGTH: W 0 m M 0 m N 0 m V 0 m NO 515 m

SURFACE OIL

<table>
<thead>
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<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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PAVEMENT: H F $ 0 sq. m by 0 cm

OILED DEBRIS NO AMOUNT

Logs
Vegetation
Trash
Debris

Photographs:

Roll No.: none
Frames: none

OILED DEBRIS COLLECTED

DEBRIS TYPE NA

NEAR SHORE SHEEN? NO BR RW SL TL

SUBSURFACE OIL

No pits dug because of inaccessibility and bedrock substrate

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
<th>BELOW</th>
<th>OIL / FILM COLOR</th>
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COMMENTS

This is a cliff-lined shore with a few small, pocket beaches. Kelp beds border much of the shoreline. No oil was observed during our inspection by boat.
SEGMENT ST: MK 2
SUBDIVISION: B
DATE: 4/7/90

CHECKLIST:
- N Arrow
- Approx. Scale
- Seg/Sub Breaky
- Oil Dist.
- Main
- Length
- % Cover
- Subsurface Character
- Est. HYUL
- SSL
- Profile Location(s)
- Puddle(s)
- PR Location(s)
- Photo Location(s)

LEGEND:
1 ▲
- Pit - No Subsurface Oil

2 ▲
- Pit - Subsurface Oil

CT/C
Continuous Distribution

CT/B
Broken Distribution

CT/P
Patchy Distribution

CT/S
Splashed Distribution

Oiled Vegetation

1 ↔
Photo location, direction, and number

Oil Character Length (m): AP O PO O CV O CT O ST O MS O PT O TB O FL O NO. 515

No sketch map.
## SHORELINE ECOLOGICAL SUMMARY

**Segment ST1 NK-2 Subdivision B (of A-B)**  Date (mo/day/yr) 4/7/90

<table>
<thead>
<tr>
<th>Date (mo/day/yr)</th>
<th>4/7/90</th>
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</table>

- **Biologist:** M. CARR
- **Time (24 hr):**
- **Subdivision:**
- **SUBDIVISION:**
- **(A)** Substrate type and % of segments:
  - (1) Bedrock (2) Boulder (3) Cobble (4) Pebble (5) Sand (6) Silt
- **(B)** Overall % cover of biota (% of substrate): Dense 70 Moderate 20 Low 10
- **(C)** Density, substrate preference (by number from A, above), & vertical zonation of major taxa: (upper-U; mid-M; low tidal-L), juveniles/adults (X), new settlement (3)

### Photographs
- Roll No. ___
- Frames: none

#### BARNACLES

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#### GASTROPODS

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#### FUCUS

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</table>

**Wildlife Observations/ General Comments:**

None

**Ecological Considerations:**

Sensitivity codes: See NK-2 A sheet.
*GIS operator: if you have to simplify this area, make it all medium.

Subdivision A

Subdiv. B

XXX Wide
/// Medium
---- Narrow

ADEC Segment Length: 1988m

Map Key: PWS-NK-2
Name: [Signature]
SHORELINE EVALUATION

SEGMENT ST/ NK-002 SUBDIVISION A (1 OF 2) DATE 4/7/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R      Seabird colony (5/1 to 9/1)
5T      Bald eagle nest (3/1 to 6/1)
4GG     Alaska State Park

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: [Signature] DATE: 4/7/90

OILING CATEGORIZATION:

Wide 0 m: Medium 182 m: Narrow 204 m: V.Light 0 m: No Oil 163 m
Subsurface Oil Observed: Yes_____ No X_____ Maximum Depth_____

RECOMMENDATIONS:

_____ No Treatment Recommended   _____ Snare/Absorbent Booms
X  Treatment Recommended          _____ Oil Snares (pom poms)
_____ Manual Pickup               _____ Absorbents (pads, rolls, etc)
X  Bioremediation                 _____ Spot Washing: Wands
X  Tarmat: _____ Breakup          _____ Beach Cleaner
   X  Removal                     _____ Other (see comments)

COMMENTS: Recommend tarmat removal in areas shown on attached sketch map and bioremediation in areas of broken cover and coat, also shown on map. Work to be conducted after 6/1 based on above eagle constraint and with approval of ADF&G and USFWS concerning seabird colony.

TAG COMMENTS: MONITORS TO ASSSS SUZITZ FOR OILING (SNOW COVERED AT TIME OF SURVEY).

TAG APPROVAL DATE: 4/7/90
ADEC: [Signature] DATE: 4/26/90
EXXON: [Signature] DATE: [Signature] DATE: 4/7/90
NOAA: [Signature]
USCG: [Signature]
SEGMENT ST. NK - 2

SUBDIVISION A

DATE 7/7/90

CHECKLIST

- N Arrow
- Approx. Scale
- Seg/Sub Bound
- Oil Dist.
- Threat length
- % Cover
- Substrate Character
- Est. HMA/HL
- SSL
- Profile Location(s)
- Profile(s)
- Pit Location(s)
- Photo Location(s)

LEGEND

1 ▲
Pt. - No Subsurface Oil

2 ▲
Pt. - Subsurface Oil

CT/C
Commercial Distribution

CT/B
Broken Distribution

CT/P
Patchy Distribution

CT/S
Splashed Distribution

Config Vegetation

1 ➜
Photo location, direction, and number

Oil Character Length (m): AP 180 PO O CV 240 CT 240 ST 50 MS O PT O TB O FL 180 NO 125
Sensitive sites for Segments NK-1 and NK-2

SEA BIRD COLONY

Bald Eagle Nest
*G15 Operator: if you have to simplify this area, make it all medium.*
ADDENDUM: SUBDIVISION CONSTRAINTS

SEGMENT NK-2 SUBDIVISION A (1 of 2)

WORK WINDOW

<table>
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<th>Tarmat Removal</th>
<th>OPEN</th>
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<tbody>
<tr>
<td>Bioremediation</td>
<td>WORK BEFORE 7/20</td>
</tr>
</tbody>
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ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

1J Purse Seine Area  Closed to bioremediation after 7/20. No constraint to tarmat removal.
5R Seabird Colony  NO CONSTRAINT. Work site is more than 800m from seabird colony.
5T Bald Eagle Nest  NO CONSTRAINT. USFWS 6/1/90 map indicates no active nest within 400m of Subdivision A work site.

OTHER ECOLOGICAL CONSIDERATIONS

Restrict boat and air traffic to essential minimum after 7/20. Avoid any unnecessary disturbance or damage to uncollied biota and substrate.

FOSC  Date 6-10-98
Prepared by  Date 6/10/90
ECOLOGY MAP
SEGMENT NK-2
SUBDIVISION A (1 of 2)
METERS

★ Seabird Colony
▲ Eagle Nest

Bald Eagle
Buffer Zone
SHORELINE EVALUATION

SEGMENT ST/ NK-002 SUBDIVISION A (1 OF 2) DATE 4/7/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R  Seabird colony (5/1 to 9/1)
5T  Bald eagle nest (3/1 to 6/1)
4GG  Alaska State Park

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: ___________ DATE: 4/7/90

OILING CATEGORIZATION:
Wide 0 m: Medium 182 m: Narrow 204 m: V.Light 0 m: No Oil 163 m
Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:
____No Treatment Recommended  _____Oil Snares (pom poms)
_XTreatment Recommended  ____Absorbents (pads, rolls, etc)
_____Manual Pickup  _____Spot Washing: Wands
_____Bioremediation  _____Beach Cleaner
_____Tarmat: Breakup  _____Other (see comments)
_____X Removal

COMMENTS: Recommend tarmat removal in areas shown on attached sketch map and bioremediation in areas of broken cover and coat, also shown on map. Work to be conducted after 6/1 based on above eagle constraint and with approval of ADF&G and USFWS concerning seabird colony.

TAG COMMENTS:
MONITORS TO ASSESS SUITABILITY FOR OILING (SNOW COVERED AT TIME OF SURVEY)

TAG APPROVAL DATE: 4/17/90

ADEC  EXXON  NOAA  USCG
SHORELINE EVALUATION

SEGMENT ST/ NK-002  SUBDIVISION B (2 OF 2)  DATE  4/10/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5R  Seabird colony (5/1 to 9/1)
5T  Bald eagle nest (3/1 to 6/1)
4GG  Alaska State Park
See attached Ecological Constraint Sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unooled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE:  DATE:  4/10/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 486 m
Subsurface Oil Observed:  Yes  No

RECOMMENDATIONS:

X  No Treatment Recommended
___  Treatment Recommended
___  Manual Pickup
___  Bioremediation
___  Tarmat:  Breakup
___  Removal

Snare/Absorbent Booms
Oil Snares (pom poms)
Absorbents (pads, rolls, etc)
Spot Washing:  Wands
Beach Cleaner
Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE:  4/17/90
ADEC
EXXON
NOAA
USCG

FOSC:  DATE:  4-20-90
*GIS operator: if you have to simplify this area, make it all medium.

Subdivision A

Subdiv. B

XXX Wide
/// Medium
---- Narrow

NK-2

ADEC Segment Length: 1988m

Map Key: PWS-NK-2

Name:

[Signature]
1991 MAYSAP EVALUATION

SEGMENT: NK 002  SUB: A  REGION: KEN  SURVEY DATE: 5/20/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  RESTRICTED 3/1 - 9/1

Ecological/Constraints (see page two for details)  Eagle nest, Fish harvest area

ARCHEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: Timothy F. Smith  Date: 6/10/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N)  N  N  D

Manual Pickup (Check as Req.)  
Spot Washing  
Bio-Customblen Only  
Bio-Inopol/Customblen  
Other  
Other

COMMENTS:

INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: June 4, 1991  FOSC APPROVAL DATE: 6/10/91

ADEC  John Bauer  FOSSC  E. E. PAGE, CDR, USCG
EXXON  
USCG  
NOAA  

The State will evaluate the need to perform treatment on this subdivision.
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Eagle Nest: Access restricted from 3/1 to 9/1. USF&WS authorization required. Maintain 1000' vertical and 1/4 mile horizontal buffer.

