[Shoreline evaluations, 1991].

Kenai PY-11 to RB-03

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REGION: KENAI

SEGMENT: ST/PY-11

SUBDIVISIONS: A (1 OF 3)
SHORELINE EVALUATION

SEGMENT ST/PY-11 SUBDIVISION A (1 OF 3) DATE 4/4/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ). No specific constraints identified.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/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: ______________________

OILING CATEGORIZATION:

Wide: 0 m; Medium: 0 m; Narrow: 0 m; V.Light: 1496 m; No Oil: 1632 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 ST1  PY 11  SUBDIVISION:  A  DATE 4/4/90

USCG/NOAA
NAME: Jacqui Michel  SIGNATURE: Michel

☑ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

The very scattered oil on rock walls does not warrant further treatment.

ADEC
NAME: John R. Reed  SIGNATURE: Reed

☑ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Very scattered splatters on large boulders does not need cleanup. I have read and agree with all maps and data on SSAT forms.

LAND MANAGER - USFWS
NAME: Mary Porter  SIGNATURE: Porter

☑ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Very scattered manure (1 per. 10-20m), Sporadic cast and stain on rock wall.
SHORELINE OILING SUMMARY

OG: Mann
BIO: Exxon
TEAM NO.: 18

TIDE LEVEL: + 2 to + 1.5
DATE: 7/1/90

SURVEYED FROM: Foot
WORKING DIRECTION: N to S

SURFACE SEDIMENTS: R 70% B 30% C 0% P 0% G 0% S 0% M 0% V 0%

OIL CATEGORY LENGTH: W 0 m M 0 m N 0 m V 1610 m NO 1990 m

SURFACE OIL

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PAVEMENT: H F S O sq. m by 0 cm
PATTIES/TARBALLS 0
BAGS
NEAR SHORE SHEEN? NO

OILED DEBRIS

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DEBRIS COLLECTED

Photographs:
Roll No. 18-3
Frames 25 + 26

SUBSURFACE OIL

No pits dug due to inaccessibility and lack of sediment cover.

COMMENTS

This subdivision encompasses narrow, steep bedrock shorelines backed by steep, overstepped slopes. Oiling consists of widely scattered (1 per 10-20 m of shoreline) spots of coat and cover as well as long stretches where no oil is visible.

Page 1 of 1

REVIEWED: BAT
DATE: 1/28/90
No sketch map provided (see GIS map)

Culvert lengths are based on an estimated 3% occurrence within the 1.0 category.
**SHORELINE ECOLOGICAL SUMMARY**

Segment ST1 PY 11 Subdivision A (of A-C) Date (mo/day/yr) 4/4/80

Time (24 hr) 1:30 Biologist M. CARR

(A) Substrate type and % of segments:
   - Bedrock 10%
   - Boulder 20%
   - Cobble 40%
   - Pebble 10%
   - Sand 10%
   - Silt 10%

(B) Overall % cover of biota (% of segment): Dense 40% Moderate 20% Low 20%

(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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### Fucus

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**Wildlife Observations/General Comments:**

- Steller's Jay (1)
- Harlequin duck (13)
- Bald eagle (1)
- Common loon, pelagic (1)
- Red-faced (1)

**Ecological Considerations:**

Sensitivity codes: 4-00 (National Wildlife Refuge)
REGION: KENAI

SEGMENT: ST/PY-11

SUBDIVISIONS: B (2 OF 3)
SHORELINE EVALUATION

SEGMENT ST/ PY-11 SUBDIVISION B (2 OF 3) DATE 4/4/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ). No specific constraints identified.

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 0 m: Narrow 0 m: V.Light 62 m: No Oil 0 m
Subsurface oil observed: Yes X No ___ Maximum depth 16 cm

RECOMMENDATIONS:

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

COMMENTS: Recommend bioremediation of subsurface oil in area shown on attached sketch map. No time constraints identified.