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.
ADEC
NAME: Clarea S. Crosby  SIGNATURE: Clarea S. Crosby

[Treatment recommended]
Suggest manual removal of HSOR - MSOR - Crews will have to roll BF to access oiling - pumps should be utilized as needed.

EXXON
NAME: George P. Stiles  SIGNATURE: George P. Stiles

[NTR] Several areas exist on the west side of the boulder outcrops of HSOR - (weathered)

MANAGER
NAME: Jeff Johnson  SIGNATURE: Jeff Johnson

[NTR] There are several small pocket beaches in this segment that contain recoverable PSOR. Crew members that were picking up PSOR during the survey were able to do so fairly well utilizing manual pickup. The segment is within Kachemak Bay State Park, in an area of high recreational value. Treatment utilizing manual methods is recommended.

USCG/NOAA
NAME: John McMahan  SIGNATURE: John McMahan

[NTR] This was a long segment, half of which had little or no oil, the remaining area did contain wetted mud - TB much of which remained in shale and sediments. The area generally, deep - not make it an idea candidate for any kind of successful manual treatment. Photographic records would reveal more environmental harm than the oil to be removed.

John H. McDowell
<table>
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<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT TYPE</th>
<th>SHORE SLOPE</th>
<th>AREA WIDTH</th>
<th>AREA LENGTH</th>
<th>ZONE S</th>
<th>ZONE UI</th>
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**TOTAL LENGTH SHORELINE SURVEYED:** 54.9 m

**NEAR SHORE SHEEN:** DBA OR None

**EST. OIL CATEGORY LENGTH:** W __ m, M __ m, N __ m, V __ m, US __ m

**DISTRIBUTION:** C = 01-100%; B = 51-90%; P = 11-50%; S = 1-10%; T = <1%

**SLOPE:** V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE

**PHOTO ROLL # MAYBE:** FRAMES

**OG COMMENTS:** See map.
OG SKETCH MAP
NK 1009 A
J P. Kemp
May 20 1971
0957-11410

Few outlined NS/MS OR 30cm dia
2m yield in extension with
near vertical stria and worked on
1x5 MS OR towards bottom
and 9x case

A4
MS OR, 5x35, 15%
around st bed down
to almost water line
an et on rock surface

A9
Small pocket of
et/bed between
bedrock cliffs
et, 2x30 on walls
MS on ramp
and MS OR on
sediments <10%
2x30
Worked on

A7
Pocket st/bed
1x10 et, 20% along
northern bed/et wall

A6
MS OR 1x10, <5%
along bedding curve
on bedrock wall

A8
et, 1x50, <5%
on bed/et bedrock

A5
MS OR 1x10
25% down
water line
Few small et on bedrock

Maysap 417 6

A1
NS OR, 2x20, 10%
worked on

A10
et, 1x5
5% et on bedrock

Revised 5/25 79
Demchesi Cil. Chart.
NK002-A Biological Summary, continued

MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4
SEGMENT # NK002
SUBDIVISION A
SEA STATE Calm

DATE/TIME May 20, 1991 1000 - 1132
TIDAL HEIGHT (Range) 6.0 => 2.3
BIOL O GIST JIM BARRY
WIND SPEED/DIRECTION Calm, Clear

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

Oil Related Comments

A1 A few scattered MS/MSOR patties were present in the upper zone of this cobble beach. Littorine snails and barnacles are moderately abundant near the oiled sediments. Dog whelks (Nucella sp.) also are common on this beach. Black lichen is patchy, but most abundant above the oiled zone. Fucus is dense in the low zone below the oiled sediments and eel grass appears to be abundant in the subtidal.

A2 MSOR was found on the cobble beach from the middle to the upper zone, and overlaps a zone of barnacles and mussels. Barnacles are moderate to dense in patches, and mussels are fairly dense in the middle zone, in crevices among the cobble. Littorine snails, limpets, and the other associated invertebrates are moderately abundant. Fucus is sparse to moderately abundant. Despite the oiled sediments, the biota appear healthy, with juveniles and recruits of most species present.

A3 A small amount of oil (HSOR) was found along the drift line around cobble and bedrock, where few biota are found. Amphipods and oligochaete worms were uncommon, and were the only invertebrates observed.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

BIRDS

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<td>1 adult, 3 juvenile</td>
<td>Salmon Fry</td>
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<td>Seabirds</td>
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<tr>
<td>Waterfowl</td>
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<td>20</td>
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Other Birds

FISH OBSERVED

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LAND Mammals

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<td>Whales (specify)</td>
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Shoreline subdivision map showing important biological features attached.
This site has patches of MSOR in the middle to upper zone on a headland and a part of the adjacent boulder/cobble talus of a pocket beach. Most species are moderately abundant. Mussels are present in dense patches, but do not completely cover the area. Fucus is most abundant towards the lower shore. Littorine snails (adults, juveniles, eggs), barnacles (adults and juveniles), limpets, and mussels are sparsely or moderately abundant. Green filamentous algae are very abundant in some areas and form a slimy film over the bedrock or cobble.

Oil (CT) at this site occurs along a zone in the upper intertidal on the cobble/boulder beach and the bordering bedrock outcrops and cliffs. Fucus and littorine snails are moderately abundant amongst the cobble. Barnacles appear less abundant, but can be found on the underside of cobbles, where they are moderately abundant in patches. The bedrock outcrops have higher densities and cover of species than found on the cobble beach. Mussels and Fucus are moderately abundant on these headlands. Amphipods, polychaete worms, and barnacles are also moderately abundant.

Oil (HSOR) is present around cobble in the middle to upper zone of this small cobble beach. Green filamentous algae form a film on the beach cobble along most of the upper zone, below which, Fucus forms a sparse zone in the upper to middle zone. Limpets, littorine snails, and oligochaetes are moderately abundant.

Oil (CT) is present on the bedrock outcrops and cliff along the upper intertidal zone, from near the barnacle zone to somewhat above it. This broken band continues along the coast into a few small pocket beaches. The abundance of biota near the oiled site varies. Barnacles and a few littorine snails are moderately abundant in some locations, but quite uncommon in others. This CT is also on cobble along the same zone (ca +10 to 12 ft.), where little biota is present. Barnacles, littorine snails, limpets, and even mussels, are present on the weathered oil, or in oiled sediments in the cobble, at several locations. Barnacle spat are sparse or uncommon.

A small pocket of cobble and boulders between bedrock outcrops on this beach have oil on and under them (CT on walls, MS, MSOR on ramp/cobble). Sparse to moderate biota occur on this beach, with scattered patches of mussels. Littorine snails, limpets, barnacles, and Fucus are low in abundance. The lower intertidal was underwater during this portion of the survey, but Fucus appears moderately abundant on the larger cobble of the beach.

Cleanup Considerations

Some manual cleanup activities were performed along this subdivision during the survey. Additional cleanup, if recommended, will probably not harm the existing biota. However, where mussels beds form a dense cover over the bottom (e.g., A4), negative effects of treatment may offset any benefit from removal of the remaining oil.

General Characteristics of NK002-A

NK002-A is located at the protected inner coast of a moderate to highly exposed cove. Most of the subdivision experiences medium to low waves, though some storms may cause somewhat higher waves and wave-related disturbance. Pocket beaches of cobble and boulders, and bedrock outcrops or talus slopes, are the major habitat types.
Biota are sparse to moderately abundant on the cobble beaches. Barnacles, littorines snails and limpets are the major species of the upper zone on these beaches. Towards the lower zone, mussels become more abundant and are present as dense patches between cobble and boulders on some beaches. Fucus is dense only on bedrock shores, near the middle to low intertidal zone.

The subtidal habitats adjacent to these shores appear to have eel grass and clam beds over a significant portion of the bottom.

Most shores appear healthy, with a diverse assemblage of species on bedrock, under cobble, and within the beach sediments.

**General Zonation Pattern**

<table>
<thead>
<tr>
<th>Biota:</th>
<th>Tide Level</th>
<th>Supratidal</th>
<th>Upper</th>
<th>Middle</th>
<th>Low</th>
<th>Subtidal</th>
</tr>
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<tbody>
<tr>
<td>Oil Distribution</td>
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<tr>
<td>Bare Rock</td>
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<tr>
<td>Green Filamentous Algae</td>
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<tr>
<td>Rockweed (Fucus)</td>
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<tr>
<td>Barnacles (Balanus)</td>
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<tr>
<td>Littorine Snails</td>
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<tr>
<td>Limpets</td>
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<tr>
<td>Other Red Algae</td>
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<tr>
<td>Green Algae (Ulva/other)</td>
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<tr>
<td>Mussels (Mytilus)</td>
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<tr>
<td>Crustose Brown Algae (Hildenbrandia)</td>
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<tr>
<td>Upright Brown Algae (not Fucus)</td>
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<tr>
<td>Eel Grass</td>
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<td>Clams</td>
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Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

**Common Species on NK002-A**

**A. Marine Plants**
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   - Enteromorpha sp., Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   - Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp.,
     Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   - Endocladia muricata, Halosaccion glandiforme, Iridaea sp.,
     Lithothamnion sp., Mastocarpus sp., Membranoptera dimorpha,
     Odonthalia floccosa, Palmarea palmata, Petrocelis sp., Porphyra sp.,
     Ptilota filicina, Rhodomela larix
5. Higher Plants - Zostera marina (eel grass), Leymus mollis (beach rye grass)