TAG COMMENTS:

TAG APPROVAL DATE: __________
ADEC __________________________
EXXON __________________________
NOAA __________________________
USCG __________________________
SEGMENT ST1 PY 11 SUBDIVISION: B DATE 4/4/90

NAME: JACQUI MICHEL SIGNATURE: Michel

☑ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMEN TS

The only section requiring consideration for treatment is the area of subsurface oil. However, about 15 cm of cobbles would have to be removed to get to the oiled zone. If a technique is developed for treatment of this type of oil (which includes thick zones of mousse up to several cm's thick), then it should be attempted here. Although there is moderate wave energy, the surface sediments are pretty coarse—limiting the potential for natural removal within 1-2 years.

NAME: JOHN R. REED SIGNATURE: Reed

☑ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMEN TS

This is a site with subsurface oil. It was warm water washed last summer. The washing seems to have driven the mousse down about 15 cm. There are clean cobbles on top. The oiled layer is approx. 8 cm thick. Manual removal of oiled substrate with shovels or hand towels. I have read and agree with all data on S.S.A.T. forms.

NAME: Mary Perret SIGNATURE: Mary Antler

☑ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMEN TS

Despite manual pickup and HHW at this site in 1989 oil remains beneath the surface boulders and cobbles as residual oil over pooled given a 10 m x 5 m. area (see map), 15 cm. of red clean cobbled 10 m x 5 m. area (see map), 15 cm. of red clean cobbled

Currently available techniques for treatment would be to turn the oil, and remove it. The oil to clean the cobbles and boulders and remove the oil to clean the substrate. This is a rich, healthy intertidal in the mud substrate. Therefore, a rich, healthy intertidal would be effective.
SHORELINE OILING SUMMARY

OG: Mann  USCG: Michel  SEGMENT ST: 78
BIO: Carr  LAND REP: Porter  SUBDIVISION: B
TEAM NO.: 18  TIDE LEVEL: 1.5 to 1.5
EST. SUBDIVISION LENGTH: 75 m
UPLANDS DESCRIPTION:  Grass  Forest  Sun  Clouds  Fog  Rain  Snow
SURVEYED FROM:  Helo WORKING DIRECTION:  all to over
SURFACE SEDIMENTS:  A 10% B 55% C 35% P 0% G 0% S 0% M 0% V 0%
SLOPE:  Lang 100% Hang 0% Vert 0%
OIL CATEGORY LENGTH:  W 0 m M 0 m N 10 m VL 05 m NO 00 m
OIL SURFACE

NOTE: if est'd from surface oil: W 0, M 0, N 2, VL 15, NO 02 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>ASPHALT PAVEMENT</td>
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PAVEMENT: H F S NO sq. m by NO cm

PATTIES / TARBALLS 0  BAGS

NEAR SHORE SHEEN? NO  BR RW SL TL

OILED DEBRIS NO

AMOUNT

SM MD LG

DEBRIS COLLECTED

YES  NO

TYPE

#BAGS

Photographs:

Roll No. 18-3
Frames 27, 28, 29

SUBSURFACE OIL

| PIT NO. | PIT DEPTH (cm) | SUBSURFACE OIL CHARACTER | OILED INTERVAL | OILED INTERVAL (cm-mm) | OILED INTERVAL | OILED INTERVAL | OILED INTERVAL | OILED INTERVAL | OILED INTERVAL | OILED INTERVAL | OILED INTERVAL | OILED INTERVAL | OILED INTERVAL | OILED INTERVAL |
|---------|----------------|---------------------------|---------------|-------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 1 30    | ✓              | ✓                         | ✓             | ✓                       | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             |
| 2 25    | ✓              | ✓                         | ✓             | ✓                       | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             |
| 3 25    | ✓              | ✓                         | ✓             | ✓                       | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             |
| 4 20    | ✓              | ✓                         | ✓             | ✓                       | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             |
| 5 25    | ✓              | ✓                         | ✓             | ✓                       | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             |
| 6 20    | ✓              | ✓                         | ✓             | ✓                       | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             | ✓             |