**II. Marine Animals**
1. Sponges - Porifera - Halichondria bowerbanki,
2. Anemones - Anthopleura artemesia, Metridium senile, Urticina crassicornis,
3. Hydroids - Sertulariidae, Aglaophenia sp.
5. Flatworms - Platyhelminthes - Polyclads
6. Nemertean Worms - Ribbon Worms - Emplectonema gracile,
8. Polychaete Worms
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Cruciger sp., Eudistylia polymorpha
   Spirobididae - Spirorbis sp.
10. Crustaceans
   a. Amphipods - Traskorchestia traskiana
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs - Paguridae (hermit crabs),
   d. Isopods - Cirdana harfordi, Idotea wesnesenskii, Gnorimorsphaeroma oregonensis
11. Mollusca
   a. Chitons - Mopalia mucosa, Katharina tunicata, Tonicella lineata,
   b. Snails - Gastropods
      Amphissa columbiana, Littorina sitkana, L. keenae, Natica clausa, Nucella lamellosa, N. lima, Searlesia dira
   c. Limpets - Lottia digitalis, L. persona, L. limatula, Tectura fenestrata, T. scutum,
   e. Bivalves - Chlamys hastata, Clinocardium sp., C. nuttalli, Macoma nasuta, Modiolus modiolus, Mytilus californianus, M. edulis, Pododesmus cepio, Prototheca staminea, Saxidomus giganteus
12. Echinoderms
   a. Brittle Stars - Ophiulus aculeatus?, Ophiothrix spiculata?, Amphipholis?
   b. Sea stars - Dermasterias imbricata, Evasterias truscheli, Pycnopodi helianthoides,
   c. Sea Cucumbers - Holothurians Eupentacta sp., Leptosynapta sp.
   d. Urchins - Strongylocentrotus droebachiensis
15. Fishes
   Cottidae -
   Stichaeidae - Xiphister atropurpureus, X. mucosus
1991 MAYSAP EVALUATION

SEGMENT: NK 002  SUB: A  REGION: KEN  SURVEY DATE: 5/20/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  RESTRICTED 3/1 - 9/1

Ecological/Constraints (see page two for details)  Eagle nest, Fish harvest area

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: ______________________ Date: ______________________

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N)  N

Manual Pickup (Check as Req.)  ______
Spot Washing  ______
Bio-Customblen Only  ______
Bio-Inipol/Customblen  ______
Other ______________________

COMMENTS:

INITIAL: ______________________

TAG: ______________________

FOSC: ______________________

TAG APPROVAL DATE: __________  FOSC APPROVAL DATE: __________

ADEC ______________________  FOSC ______________________

EXXON ______________________

USCG ______________________

NOAA ______________________
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Eagle Nest: Access restricted from 3/1 to 9/1. USF&WS authorization required. Maintain 1000' vertical and 1/4 mile horizontal buffer.

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.
Treatment Recommended

Suggest manual removal of HSOR - MSOR - Crew will have to roll B/C to access oiling - Compressors should be utilized as needed.

Several areas exist on the west side of the shoulder and crags of HSOR. (Weathered)

There are several small pocket beaches in this segment that contain resemble MSOR. Crew members that were picking up sor during the survey were able to do fairly well utilizing manual pickup. The segment is within Kachemak Bay State Park, in an area of high recreational value. Treatment utilizing manual methods is recommended.

This was a long segment, half of which had light to no oil; the remaining area did contain weathered, B/C much of which remained in place and unset. The area, generally, does not make it an idea candidate for any kind of successful manual treatment. Scientific report would cause more environmental harm then the oil to be removed.
**OG: J. Smee**  
**BIO: J. Barry**  
**ADEC: Crosby**  
**LANDMANAGER: Johnson**  
**EXON: Stiles**  
**USCG/NOAA: McDonald/Meekon**

**TIME:** 09:57 to 11:45  
**TIDE LEVEL:** +6.0 ft. to +2.3 ft.  
**ENERGY LEVEL:** □ H □ M □ L  
**SURVEYED FROM:** □ FOOT □ BOAT □ HELO  
**WEATHER:** □ SUN □ CLOUDS □ FOG □ RAIN □ SNOW  
**TOTAL LENGTH SHORELINE SURVEYED:** 549 m  
**NEAR SHORE SHEEN:** □ BR □ RB □ SL □ NONE  
**EST. OIL CATEGORY LENGTH:**  
**TOTAL LENGTH SHORELINE SURVEYED:**

<table>
<thead>
<tr>
<th>L</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>AREA</th>
<th>ZONE</th>
</tr>
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<tbody>
<tr>
<td>LOC</td>
<td>AP</td>
<td>MS</td>
<td>TB</td>
<td>SOH CV</td>
<td>CT</td>
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<td>A2</td>
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<td>A3</td>
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<td>A4</td>
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<td>A5</td>
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<td>A7</td>
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<tr>
<td>A8</td>
<td>S</td>
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<tr>
<td>A9</td>
<td>S</td>
<td></td>
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</tr>
</tbody>
</table>

**DISTRIBUTION:** C = 0-100%; B = 1-50%; P = 1-50%; S = 1-100%; T = <1%  
**SLOPE:** V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE  
**PHOTO ROLL:** MAYSAP-8903  
**FRAMES:**

<table>
<thead>
<tr>
<th>PIT</th>
<th>PIT</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN BENEATH LEVEL</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE-TO-SUBSURFACE SEDIMENTS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td></td>
<td>cm-cm</td>
<td>Y/N</td>
<td></td>
<td>S</td>
<td>U/M/L</td>
<td></td>
</tr>
</tbody>
</table>

**SHEEN COLOR:** D = BROWN; R = RAINBOW; S = SILVER; N = NONE

**OG COMMENTS:** See map.
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4  DATE/TIME May 20, 1991 1000 - 1132
SEGMENT # NK002  TIDAL HEIGHT (Range) 6.0 => 2.3
SUBDIVISION A  BIOLOGIST JIM BARRY
SEA STATE Calm  WIND SPEED/DIRECTION Calm, Clear

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

Oil Related Comments

A1 A few scattered MS/MSOR patties were present in the upper zone of this cobble beach. Littorine snails and barnacles are moderately abundant near the oiled sediments. Dog whelks (Nucella sp.) also are common on this beach. Black lichen is patchy, but most abundant above the oiled zone. Fucus is dense in the low zone below the oiled sediments and eel grass appears to be abundant in the subtidal.

A2 MSOR was found on the cobble beach from the middle to the upper zone, and overlaps a zone of barnacles and mussels. Barnacles are moderate to dense in patches, and mussels are fairly dense in the middle zone, in crevices among the cobble. Littorine snails, limpets, and the other associated invertebrates are moderately abundant. Fucus is sparse to moderately abundant. Despite the oiled sediments, the biota appear healthy, with juveniles and recruits of most species present.

A3 A small amount of oil (HSOR) was found along the drift line around cobble and bedrock, where few biota are found. Amphipods and oligochaete worms were uncommon, and were the only invertebrates observed.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>1 adult, 3 juvenile</td>
<td>Salmon Fry</td>
</tr>
<tr>
<td>Seabirds</td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td>3</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>40</td>
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</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td>1</td>
<td>6</td>
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<tr>
<td>Corvids</td>
<td></td>
<td></td>
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<tr>
<td>Other Birds</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
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<tr>
<td>Pinnipeds (specify)</td>
<td></td>
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<tr>
<td>Whales (specify)</td>
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</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
A4 This site has patches of MSOR in the middle to upper zone on a headland and a part of the adjacent boulder/cobble talus of a pocket beach. Most species are moderately abundant. Mussels are present in dense patches, but do not completely cover the area. Fucus is most abundant towards the lower shore. Littorine snails (adults, juveniles, eggs), barnacles (adults and juveniles), limpets, and mussels are sparsely or moderately abundant. Green filamentous algae are very abundant in some areas and form a slimy film over the bedrock or cobble.

A5 Oil (CT) at this site occurs along a zone in the upper intertidal on the cobble/boulder beach and the bordering bedrock outcrops and cliffs. Fucus and littorine snails are moderately abundant amongst the cobble. Barnacles appear less abundant, but can be found on the underside of cobbles, where they are moderately abundant in patches. The bedrock outcrops have higher densities and cover of species than found on the cobble beach. Mussels and Fucus are moderately abundant on these headlands. Amphipods, polychaete worms, and barnacles are also moderately abundant.

A6 Oil (HSOR) is present around cobble in the middle to upper zone of this small cobble beach. Green filamentous algae form a film on the beach cobble along most of the upper zone, below which, Fucus forms a sparse zone in the upper to middle zone. Limpets, littorine snails, and oligochaetes are moderately abundant.

A7, A8 A10 Oil (CT) is present on the bedrock outcrops and cliff along the upper intertidal zone, from near the barnacle zone to somewhat above it. This broken band continues along the coast into a few small pocket beaches. The abundance of biota near the oiled site varies. Barnacles and a few littorine snails are moderately abundant in some locations, but quite uncommon in others. This CT is also on cobble along the same zone (ca +10 to 12 ft.), where little biota is present.

Barnacles, littorine snails, limpets, and even mussels, are present on the weathered oil, or in oilied sediments in the cobble, at several locations. Barnacle spat are sparse or uncommon.

A9 A small pocket of cobble and boulders between bedrock outcrops on this beach have oil on and under them (CT on walls, MS, MSOR on ramp/cobble). Sparse to moderate biota occur on this beach, with scattered patches of mussels. Littorine snails, limpets, barnacles, and Fucus are low in abundance. The lower intertidal was underwater during this portion of the survey, but Fucus appears moderately abundant on the larger cobble of the beach.

Cleanup Considerations

Some manual cleanup activities were performed along this subdivision during the survey. Additional cleanup, if recommended, will probably not harm the existing biota. However, where mussel beds form a dense cover over the bottom (e.g., A4), negative effects of treatment may offset any benefit from removal of the remaining oil.