COMMENTS

This tiny subdivision was site F during our August 1989 SCAT of FY-11. Oiling has been reduced greatly on the surface of this subdivision since my visit last August. However, fresh-looking (light brown) mousse exists in the subsurface. Dr. Michel suggests it was washed there during washing operation. Ablation marks on stone surfaces indicate this site.
### Subsurface Oil (Continued)

<table>
<thead>
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<th>Pit No.</th>
<th>Pit Depth (cm)</th>
<th>Subsurface Oil Character</th>
<th>Oiled Interval (cm)</th>
<th>Below Oil/Film Color</th>
<th>Pit Zone</th>
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**Comments**
### Shoreline Ecological Summary

**Segment ST / PY 11**  
**Subdivision B**  
(of A-C)  
**Date (mo/day/yr)** 4/4/90

**Time (24 hr)** 1500  
**Biologist** M. CARR

(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 40 Moderate 40 Low 20

(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:**  
- **Harbor seal (1)**

**Ecological Considerations:**  
- **Sensitivity codes:** 4-qq (National Wildlife Refuge)
XX XX Wide
/// Medium
---- Narrow
TTTT Very Light

PY-11 Subway

Map Key: KEH-90c
Name: Mona
Date: April 4, 90

ADEC Segment Length: 4719m

LEN 900
LEN 90 A
REGION: KENAI

SEGMENT: ST/PY-11

SUBDIVISIONS: C (3 OF 3)
SHORELINE EVALUATION

SEGMENT ST/ PY-11 SUBDIVISION C (3 OF 3) DATE 4/4/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ). No specific constraints identified.

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 174 m: No Oil 1355 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 __________________________
NOAA ___________________________
USCG ___________________________

FOSC: ___________________ DATE: _________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST/ HY 11  SUBDIVISION:  CR  DATE 4/4/90

USCG/NOAA
NAME:  JACQUI MICHEL  SIGNATURE:  [Signature]

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

The very light to no oil does not warrant further treatment.

ADEC
NAME:  JOHN R. REED  SIGNATURE:  [Signature]

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Very light and sporadic splatters. Does not need cleanup. I have read and agree with all data and maps on SSAT forms.

LAND MANAGER/USFWS
NAME:  MARY F. PETER  SIGNATURE:  [Signature]

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Very light sporadic oiling in the form of cover coat and stain.
SHORELINE OILING SUMMARY

FROM: Ensco Atlas Ensco TO: SSAT

APR-04-1990 21:31

TEAM NO.: 19 TIDE LEVEL: +1.5 to +1.0 DATE 4/1/90
EST. SUBDIVISION LENGTH: 1170 m WAVE EXPOSURE: Med
UPLANDS DESCRIPTION: □ Grass □ Forest □ Rock
SURVEYED FROM: □ Foot □ Boat □ Helo WORKING DIRECTION: E to W
SURFACE SEDIMENTS: R 90 % B 9 % C 1 % P 0 % G 0 % S 0 % M 0 % V 0 %
SLOPE: Lang 10 % Hang 60 % Vert 30 % OIL CATEGORY LENGTH: W 0 m M 0 m N 0 m VL 15 m NO 1020 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</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAVEMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOLED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COVER</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>COAT</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>STAIN</td>
<td>✓</td>
<td></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></td>
</tr>
</tbody>
</table>

PAVEMENT: H F S 0 sq. m by 0 cm
PATTIES/TARBALLS 0 BAGS
NEAR SHORE SHEEN? NO

OILED DEBRIS NO AMOUNT SM MD LG
Logs
Vegetation
Trash
Debris

DEBRIS COLLECTED

Photographs:
Roll No. 18-3
Frames 30

SUBSURFACE OIL

No pits dug due to inaccessibility and lack of sediment cores.