General Characteristics of NK002-A

NK002-A is located at the protected inner coast of a moderate to highly exposed cove. Most of the subdivision experiences medium to low waves, though some storms may cause somewhat higher waves and wave-related disturbance. Pocket beaches of cobble and boulders, and bedrock outcrops or talus slopes, are the major habitat types.
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<tr>
<td>Barnacles (Balanus)</td>
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<td>- + + + +</td>
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<tr>
<td>Littorine Snails</td>
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<tr>
<td>Other Red Algae</td>
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<td>++</td>
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<td>-</td>
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<td>Mussels (Mytilus)</td>
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<td>++++</td>
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<td>-</td>
<td>-</td>
</tr>
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<td>- -</td>
<td>-</td>
<td>+</td>
<td>++++</td>
<td>++++</td>
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<td>Clams</td>
<td>- -</td>
<td>-</td>
<td>+</td>
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   a. Brittle Stars - Ophiolus aculeatus?, Ophiothrix spiculata?, Amphipolhis?
   b. Sea stars - Dermasterias imbricata, Evasterias truscheli, Pycnopodia helianthoides,
   c. Sea Cucumbers - Holothurians Eupentacta sp., Leptosynapta sp.
   d. Urchins - Strongylocentrotus droebachiensis
11. Ascidians - Synocium? sp., Aplidium?
12. Fishes
   Cottidae -
   Stichaeidae - Xiphister atropurpureus, X. mucosus
ASAP TAG REVIEW SHEET

Segment: NK02   Subd: A   Site: 1   Date: PRE-Review 14AUG90

Priority For Addressing In 1990

___ HIGH   ___ MEDIUM   X LOW   ___ NTR

Treatment Recommended: Mowing; Remove Asphalt & Mousse
BIOSORB

Priority Site For Reassessment In 1991

YES   NO   YES   NO   YES   NO   YES   NO
✓ CG ___   __ ADEC ___   ✓ EXXON ___   ✓ LAND MGR ___

TAG 13AUG-90

Manual Remove Asphalt & Mousse & BIO

Medium Priority
WORK PLAN MODIFICATION RECOMMENDATION

SEGMENT NK-2       SUBDIVISION    A       DATED 3/3/90

MODIFICATION  CLASS I  X  CLASS II  CLASS III

1. REASON FOR MODIFICATION
   Oil and/or oil still remaining in this subdivision, light sheen coming from subdivision,

2. SUGGESTED ADJUSTMENT TO WORK PLAN
   Manual pick up of OP oil and tar mats

3. TIMING ISSUES
   N/A

ADEC  John F. Reed
EXXON  [Signature]  (If resources permit)
USCG  [Signature]  [Signature]
LAND MANAGER  [Signature]  (Non) (If field rep is on scene)
SEGMENT AS 1NK-02  SUBDIVISION:    SITE: 01   DATE 3Aug 1990

USCG
NAME  SCHULTZ GREGORY J  SIGNATURE  Gregory J Schultz

☐ YES  ☐ NO  PRIORITY SITE FOR REASSESSMENT IN 1991
REASON:  There is still a moderate amount of oily sediment in this
subdivision. There are 4 anadromous streams in this bay and this
subdivision is a low energy area.

ADEC
NAME  JOHN R. REED  SIGNATURE  John R. Reed

☐ YES  ☐ NO  PRIORITY SITE FOR REASSESSMENT IN 1991
REASON:  Sheen, Mousse, tar patches, and surfacse OR still remains at this
site. These sites are protected and get very little wave
action. Angular broken shale.

LAND MANAGER
NAME  David K. Kenagy  ADNR SIGNATURE  [Signature]

☐ YES  ☐ NO  PRIORITY SITE FOR REASSESSMENT IN 1991
REASON:  Several areas observed in this subdivision with OP oil and pooled
mousse. There are four anadromous streams (listed by ADF&G) at
the head of the bay and adjacent to this subdivision. Sediments consist
of fragmented shale, with only small amounts of rounded gravel. The subdivision
is generally low energy; oil remaining will likely be present in 1991.

EXXON
NAME  Keith Miles  SIGNATURE  Keith Miles

☐ YES  ☐ NO  PRIORITY SITE FOR REASSESSMENT IN 1991
REASON:  This low energy area is still producing sheen in moderation. Some
manual picked (< 50 bps) should halt the sheening. Due to resource
availability I would not a low priority on this site. We took a helio
in and could not pick up any more weight.
**ASAP SHORELINE OILING SUMMARY**

**TEAM NO.:** 04  
**EXXON:** Keith Miles  
**OG:** Rich Marty  
**USGS:**  
**USGS:**  
**GLOSS:**  
**ADEC:** Randy Reed  
**LAND REP:** Dave Kimsey  
**TOTAL NO. SITES:** 1

**DATE:** 03 July 90  
**TIME:** 13:00  
**TIDE LEVEL:** 0.2 to 0.8

**TOTAL EST LENGTH OF SHORELINE SURVEYED:** 55 m

**SURVEYED FROM:**  
Foot □ Boat □ Helo  
**WEATHER:** □ Sun □ Clouds □ Fog □ Rain □ Snow

**OIL CATEGORY LENGTH:** W - m  
□ M - m  
□ N - m

---

**SURFACE OIL**

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OILED ZONES</th>
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<tbody>
<tr>
<td>ASPHALT</td>
<td>/C /B /P /S</td>
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<tr>
<td>S.O.R.</td>
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<td>X</td>
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<td>STAIN</td>
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<tr>
<td>MOUSSE</td>
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<td>X X</td>
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<tr>
<td>PATTIES/T.B.</td>
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<tr>
<td>FILM</td>
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<td>EST. SITE LENGTH</td>
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**SUBSURFACE OIL**

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<th>SITE NO.</th>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
<th>CLEAN BELOW (Y/N)</th>
<th>PIT ZONE</th>
<th>SURFACE-SUBSURFACE SEDIMENTS</th>
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</table>

 Photos:  
 Roll No.  
 Frames  

**COMMENTS:** Oil remains fairly heavy on beach. Some clear coming off.

---

**REVISION NO.:** 7/27/90
ECOLOGY MAP
SEGMENT NK-2
SUBDIVISION A (1 of 2)

WORK AREAS

ACTIVE NEST

Bald Eagle Buffer Zone

ASAP
Sketch map
08/03/90

Exxon Company, USA
Map Key: KEX-NK-2
May 17, 1990

Some mousse/fur patches in small pockets + broken SOR in a ~3m band from LITZ-LITZ. Some sheen coming off.
RM 08/03/90

Seabird Colony
Eagle Nest
REGION: KENAI
SEGMENT: ST/NK-03
SUBDIVISIONS: A (1 OF 1)
SEGMENT ST/___ NK-03____ SUBDIVISION A (1 OF 1) DATE ___4/22/90__

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4GG   Alaska State Wilderness Park
5T All bald eagle nests (3/1 to 6/1)-Active eagle nests (3/1 to 9/1)
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE:_________________________ DATE:_________________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 605 m: No Oil 817 m
Subsurface Oil Observed: Yes No X Maximum Depth________

RECOMMENDATIONS:
X No Treatment Recommended Snare/Absorbent Booms
____ Treatment Recommended Oil Snares (pom poms)
____ Manual Pickup Absorbents (pads, rolls, etc)
____ Bioremediation Spot Washing: Wands
____ Tarmat Removal Beach Cleaner
____ Other (see comments)

COMMENTS: ________________________________________________________________

TAG COMMENTS: _____________________________________________________________

TAG APPROVAL DATE:____________
ADEC ___________________________ FOSC:________________ DATE:________
EXXON __________________________"
NOAA __________________________
USCG __________________________
Salmon stream mouth - fry outmigration (3/1 to 5/15)
Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream. Contact ADF&G Habitat Division prior to treatment for permits.

Salmon fry nursery area (4/31 to 7/31)

Estuary Hatchery release (4/15 to 6/1)

Main Bay Hatchery release (4/20 to 5/10)

Sawmill Bay Hatchery release (4/15 to 6/1)

Cannery Creek Hatchery release (4/21 to 6/1)

Remote release site

Gill net area (6/7 to 8/31)

Purse seine area (7/20 to 9/30)

Purse seine hook-off (7/20 to 9/30)

Set net sites (8/11 to 7/25)
For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.

Herring spawning (4/1 to 8/15)
Restrict boat traffic to essential minimum. Avoid damage to unoiled intertidal and subtidal algae and seagrass. Contact ADF&G for specific dates and locations.

Harbor seal and seal lion pupping (5/15 to 7/1)
Harbor seal and seal lion molting (3/15 to 8/15)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.

Seabird colony (5/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.

Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic.

All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 400m. 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

Recruitment:
Tent sites (5/1 to 9/15)
Anchorage (6/1 to 9/15)
Forest Service cabins (6/1 to 9/15)
Lodge (6/1 to 9/15)
Special use destination

Subsistence area: Salmon harvesting (5/1 to 9/30)
Finfish harvesting
Deer harvesting (9/15 to 2/28)
Invertbrate harvesting
For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
FIELD SHORELINE COMMENT SHEET

SEGMENT STL NK-03 SUBDIVISION: A (1041) DATE 4/22/90

JOAN NAME Donald A. MacDonald SIGNATURE Donald A. MacDonald

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

Most of the segment was vegetal debris with a few pocket beaches. Some seagrass wetland planting present at northern end of segment. One sea urchin reported toward the southern end of segment. Replenishing intertidal zone.

ADEC NAME John R. Reed SIGNATURE John R. Reed

☒ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

Very scattered coat of splatters and sand on protected vertical walls, does not warrant treatment. I agree with data on SSAT Forms.

LAND MANAGER

NAME Sharron Mathven-Toney (ADNE) SIGNATURE Sharron Mathven-Toney

☒ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

Haka Island Segment 3 - Northeast Cove lies within Kachemak Bay State Wilderness Park. This segment receives continuous flushing with wave motion. Only two of the pocket beaches can be safely surveyed by small helicopters. Shoreline is accessible only with good weather conditions.
SHORELINE OILING SUMMARY

OG Sawyer
USCG MacDonald

BIO Gen
LAND REP Mathven-Tong

EXXON Boyer
ADEC Reed

SEGMENT ST/ NK-3
SUBDIVISION A

TEAM NO. 18
TIDE LEVEL +6 to +1.5

DATE Apr 12, 1990

EST. SUBDIVISION LENGTH: 1752 m

LAND SURVEYED FROM:
Foot
Boat
 Helo

WORKING DIRECTION:
S to N

SURFACE SEDIMENTS:
R 75%
S 10%
C 5%
P 5%
G 0%
S 5%
M 0%
O 0%

SLOPE: Lang 25%
Hang 0%
Ven 75%

WAVE EXPOSURE:
Low
Med
High

OIL CATEGORY LENGTH:
W 0 m
M 0 m
N 0 m
V 750 m
VL 750 m
NO 1003 m

SURFACE OIL

<table>
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<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<td>ASPHALT PAVEMENT</td>
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<tr>
<td>POOLED COVER</td>
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<tr>
<td>STAIN MOUSSE PATTIES TARBALLS FILM</td>
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<tr>
<td>NO OIL</td>
<td>/ / / /</td>
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PAVEMENT H F S_O sq. m by_O cm

PATTIES / TARBALLS_O BAGS

NEAR SHORE SHEEN? NO BR RW SL TL

OILED DEBRIS AMOUNT SM MD LG

DID YOU COLLECT DEBRIS?

Log
Vegetation
Trash
Debris

TYPE mousse

#BAGS_1

Photographs:

Roll No. ST-18-8
Frames_13+14

SUBSURFACE OIL

| PIT NO. | PIT DEPTH (cm) | SUBSURFACE OIL CHARACTER | OILED MATERIAL | BELOW OIL / FILM COLOR | PIT ZONE | A SHEEN
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<td>4</td>
<td>20</td>
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<td>P-S,F</td>
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COMMENTS ST/NK3 (Nuka Island) comprises mostly bedrock cliffs with several low-angle pocket beaches. No oil was observed along the southern half of this segment, whereas a discontinuous, less than 1 meter wide band of splatters was observed along the northern half.

REVIEWED DATE 23 Apr 90
**SHORELINE ECOLOGICAL SUMMARY**

Segment ST/NK-3 Subdivision A Date (mo/day/yr) 4-22-20

(A) Substrate type and % of segments:

1. Bedrock 75%
2. Boulder 10%
3. Cobble 5%
4. Pebble 5%
5. Sand 5%
6. Silt 0%

(B) Overall % cover of biota (% of segment):

- Dense 70%
- Moderate 20%
- Low 10%

(C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa: (upper-U; mid-M; low tidal-L; juveniles/adults (X), new settlement (3)).

### BARNACLES

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<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
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<td>Bed 1U 1M 1L</td>
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<tr>
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### MYTILUS

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### GASTROPODS

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### FUCUS

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<tr>
<td>Bed 5</td>
<td>6 6 6</td>
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Wildlife Observations/General Comments:

- glamour-winged gull (10)
- sea otter (6)
- adult common oystercatcher (1)
- oyster-catcher (5)

Ecological Considerations:

- Sensitivity codes: ST 4 GG
XXX Wide
/// Medium
---- Narrow
TTTT Very Light
0000 No Oil

NK-3

Map Key: PWS-NK-3
Name: T. Sawyer
Date: 4-22-90
Data Entered:

ADEC Segment Length: 1752m
SHORELINE EVALUATION

SEGMENT ST/ NK-03 SUBDIVISION A (1 OF 1) DATE 4/22/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

- 4GG Alaska State Wilderness Park
- 5T All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 to 9/1)

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: Charles Holmes DATE: 5/5/90

OILING CATEGORIZATION:

- Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 605 m: No Oil 817 m
- Subsurface Oil Observed: Yes ___ No X
- Maximum Depth

RECOMMENDATIONS:

- X No Treatment Recommended
- ___ Treatment Recommended
- ___ Manual Pickup
- ___ Bioremediation
- ___ Tarmat Removal

- ___ Snare/Absorbent Booms
- ___ Oil Snare (pom poms)
- ___ Absorbents (pads, rolls, etc)
- ___ Spot Washing: Wands
- ___ Beach Cleaner
- ___ Other (see comments)

COMMENTS:

- 
- 
- 
- 

TAG COMMENTS: 

- 
- 
- 
- 

TAG APPROVAL DATE: May 5, 1990

ADEC Art Weimer

EXXON Mark A. Higginbottom

NOAA Gay Patrick

USCG E.A. Keiter

DATE: 5-9-90
OILING LENGTHS
TO BE PROVIDED
AT A LATER DATE
REGION: KENAI

SEGMENT: ST/NK-04

SUBDIVISIONS: B (2 OF 2)
SHORELINE EVALUATION

SEGMENT ST/ NK-04  SUBDIVISION B (2 OF 2)  DATE  4/10/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
4GG State Wilderness Park
5T All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 to 9/1)
6NN Recreation area: Sportfishing
6U Recreation: Tent sites (6/1 to 9/15)
6V Recreation: Anchorages (6/1 to 9/15)
6X Recreation: Lodge (6/1 to 9/15)
9BB Privately developed land
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to uncoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: ____________________  DATE: ______________________

OILING CATEGORIZATION:
Wide____ m: Medium____ m: Narrow____ m: V. Light____ m: No Oil____ m
Subsurface Oil Observed: Yes____ No____ X____ Maximum Depth____

RECOMMENDATIONS:
_____ No Treatment Recommended  _____ Snare/Absorbent Booms
_____ Treatment Recommended  _____ Oil Snare (pom poms)
_____ Manual Pickup  _____ Absorbents (pads, rolls, etc)
_____ Bioremediation  _____ Spot Washing: _____ Wands
_____ Tarmat: _____ Breakup  _____ Beach Cleaner
_____ Removal  _____ Other (see comments)

COMMENTS: Recommended treatment includes 1) manual removal of tarmat, 2) manual pick up of mousse and patties, 3) bioremediation of surface coat areas shown on attached sketch map. Work should be conducted between 6/1 and 7/10 based on salmon constraints after consulting ADF&G and USFWS regarding eagle nest and possible seabird colony.

TAG COMMENTS: __________________________________________________________
_______________________________________________________________________
_______________________________________________________________________

TAG APPROVAL DATE: ____________________
ADEC __________________________________________ FOSC: ___________ DATE: ___________
EXXON __________________________________________
NOAA __________________________________________
USCG __________________________________________
Salmon stream mouth - fry outmigration (3/1 to 5/15)
Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage.
No bio remediation or other chemical application within 100m of stream. Contact ADF&G Habitat Division prior to treatment for permits.

Salmon fry nursery area (4/31 to 7/31)

Esther Hatchery release (4/15 to 6/1)

Main Bay Hatchery release (4/20 to 5/10)

Sawmill Bay Hatchery release (4/15 to 6/1)

Cannery Creek Hatchery release (4/21 to 6/1)

Remote release site

Gill net area (6/7 to 8/31)

Purse seine area (7/20 to 9/30)

Purse seine hook-off (7/20 to 9/30)

Set net sites (6/11 to 7/25)

For Codes IC through IL contact ADF&G for specific dates, locations and constraints.

Herring spawning (4/1 to 6/15)
Restrict boat traffic to essential minimum. Avoid damage to unoiled intertidal and subtidal algae and seagrass. Contact ADF&G for specific dates and locations.

Harbor seal and sea lion pupping (5/15 to 7/1)
Harbor seal and sea lion molting (8/15 to 9/15)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.

Seabird colony (5/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.

Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic.

All Bald Eagle nests (2/1 to 6/1)
Active Bald Eagle nests (5/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

Recreation:

Tent sites (6/1 to 9/15)
Anchoring (6/1 to 9/15)
Forest Service cabins (6/1 to 9/15)
Lodge (6/1 to 9/15)
Special use destination

Subsistence area:
Salmon harvesting (5/1 to 9/30)

Finfish harvesting

Deer harvesting (8/15 to 2/28)

Invertebrate harvesting

For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
FIELD SHORELINE COMMENT SHEET

SMENT ST: __ NW 4 __ SUBDIVISION: __ B __ DATE 4/9/90

USCG / NAAA NAME: JACQUI MICHIGAN SIGNATURE: MICHIGAN

☐ NO TREATMENT RECOMMENDED ☒ TREATMENT SUGGESTED

COMMENTS

The asphalt pavement and scattered mousse on the southern beach and the small area of subsurface oil on the northern beach should be manually removed. This is a very low energy lagoon, and material removal of these thick oil deposits would be slow. The remaining oil is too light to warrant further treatment.

As a wilderness park, removal of this oil should be a high priority.

ADEC NAME: JOHN R. REED SIGNATURE: JOHN R. REED

☐ NO TREATMENT RECOMMENDED ☒ TREATMENT SUGGESTED

COMMENTS

Asphalt pavement and mousse on southern shore should be picked up manually. Shovels or yard trowels should do the trick. This is a low energy lagoon that will need help clearing itself. This is also a site with high recreation value. I have read and agree with all data on S.S.A.T. Forms.

LAND MANAGER NAME: JEFFREY J. JOHNSON SIGNATURE: JEFFREY J. JOHNSON

☐ NO TREATMENT RECOMMENDED ☒ TREATMENT SUGGESTED

COMMENTS

This segment was previously treated, and needs more work. I agree with S.S.A.T. comments on forms. Manual methods should work.

Drift logs that interfere during past treatment efforts should either be removed, or visually mitigated. Perhaps splintering ends with explosives. Scowed saw cuts have significant negative visual impact in wilderness areas, and these must be taken care of, especially on a much lower beach (on sketch map).
**SHORELINE OILING SUMMARY**

**OG** MANN USCG/NARA MICHEL SEGMENT ST/ NK 4

**BIO** CARR LAND REP JOHNSON DNR SUBDIVISION B

**EXXON** BOYER ADEC SEGNO TIME 07:00 to 11:30

**TEAM NO.:** 18

**TIDE LEVEL:** +0.3 to +4.0

**DATE:** 4/19/90

**EST. SUBDIVISION LENGTH:** 4.06 (M)

**UPLANDS DESCRIPTION:** Gras Forest Rock

**SURVEYED FROM:** Foot Boat Helo

**WORKING DIRECTION:** South to North

**SURFACE SEDIMENTS:** R 50% B 10% C 30% P 5% G 0% S 0% M 5% V 0%

**OIL CATEGORY LENGTH:** W 0 m M 0 m N 0 m V 110 m NO 350 m

---

**SURFACE OIL**

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL/FILM COLOR</th>
<th>IMPACTED ZONES</th>
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**PAVEMENT:** H 10 sq. m by 3 cm

**PATTIES/TAR BALLS:** 4 BAGS

**NEAR SHORE SHEEN:** NO

**OILED DEBRIS:**

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**DEBRIS COLLECTED:** 1 BAGS

**PHOTOGRAPHS:**

- Roll No. ST 15-5
- Frames (21-34)

---

**SUBSURFACE OIL**

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**COMMENTS:**

Subdivision B occupies a lagoon nearly enclosed by 2 islands. Wave energy is low and floating debris accumulates here. On the north side, oil persists in the subsurface of a 2m² area and several smaller film patts. Most of the remnant oil is on the southern pocket beach where CT 15 lines a rock wall. A line of viscos mousse patts extends across the lower unit and an area of scattered asphalt exists. Natural cleaning will be slow.