<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>
<th>SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

COMMENTS

This subdivision is much like subdivision A. Oiling consists of
<1 spot of coat and/or cover per 10 m of shoreline.
SKETCH MAP

No separate sketch map provided (see GIS map)

LEGEND

1 A
- Pit - No Subsurface Oil

2 A
- Pit - Subsurface Oil

CT/C
- Continuous Distribution

CT/B
- Broken Distribution

CT/P
- Patchy Distribution

CT/S
- Splashed Distribution

Oil Vegetation

1 ↔
- Photo location, direction, and number

Oil Character Length (m): AP 0 PO 0 CV 2 CT 2 ST 2 MS 0 PT 0 TB 0 FL 0 NO 0 F 1420
**SHORELINE ECOLOGICAL SUMMARY**

- Segment: ST PY II
- Subdivision: C (of A-C)
- Date: 4/4/90
- Biologist: M. Carr
- Sample Time: 8 (24 hr)
- Location: 1350

### Subdivision

<table>
<thead>
<tr>
<th>Substrate Type</th>
<th>% of Segment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedrock</td>
<td>20%</td>
</tr>
<tr>
<td>Boulder</td>
<td>20%</td>
</tr>
<tr>
<td>Cobble</td>
<td>20%</td>
</tr>
<tr>
<td>Pebble</td>
<td>20%</td>
</tr>
<tr>
<td>Sand</td>
<td>20%</td>
</tr>
<tr>
<td>Silt</td>
<td>20%</td>
</tr>
</tbody>
</table>

### Overall Cover of Biota

- Dense 30%
- Moderate 20%
- Low 20%

### Density, Substrate Preference

- Pelagic common eelgrass (1)
- Bald eagle (1)

### Wildlife Observations/General Comments:

- Ecological Considerations:
XXX Wide
///// Medium
---- Narrow
TTTT Very Light

PY-11

Subdivision C

Not observed

PY-11 (Subdiv. A)

LEN 900

Map Key: KEN-90a
Name: Marr
Date: 4 April 90

ADEC Segment Length: 4719 m
ADDENDUM: SUBDIVISION CONSTRAINTS
SEGMENT PY-11 SUBDIVISION B (2 of 3)

WORK WINDOW

<table>
<thead>
<tr>
<th>Manual Pickup</th>
<th>Other Approved Manual Treatment</th>
<th>OPEN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bioremediation</td>
<td>OPEN</td>
</tr>
</tbody>
</table>

ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

No ecological time constraints.

OTHER ECOLOGICAL CONSIDERATIONS

Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

TAG ADDENDUM DATE 5/21/90
ADEC Art Women Art Women
EXXON
NOAA
USCG
FOSC [Signature] DATE 5/21/90

Prepared by: [Signature] Date: 5/20/90
SHORELINE EVALUATION

SEGMENT ST/ PY-11 SUBDIVISION B (2 OF 3) DATE 4/4/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ). No specific constraints identified.

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: 4/17/90

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 62 m: No Oil 0 m
Subsurface Oil Observed: Yes X No Maximum Depth 16 cm

RECOMMENDATIONS:

X Treatment Recommended Snare/Absorbent Booms
Manual Pickup Oil Snares (pom poms)
Bioremediation Absorbents (pads, rolls, etc)
Tarmat: Breakup Spot Washing: Wands
Removal Beach Cleaner

Other (see comments)

COMMENTS: Recommend bioremediation of subsurface oil in area shown on attached sketch map. No time constraints identified.

Prior to bioremediation, remove surface gobbleks to access subsurface oil. Manually remove mousse using hand tools and oil snares.

TAG COMMENTS:

TAG APPROVAL DATE: 4/17/90
ADEC DATE: 4/12/90
EXXON
NOAA
USCG
SHORELINE EVALUATION

SEGMENT ST/ PY-11 SUBDIVISION A (1 OF 3) DATE 4/4/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ). No specific constraints identified.