**REVIEWED DATE:** 12/02/90
## SHORELINE OILING SUMMARY (PAGE__ of__)

SEGMENT STR/ NK-Y _SUBDIVISION B_

### SUBSURFACE OIL (CONTINUED)

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### COMMENTS

None of the oil on the southern pocket beach is subsurface. However, most of the 2m² oil spot on the north side cove is subsurface.

**REVIEWS 08/28/90**

**DATE 12 Aug 90**
## SHORELINE ECOLOGICAL SUMMARY

**Segment ST 1/ NK-4**  
Subdivision B (of A-B)  
Date (mo/day/yr) 4-9-90

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<tr>
<th>Time (24 hr)</th>
<th>Biologist</th>
<th>M. CARR</th>
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### (A) Substrate type and % of segments:
1. Bedrock 50
2. Boulder 10
3. Cobble 30
4. Pebble 5
5. Sand 5
6. Silt

### (B) Overall % cover of biota (% of segment):
- Dense  
- Moderate 20
- Low 20

### (C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa:
- Barnacles:
  
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Photographs:
- Roll No. 5
- Frames 21-34

Wildlife Observations/ General Comments:
- None

Ecological Considerations:
- Sensitivity codes (see NK-4 A sheets)
Sensitive Sites

NK-4

Offshore Islands used as seabird colonies

Bald Eagle Nest
NK-4

Subdiv. B

Mann
revised to show oil category lengths
on this en-
largement
Y/10/90

(~3000 x mag)

Attachment to NK-4 B
REGION: KENAI

SEGMENT: ST/NK-04

SUBDIVISIONS: C (3 OF 3)

NK-04-A AND NK-04-B WERE COMPLETED IN PHASE I.
SHORELINE EVALUATION

SEGMENT ST/ _NK-04__ SUBDIVISION C (3 OF 3) DATE _4/23/90_

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
1J Purse seine area (6/20 to 9/30)
4GG Alaska State Parks
5R Seabird colony (5/1 to 9/1)
5T-4 All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 to 9/1)
6NN Recreation: Sportfishing
6U Recreation: Tent sites (6/1 to 9/15)
6V Recreation: Anchorages (6/1 to 9/15)
6X Recreation: Lodge (6/1 to 9/15)
9BB Privately Developed Lands

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
Cultural resource survey in progress. Shoreline treatment cannot proceed until field data have been assessed and a formal archaeological constraint entered on the shoreline evaluation form.

SHPO SIGNATURE: ___________________ DATE: ___________________ 

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 9282 m: No Oil 0 m

Subsurface Oil Observed: Yes ___ No X 

Maximum Depth

RECOMMENDATIONS:

___ No Treatment Recommended ___ Snare/Absorbent Booms
___ Treatment Recommended ___ Oil Snares (pom poms)
___ Manual Pickup ___ Absorbents (pads, rolls, etc)
___ Bioremediation ___ Spot Washing: ___ Wands
___ Tarmat Removal ___ Beach Cleaner

Other (see comments)

COMMENTS: Recommended treatment includes 1) manual pickup of mousse, 2) bioremediation in areas shown on attached sketch map. Work should be conducted between 6/1 and 7/9 due to eagle nests and salmon constraints after approval of USFWS regarding eagle nests and seabird colony, or after 9/30.

TAG COMMENTS: ________________________________

TAG APPROVAL DATE: ____________

ADEC ___________________________ FOSC: ________ DATE: ____________
EXXON ___________________________
NOAA ___________________________
USCG ___________________________
Salmon stream mouth - fry outmigration (3/1 to 5/15)  
Salmon stream mouth - spawning (7/10 to 8/31)  
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream without authorization from ADF&G. No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or Inipol application, prior to at least July 1 unless authorized by ADF&G. Treatment which is not intrusive and which will not affect nearshore oil or toxicity levels, such as manual removal, can probably proceed without adherence to time constraints. In any case, contact ADF&G prior to treatment for confirmation and/or permit application.

AGENCY CONTACT PERSON:  
ADF&G  
John Morison  
267-2324

Salmon fry nursery area (4/31 to 7/31)  
No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or Inipol application, prior to July 31 unless authorized by ADF&G. Treatment which will not affect nearshore oil or toxicity levels, such as manual or mechanical removal, can probably proceed without adherence to time constraints. Contact ADF&G prior to treatment for confirmation and advice.

AGENCY CONTACT PERSON:  
ADF&G  
Larry Peltz  
424-3214

Gill net area (6/7 to 8/31)  
Purse seine area (7/20 to 9/30)  
Purse seine hook up (7/20 to 9/30)  
Set net sites (6/11 to 7/25)  
Contact ADF&G for specific dates, locations and constraints. Restrict boat and air traffic to essential minimum. When set net sites are present (1L) restrict beach operations to essential minimum as authorized by ADF&G. If plans for treatment include methods such as hot water wash or Inipol application which might affect nearshore oil or toxicity levels, contact ADF&G for consultation and authorization.

AGENCY CONTACT PERSON:  
ADF&G  
Evelyn Biggs  
424-3235

Herring spawning (4/1 to 6/15)  
Contact ADF&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to uncoupled intertidal and subtidal algae and seagrass. If plans for treatment include methods such as hot water wash or Inipol application which might affect nearshore oil or toxicity levels, contact ADF&G for consultation and authorization.

AGENCY CONTACT PERSON:  
ADF&G  
James Brady  
424-3212

Habitat area (5/15 to 7/1)  
Habitat area and sea lion molting (8/15 to 2/15)  
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts. No application of Inipol within two weeks of arrival dates (window at these sites is limited to 7/2 to 7/31). Contact ADF&G and USFWS prior to treatment for confirmation.

AGENCY CONTACT PERSON:  
ADF&G  
Don Calkins  
267-2403

Seabird colony (5/1 to 9/1)  
Restrict air and boat traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance from colony. Contact USFWS prior to treatment.

AGENCY CONTACT PERSON:  
USFWS  
Jill Parker  
766-3377

Shorebird/waterfowl concentration (4/1 to 5/15)  
Restrict all activity to essential minimum, especially air traffic. Contact USFWS and ADF&G for confirmation.

AGENCY CONTACT PERSON:  
USFWS  
Jill Parker  
766-3377

ADF&G  
Tom Rothy  
267-2206

All Bald Eagle nests (3/1 to 6/1)  
Active Bald Eagle nests (3/1 to 9/1)  
Restrict air traffic and all disturbance to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

AGENCY CONTACT PERSON:  
USFWS  
Jill Parker  
766-3377

Recreation:  
Tent sites (5/1 to 9/15)  
Anchorages (3/1 to 9/15)  
Forest Service cabins (6/1 to 9/15)  
Lodge (6/1 to 9/15)  
Special use destination (6/1 to 9/15)  
Sport fishing

Subsistence area:  
Salmon harvesting (5/1 to 9/30)  
Salmon harvesting (5/1 to 9/30)

Finfish harvesting  
Deer harvesting (8/15 to 2/26)  
Invertebrate harvesting

Contact ADF&G and appropriate Native Corporation for specific dates, locations, and constraints. Restrict boat and air traffic and beach disturbance to essential minimum. If plans for treatment include methods such as hot water wash or application of Inipol which might affect intertidal or nearshore oil or toxicity levels, contact ADF&G and appropriate Native Corporation for authorization - see Native Corporation Contact List for each Native Corporation's contact person.

AGENCY CONTACT PERSON:  
ADF&G  
Jim Fall  
267-2358
FIELD SHORELINE COMMENT SHEET

SEGMENT ST  NK-04  SUBDIVISION: C (30+3)  DATE 4/22/92

NAME  Donald A. Madson  SIGNATURE  Donald A. Madson

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS

Special concern if NOA 4 in this segment on the anomalous fish stream located in the embayment at the north end of the segment and the marine mammal, sea otters and seals in the area. I saw one sea otter with a pup. I'm in basic agreement with the SSAT report.

ADEC

NAME  John R. Reed  SIGNATURE  John R. Reed

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS

NK-04-C is the northern end of NK-04. Shoreline consists of small pocket beaches and vertical rock walls. Several of the pocket beaches have scattered mouse patties which can be manually removed by shovel. The area around the anomalous stream and lagoon was clean. This area has a high recreational value and should be cleaned. The mouse patties were found in low energy areas so they are not going anywhere. I agree with SSAT.

LAND MANAGER

NAME  Shari Mathven-Toney  SIGNATURE  Shari Mathven-Toney

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS  Nuka Island Segment 4 is within Kachemak Bay State Wilderness Area; located on the west side of the island. The segment is within Berger Bay and Mikes Bay. There are high recreation values, good anchoring anchorages in this unit, tent sites possible; relative high use, popular with commercial fishermen & pleasure boaters, high wilderness values. One anomalous stream in the segment. I recommend cleanup by manual removal of mousepatties using shovels, the areas observed with the mouse patties needed to be worked with access using shovels. The areas support dense beds of clams, supporting sea otters. I agree with SSAT report.
SHORELINE OILING SUMMARY

ST/NK-4

OIL SPILL: NOAA MacDonald LAND REP Mathewson-Toney
SEGMENT: ST/NK-4
TIME: 1800 26/75 and 0700 10/70
TEAM NO.: 18 TIDE LEVEL:+1+4.5 and -1+60 DATE: 2/27/90
EST. SUBDIVISION LENGTH: 6956 m
UPLANDS DESCRIPTION: Forest
SURVEYED FROM: 31 Foot Boat
WORKING DIRECTION: N to S
SURFACE SEDIMENTS: R 60% B 10% C 10% P 10% G 0% S 10% M 0% V 0%
SLOPE: Lang 15% Hang 15% Vert 60%
WAVE EXPOSURE: Low Med High
OIL CATEGORY LENGTH: W 0 m M 0 m N 0 m V 6956 m NO 0 m

SURFACE OIL

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PAVEMENT H F S 0 sq. m by 0 cm
PATTIES / TARBALLS 0 BAGS
NEAR SHORE SHEEN? NO BR RW SL TL

-OILED DEBRIS AMOUNT

<table>
<thead>
<tr>
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AMOUNT

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<td>TYPE Mouse</td>
<td>TYPE</td>
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Photographs:
Roll No. ST-18-8
Frames 15-18

SUBSURFACE OIL

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<tbody>
<tr>
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COMMENTS: ST/NK-4 comprises mostly bedrock highland with a number of small rock
beaches and one anadromous stream. The most significant oiling occurs near the south end of this sub-segment on a small beach
where a near shore silver sheen was observed.

REVIEWED BA 7 DATE 2/9/93
SHORELINE ECOLOGICAL SUMMARY

Segment ST NK - 4  Subdivision C

Date (mo/day/yr) 4-22-90

Time (24 hr) 0800  Biologist MAGIC CARR

1. Subdivision
   (1) Bedrock  (2) Boulder  (3) Cobble  (4) Pebble  (5) Sand  (6) Silt

2. Overall % cover of biota (% of segment): Dense  Moderate  Low

3. Substrate type and % of segments:
   (1) Bedrock  (2) Boulder  (3) Cobble  (4) Pebble  (5) Sand  (6) Silt

   Overall % cover of biota (% of segment): Dense  Moderate  Low

   Substrate type: (1) Bedrock  (2) Boulder  (3) Cobble  (4) Pebble  (5) Sand  (6) Silt

   Overall % cover of biota (% of segment): Dense  Moderate  Low

BARNACLES

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Wildlife Observations/ General Comments:

- N.W. CROW (8), RAVEN (1), HARRLEQUIN DUCK (13), BALD EAGLE (6) w/ IMMATURE SEA OTTER (5), FLYING STALLER'S JAY (3), HARBOR SEAL (2), GLACIATOR WINGED GULL

Ecological Considerations:

- Low intertidal and shallow subtidal lagoon support dense beds of bivalves (Mytilus and clams). Supra-littoral sites in back lagoon with abundant sea otter scat; evidence of frequent haul-out by sea otters; scat comprised of Mytilus shells. Oil and cleanup activity should consider potential contamination (and population impact) of bivalves and subsequent effects on sea otters and birds.

- Sensitivity codes: 5T-4 (EAGLE NESTS), 5R (SEA BIRD COLONY)
SHORELINE EVALUATION

SEGMENT ST/ NK-04  SUBDIVISION A (1 OF 2)  DATE  4/9/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

1A  Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B  Salmon stream mouth - spawning (7/10 to 8/31)
4GG  State Wilderness Park
5T  All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 to 9/1)
6NN  Recreation area: Sportfishing
6U  Recreation: Tent sites (6/1 to 9/15)
6V  Recreation: Anchorages (6/1 to 9/15)
6X  Recreation: Lodge (6/1 to 9/15)
9BB  Privately developed land

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE:  DATE:  4/28/90

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V. Light 314 m: No Oil 14901 m
Subsurface Oil Observed: Yes  No  Maximum Depth __________

RECOMMENDATIONS:

X  No Treatment Recommended
    Treatment Recommended
    Manual Pickup
    Bioremediation
    Tarmat: Breakup
    Removal
    Snare/Absorbent Booms
    Oil Snares (pom poms)
    Absorbents (pads, rolls, etc)
    Spot Washing: Wands
    Beach Cleaner
    Other (see comments)

COMMENTS: ____________________________________________________

TAG COMMENTS: _________________________________________________

TAG APPROVAL DATE:  4/26/90

ADEC  EXXON  NOAA  USCG
JOHN BAKER  ARNIE GOOD  KENNETH KENNEF

FOSC:  DATE:  5-3-90
SHORELINE EVALUATION

SEGMENT ST/ NK-04 SUBDIVISION C (3 OF 3) DATE 4/23/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
1J Purse seine area (6/20 to 9/30)
4GG Alaska State Parks
5R Seabird colony (5/1 to 9/1)
5T-4 All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 to 9/1)
6NN Recreation: Sportfishing
6U Recreation: Tent sites (6/1 to 9/15)
6V Recreation: Anchorages (6/1 to 9/15)
6X Recreation: Lodge (6/1 to 9/15)
9BB Privately Developed Lands

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to uncoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINT: An Exxon archaeological monitor is required on-site during shoreline treatment.

>> PHONE 564-3274 (Anchorage) OR 229-1508 (24 hrs.) <<

SHPO SIGNATURE: ___________________________ DATE: 5/7/90

OILING CATEGORIZATION:

Wide_0 m: Medium_0 m: Narrow_0 m: V.Light_9282 m: No Oil_0 m
Subsurface Oil Observed: Yes__ No_X__ Maximum Depth________

RECOMMENDATIONS:

___ No Treatment Recommended ___ Snare/Absorbent Booms
__ X__ Treatment Recommended ___ Oil Snare (pom poms)
__ X__ Manual Pickup ___ Absorbents (pads, rolls, etc)
__ X__ Bioremediation ___ Spot Washing: ___ Wands
___ Tarmat Removal ___ Beach Cleaner
___ Other (see comments)

COMMENTS: Recommended treatment includes 1) manual pickup of mousse, 2) bioremediation in areas shown on attached sketch map. Work should be conducted between 6/1 and 7/9 due to eagle nests and salmon constraints after approval of USFWS regarding eagle nests and seabird colony, or after 9/30.

TAG COMMENTS: ________________________________________________________________

TAG APPROVAL DATE: 5/7/90

ADEC ___________ DATE: 5/7/90
EXXON ___________
NOAA ___________ DATE: 5/7/90
USCG ___________
SEGMENT SINK-4
SUBDIVISION C
DATE Apr. 12 1990

CHECKLIST
- N Arraw
- Approx. Scale
- Seg/Sub Boundary
- Oil Dirt
- Weeds
- Length
- % Cover
- Substrate Character
- Est. HWL/WL
- SSL
- Profile Location(s)
- Pit Location(s)
- Photo Location(s)

LEGEND

1
2

Pt: No Subsurface Oil
Pt: Subsurface Oil

CT/C
Commercial Distribution

CT/B
Broken Distribution

CT/P
Patched Distribution

CT/V
Splashed Distribution

Oiled Vegetation

Photo location, direction, and number

2 bags of mouse
CT/C Collected
Low angle bulder
and boulder beach
Low angle bulder
and boulder beach
Nuka Island

Mousse may occur on
beaches where mouse
was collected.
SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
4G State Wilderness Park
5T All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 to 9/1)
6NN Recreation area: Sportfishing
6U Recreation: Tent sites (6/1 to 9/15)
6V Recreation: Anchorages (6/1 to 9/15)
6X Recreation: Lodge (6/1 to 9/15)
9BB Privately developed land

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: ________________ DATE: __________

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 90 m: No Oil 258 m
Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:

____ No Treatment Recommended ______ Snare/Absorbent Booms
____ Treatment Recommended ______ Oil Snare (pom poms)
____ Manual Pickup ______ Absorbents (pads, rolls, etc)
____ Bioremediation ______ Spot Washing: ______ Wands
____ Tarmat: ______ Breakup ______ Beach Cleaner
____ Manual Removal ______ Other (see comments)

COMMENTS: Recommended treatment includes 1) manual removal of tarmat, 2) manual pick up of mousse and patties, 3) bioremediation of surface coat areas shown on attached sketch map. Work should be conducted between 6/1 and 7/10 based on salmon constraints after consulting ADF&G and USFWS regarding eagle nest and possible seabird colony.

TAG COMMENTS: __________________________________________

TAG APPROVAL DATE: __________

ADEC ________________ DATE: __________

EXXON ________________ DATE: __________

NOAA ________________ DATE: __________

USCG ________________ DATE: __________
Sensitive Sites

NK-4

Offshore Islands used as seabird colonies

Bald Eagle Nest
ADDENDUM: SUBDIVISION CONSTRAINTS
SEGMENT NK-4 SUBDIVISION B (2 of 3)

WORK WINDOW

<table>
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<tr>
<th>Manual Pickup</th>
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<tr>
<td>Tarmac Removal</td>
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<tr>
<td>Bioremediation</td>
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</table>

ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

1A, 1B Salmon Stream
NO CONSTRAINT. ADF&G catalogued anadromous streams (232-15-10270, 232-15-10280, 232-15-10290, and 232-15-10300) are in Subdivision B and are more than 100m from the work site.

1J Purse Seine Area
Closed to bioremediation after 7/10. No constraint to manual pickup and tarmac removal.

5T Bald Eagle Nest
USFWS 6/1/90 map indicates an active nest in Subdivision A. Closed to manual pickup, tarmac removal, and bioremediation within 400m of active nest. No constraint to manual pickup, tarmac removal, bioremediation more than 400m from active nest.

OTHER ECOLOGICAL CONSIDERATIONS

If eagle nest constraint is removed, other ecological considerations will apply.

FOSC: Date 6/4/80
Prepared by: Date 6/14/90
SHORELINE EVALUATION

SEGMENT ST/ NK-04   SUBDIVISION B (2 OF 2) DATE 4/10/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
4GG State Wilderness Park
5T All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 to 9/1)
6NN Recreation area: Sportfishing
6U Recreation: Tent sites (6/1 to 9/15)
6V Recreation: Anchorages (6/1 to 9/15)
6X Recreation: Lodge (6/1 to 9/15)
9BB Privately developed land

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unolied biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3658; 564-3657 or 564-3276).