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: [Signature] DATE: 4/17/90

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 1496 m: No Oil 1632 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 ______ Beach Cleaner
_____ Removal ______ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 4/17/90
ADEC [Signature] DATE: 4-22-90
EXXON [Signature]
NOAA [Signature]
USCG [Signature]
XXX Wide
//// Medium
---- Narrow
TTTT Very Light

PY-1

PY-11

Subdivision C

LEN 908

Map Key: KEN-90a
Name: Murray
Date: 4 April 90

ADEC Segment Length: 4719m
SHORELINE EVALUATION

SEGMENT ST/ PY-11 SUBDIVISION B (2 OF 3) DATE 4/4/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ). No specific constraints identified.

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: 4/10/90

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 62 m: No Oil 0 m
Subsurface Oil Observed: Yes X No____ Maximum Depth 16 cm

RECOMMENDATIONS:

- No Treatment Recommended
- X Treatment Recommended
- Manual Pickup
- X Bioremediation
- Tarmat: _____Breakup
- _____Removal
- _____Other (see comments)

COMMENTS: Recommend bioremediation of subsurface oil in area shown on attached sketch map. No time constraints identified.

PRIOR TO BIOREMEDIATION, REMOVE SURFACE BOOMS TO ACCESS SUBSURFACE OIL. MANUALLY REMOVE MOUSSE USING HAND TOOLS AND OIL SNARES.

TAG COMMENTS:

TAG APPROVAL DATE: 4/17/90
ADEC [Signature] DATE: 4-22-90
EXXON [Signature] FOSC: [Signature]
NOAA [Signature] USCG [Signature]
SHORELINE EVALUATION

SEGMENT ST/ PY-11 SUBDIVISION C (3 OF 3) DATE 4/4/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ). No specific constraints identified.

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: 4/12/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 174 m: No Oil 1355 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: 4/17/90
ADEC
EXXON
NOAA
USCG

FOSC: DATE: 4-22-90
PY-11

Not observed

Subdivision C

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

ADEC Segment Length: 4719m

Map Key: KEN-90a
Name: Mean
Date: 4 April 90
WORK PLAN ADDENDUM

Segment FY-011  Subdivision B  Dated 5/16/90

MODIFICATION

1. REASON FOR MODIFICATION
   • Admiral's requirement.
   • Landowner recommendation.

2. ADJUSTMENT TO WORK PLAN
   • Customblen may be used in the ITZ area only.
   • A USFWS representative must be onsite for treatment.

SHPO APPROVAL NEEDED YES ___ NO X ___

SHPO SIGNATURE

TAG APPROVAL DATE 5/18/90
ADEC Art Weiss, Director
EXXON
NOAA Gary Peterson, Navy
SCG

FOSC 5/11/90
WORK PLAN ADDENDUM

Segment PY-012    Subdivision B    Dated 5/16/90

MODIFICATION

1. REASON FOR MODIFICATION

- FOSC requirement.
- Landowner recommendation.

2. ADJUSTMENT TO WORK PLAN

Custumblen may be used in the ITZ as indicated on the sketch following manual removal of mousse and patties.
A USFWS representative must be on site for treatment.

SHPO APPROVAL NEEDED YES ___   NO X
SHPO SIGNATURE

TAG APPROVAL DATE 5/19/90
ADEC Art Welch
EXXON Away 7-9
NOAA Gary Peters
USCG

FOSC
DATE 5-18-90
**1991 MAYSAP EVALUATION**

**SEGMENT:** PY 011 SUB: A  **REGION:** KEN  **SURVEY DATE:** 5/14/91

**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>
<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____________________  ____  ___