SHPO SIGNATURE:  DATE: 4/20/90

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V. Light 0 m: No Oil 258 m
Subsurface Oil Observed: Yes No Maximum Depth

RECOMMENDATIONS:

_____ No Treatment Recommended  _____ Snare/Absorbent Booms
X Treatment Recommended  _____ Oil Snares (pom poms)
_____ Manual Pickup  Absorbents (pads, rolls, etc)
X Bioremediation  Spot Washing: Wands
X Tarmat: Breakup  Beach Cleaner
X Removal  Other (see comments)

COMMENTS: Recommended treatment includes 1) manual removal of tarmat, 2) manual pick up of mousse and patties, 3) bioremediation of surface coat areas shown on attached sketch map. Work should be conducted between 6/1 and 7/10 based on salmon constraints after consulting ADF & G and USFWS regarding eagle nest and possible seabird colony.

TAG COMMENTS: See comments attached dated 6/14/90

TAG APPROVAL DATE: 4/26/90
ADEC  JOHN BECK  DATE: 5-6-90
EXXON  WAYNE  FOSC:  DATE: 5-6-90
NOAA  GARRY BERTHE  USCG  KENNETH KEMBITZ

OILING LENGTHS
TO BE PROVIDED
AT A LATER DATE
REGION: KENAI

SEGMENT: ST/NX-04

SUBDIVISIONS: A (1 OF 2)
SHORELINE EVALUATION

SEGMENT ST/ NK-04 SUBDIVISION A (1 OF 2) DATE 4/9/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
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6X Recreation: Lodge (6/1 to 9/15)
9BB Privately developed land
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ______________________ DATE: ______________________

OILING CATEGORIZATION:

Wide____ m: Medium____ m: Narrow____ m: V.Light____ m: No Oil____ m
Subsurface Oil Observed: Yes____ No____ X____ Maximum Depth_______

RECOMMENDATIONS:

X No Treatment Recommended ______ Snare/Absorbent Booms
____ Treatment Recommended ______ Oil Snares (pom poms)
____ Manual Pickup ______ Absorbents (pads, rolls, etc)
____ Bioremediation ______ Spot Washing: ______ Wands
____ Tarmat: ______ Breakup ______ Beach Cleaner
____ Removal ______ Other (see comments)

COMMENTS: ________________________________________________________
_________________________________________________________________
_________________________________________________________________

TAG COMMENTS: ______________________________________________________
_________________________________________________________________
_________________________________________________________________

TAG APPROVAL DATE: ______________ ADEC ______________
EXXON ___________________________ FOSC: ______________ DATE: ______
NOAA ____________________________ USCG ____________________________
FIELD SHORELINE COMMENT SHEET

ST/NI< SUBDIVISION: A DATE 4/9/90

NAME JACQUI MICHEL SIGNATURE JMcH

NO TREATMENT RECOMMENDED TREATMENT SUGGESTED

COMMENTS

Only five small areas were observed to have a very light oiling. However, this subdivision has a highly irregular coastline, the original contamination was slight and discontinuous, and the shoreline is composed of dark-meta-sedimentary rock. We could have missed some oiled spots, but they would be small. The northern part of this subdivision is very low-energy, so any oil from last year would still be present.

ADEC NAME JOHN R. REED SIGNATURE John R. Reed

NO TREATMENT RECOMMENDED TREATMENT SUGGESTED

COMMENTS

Very light scattered oiling in this very long segment. No oil was observed around theochondrurus stream. No treatment was recommended for this segment. I have read and agree with all information on SSATI forms.

LAND MANAGER DNR/DOPOR

NAME Jeffrey L. Johnson SIGNATURE J.L.J

NO TREATMENT RECOMMENDED TREATMENT SUGGESTED

COMMENTS

Agree with SSAT + comments in Arms; very light oiling, mostly rock + rocky cliffs with few beaches. No oiled debris found, surface or subsurface oil was found, virtually no visual indications of any past treatment activities.
### SHORELINE OILING SUMMARY

**OIL MANN** USCG MARINE MICHEL SEGMENT ST/ NK 4
**BIO CARE** LAND REEfs JOHNSON STATE PARK SUBDIVISION
**EXXON BOYER** ADEC REED (DUE) TIME 07:17 to 11:30

**TEAM NO.: 1B** TIDE LEVEL: -0.9 to +0.6 DATE 4/19/90
**ST. SUBDIVISION LENGTH:** 19,980 m
**UPLANDS DESCRIPTION:** ☑ Grass ☑ Rock ☑ Forest
**SURVEYED FROM:** ☑ Foot ☑ Boat ☑ Helo WORKING DIRECTION: 500° N to 360° N
**SURFACE SEDIMENTS:** R 57 % B 10 % G 15 % O 15 % P 1% S 0 % M 2% V l %
**SLOPE:** Lang 60% Hang 20% Vert 20% WAVE EXPOSURE: ☑ Low ☑ Med ☑ High
**OIL CATEGORY LENGTH:** W 0 m M 0 m N 0 m V 270 m NO 19,710 m

### SURFACE OIL

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### SUBSURFACE OIL

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### COMMENTS

This subdivision includes a diversity of shoreline types ranging from intertidal mud flats to sea stacks. Its only common feature is the scarcity of oil. The shoreline is intricate from Westdahl Cove northward. The present segment boundaries are unfortunately placed. Dark bedrock makes oil deter-}

Page 1 of 2 surveyed (Subdiv Con map) REVIEWED DATE 10/02/90
### SHORELINE OILING SUMMARY (PAGE 2 OF 2)

**SEGMENT STI NK-4 SUBDIVISION A**

#### SUBSURFACE OIL (CONTINUED)

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL (CM-CM)</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>ANA</th>
<th>SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>GPC throughout</td>
</tr>
<tr>
<td>8</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>GPC throughout</td>
</tr>
</tbody>
</table>

**COMMENTS**

We stopped at pocket beaches that were accessible by skiff and that had accumulations of some drift material. No subsurface (or surface) oil was found nor was any oiled debris.
No Sketch Map.
### SHORELINE ECOLOGICAL SUMMARY

Segment ST 1, NK-4  
Subdivision: A (of A-B)  
Date (mo/day/yr): 4/9/90

#### (A) Substrate type and % of segments:
- Bedrock: 10
- Boulder: 20
- Cobble: 15
- Pebble: 15
- Sand: 15
- Silt: 15

#### (B) Overall % cover of biota (% of segment):
- Dense: 10%
- Moderate: 10%
- Low: 10%

#### (C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa:
- Juveniles/adults (X), new settlement (3)

### BARNACLES

<table>
<thead>
<tr>
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<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
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<tbody>
<tr>
<td>Bedrock</td>
<td>1 U</td>
<td>1 M</td>
<td>1 L</td>
<td>1 L</td>
</tr>
<tr>
<td>Boulders</td>
<td>2</td>
<td>1 M</td>
<td>1 L</td>
<td>1 L</td>
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<tr>
<td>Cobble</td>
<td>4</td>
<td>1 M</td>
<td>1 L</td>
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<td>5</td>
<td>1 M</td>
<td>1 L</td>
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<tr>
<td>Sand</td>
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### MYTILUS

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### Photographs:
- Roll No.: 5
- Frames: 15-20

### Wildlife Observations/ General Comments:
- Land Otter (tracks)
- Harlequin Ducks (3)
- Oyster Catcher (3)
- Sea Otter (3)
- Glaucous-winged Gull (11)
- Harbor Seal (1)
- Surf-Spotted (12)

### Ecological Considerations:
- Sensitive codes: 4-06 (Alaska State Park), 5-T (Bald Eagle Nest), 5-R (Sea Bird Colony)
PWS, SEWARD AND HOMER ECOLOGICAL CONSTRAINTS

1A. Salmon stream mouth - fry outmigration (5/1 to 6/15)
Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream. Contact ADF&G Habitat Division prior to treatment for permits.

1C. Salmon fry nursery area (4/31 to 7/31)
1D. Esther Hatchery release (4/15 to 6/1)
1E. Main Bay Hatchery release (4/20 to 5/10)
1F. Sawmill Bay Hatchery release (4/15 to 6/1)
1G. Cannery Creek Hatchery release (4/21 to 6/1)
1H. Remote release sites
1I. Gill net area (6/7 to 8/31)
1J. Purse seine area (7/20 to 9/30)
1K. Purse seine hook-off (7/20 to 9/30)
1L. Set net areas (6/11 to 7/25)
For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.

2M. Herring spawning (4/1 to 6/15)
Restrict boat traffic to essential minimum. Avoid damage to uncoiled intertidal and subtidal algae and seagrass. Contact ADF&G for specific dates and locations.

3N, 3P
3O, 3Q
Harbor seal and sea lion pupping (5/15 to 7/1)
Harbor seal and sea lion molting (6/15 to 9/15)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.

5R. Seabird colony (5/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.

5S. Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic.

5T. All Bald Eagle nests (3/1 to 8/1)
Active Bald Eagle nests (3/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

6U. Special use destination
6V. Anchorage (6/1 to 9/15)
6W. Forest Service cabins (6/1 to 9/15)
6X. Lodge (6/1 to 9/15)
6Y. Special use destination

7Z. Subsistence area: Salmon harvesting (5/1 to 9/30)
7H. Finfish harvesting
7I. Deer harvesting (8/15 to 2/28)
7JJ. Invertebrate harvesting
For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
Subdiv. A

Subdiv. C (NOT surveyed)

Subdiv. C (NOT surveyed)

Subdiv. C

(all island shores are in subdiv. A)

not surveyed

subdiv. B

XXX Wide

/ / Medium

---- Narrow

TTTT Very Light

0000 No Oil

Map Key: PWS-5920
Name: Nunn
Date: 4/9/80

NK-4

ADEC Segment Length: 27376 m