**COMMENTS:**

INITIAL:__________________________________________________

TAG:_____________________________________________________

FOSC:_____________________________________________________

TAG APPROVAL DATE:_____________  FOSC APPROVAL DATE:_____________

ADEC________________________  FOSC ___________________________

EXXON_______________________

USCG_______________________

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

☑ NTR
Spillage of ms/cr/cvr observed - <1% -

EXXON
NAME: George P. Stiles  SIGNATURE: George P. Stiles

☑ NTR
Concur with ADEC

LANDMANAGER
NAME: John P. Hardister  SIGNATURE: John P. Hardister

☑ NTR
Concur with ADEC and Exxon

USCG/NOAA
NAME: CWO2 J. M. Brown  SIGNATURE: J. M. Brown

☑ NTR
Concur w/ above

AHA / Donald A. Macdonald  Donald A. Macdonald
MAYSAP SHORELINE OILING SUMMARY

DATE: May 14, 1991
SEGMENT: 01
SUBDIVISION: A
TEAM NO: 41
OG: J. Campbell
BIO: J. Barry
ADEC: Clara Crosby
LANDMANAGER: John Headly for USFWS
USCG/NOAA: John McKenna

TIME: 10:13 to 10:58
TIDE LEVEL: 0.2 ft. to 0.5 ft.
ENERGY LEVEL: H M L
SURVEYED FROM: FOOT BOAT HELO
WEATHER: SUN CLOUDS FOG RAIN SNOW
TOTAL LENGTH SHORELINE SURVEYED: 3620 m
NEAR SHORE SHEEN: BR RB SL NONE
EST. OIL CATEGORY LENGTH: W - m M - m N - m V - m NO - m US - m

<table>
<thead>
<tr>
<th>L/O</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>WIDTH</th>
<th>LENGTH</th>
<th>ZONE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISTRIBUTION: C = 91-100%; B = 81-90%; P = 71-80%; S = 1-10%; T = <1%
SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE
PHOTO ROLL: MAYSAP

<table>
<thead>
<tr>
<th>PIT</th>
<th>PIT NO</th>
<th>DEPTH</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN H2O SEDIMENT</th>
<th>SHEEN ZONE</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>SURFACE- Subsurface SEDIMENTS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.0</td>
<td>0.5</td>
<td></td>
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</tr>
</tbody>
</table>

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

OG COMMENTS: See map.
Section walked consists of steep bedrock backbone and a deep talus of large angular boulders 3 small shelters, c. 15 cm. dia. were found in the U1/T2 on boulder surfaces. Sections skipped showed no oil on previous surveys.
Very little oil was found on this moderately exposed boulder and cobble beach. The intertidal biota appear to be healthy and diverse, with no evidence of recent oil-related impacts. The oil splatters found were located in the upper intertidal zone where little other biota normally exist. In this site there were scattered limpets and barnacles, black lichen, and a few individuals of Fucus (rockweed). Zonation of intertidal fauna and flora was generally as follows:

<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>
</thead>
<tbody>
<tr>
<td>Limpets</td>
<td></td>
<td>- - + + ++ - - - - - - - - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td></td>
<td>- ++++++-----+++-----+----- + -----+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td></td>
<td>- ++++++-----+-----+----- + -----+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td></td>
<td>- ++++++-----+-----+----- + -----+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Littorines and others</td>
<td></td>
<td>- - + - ++++++-----+-----+----- + -----+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Algae</td>
<td></td>
<td>- - - ++++++-----+-----+----- + -----+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green Algae</td>
<td></td>
<td>- - - ++++++-----+-----+----- + -----+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Algae (not Fucus)</td>
<td></td>
<td>- - - ++++++-----+-----+----- + -----+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil Spatters</td>
<td></td>
<td>- - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: - Sparse to rare
+ Moderate
* Abundant

(continued)

wildlife observations - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th>N OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>3</td>
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</tr>
<tr>
<td>Seabirds</td>
<td>2</td>
<td>3</td>
<td></td>
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<tr>
<td>Waterfowl</td>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th>N OBSERVED</th>
<th>SPECIES</th>
<th>N OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sea Lions</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
The subdivision has several species that are typical of moderate and high exposure sites. Bull kelp is scattered along small headlands and outcrops. The subtidal zones are dominated heavily by large brown algae.

**Common Species on PY011-A**

### A. Marine Plants

1. **Diatoms, Blue Greens**
   - Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.

2. **Green Algae - Chlorophyta**
   - Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.

3. **Brown Algae - Phaeophyta**
   - Alaria marginata, Agarum fimbriatum, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Laminaria saccharina, Nereocystis leutkeana, Ralfsia sp., Syctosiphon lomentaria

4. **Red Algae - Rhodophyta**

5. **Higher Plants - Leymus mollis** (beach rye grass)

### II. Marine Animals

1. **Sponges - Porifera - Halichondria sp., Halichondria panicea,**
   - Halichondria sp., Halichondria panicea

2. **Anemones**
   - Anthopleura artemesia, Epiactis ritteri, Metridium senile, Urticina crassicornis, Stomphia sp.

3. **Hydroids - Sertularidae - Sertularella?**

4. **Flatworms - Platyhelminthes - Polyclads**

5. **Nemerteans - Ribbon Worms - Emplectonema gracile**

6. **Polychaete Worms**
   - Nereididae - Nereis spp.
   - Serpulidae - Serpula sp., Eudistylia polymorpha
   - Spiorbidae - Spiorbis sp.

7. **Crustaceans**
   - a. **Amphipods - Orchestia sp.?**
   - b. **Barnacles - Balanus glandula, Semibalanus cariosus**
   - c. **Crabs**
   - d. **Isopods** - Cirdana harfordi, Idotea wosnesenskii, Onorimorsphaeroma oregonensis

8. **Mollusks**
   - a. **Clams - Mytilus edulis, Pododesmus cepio**
   - b. **Limpets**
   - c. **Snails - Gastropods**
   - d. **Nudibranchs - Lamellididus fusca**
   - e. **Oysters - Mopalia sp., M. mucosa, Tonicella lineata,**

The text ends with a blank line.
12. Echinodermata
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      - Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus,
      - Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis

13. Bryozoa - Membranipora sp., Microporina borealis, Phidolopora pacifica,
    Schizoporella sp.

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

SEGMENT: PY 011  SUB:  A  REGION:  KEN  SURVEY DATE: 5/14/91

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:  5/14/91

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>N</td>
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Manual Pickup (Check as Req.)
Spot Washing
Bio-Custombien Only
Bio-Inipol/Custombien
Other
Other

COMMENTS:

INITIAL:

TAG:

FOSC:

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

ADEC  FOSC
EXXON  E. E. PAGE, CDR, USCG
USCG  CHIEF OF STAFF, FOSC
NOAA
TEAM NO. 4

SEGMENT 34-8-11

SUBDIVISION A

DATE 7/14/1981

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

NTR
Splatters of mg/ct/v observed - <17-

EXXON
NAME: George P. Stiles
SIGNATURE: George P. Stiles

NTR
Concern with ADEC

LANDMANAGER
NAME: John P. Hardister
OF: USFWS
SIGNATURE: John P. Hardister

NTR
Concern with ADEC and Exxon

USCG/NOAA
NAME: Carl J. McNaught
SIGNATURE: Carl J. McNaught

NTR
Concern as above

WASTE DENY
DENNIS A. MACDONALD
DENNIS A. MACDONALD
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 47

OG 17 Empea
ADEC Clara Crosby
EXXON George P. Stiles

BIO John Bean
LANDMANAGER John Headstrom
USCG/NOAA John Michael McDaniel

DATE May 14, 1991
TIME 10:12 to 10:58
TIDE LEVEL -0.2 ft to +2.5 ft.
ENERGY LEVEL: H M L
SURVEYED FROM: FOOT BOAT HELO
WEATHER: SUN CLOUDS FOG RAIN SNOW
TOTAL LENGTH SHORELINE SURVEYED: 5600 m
NEAR SHORE SHEEN: BR RB SL X
EST. OIL CATEGORY LENGTH: W m M m N m V m S m NO m US m

<table>
<thead>
<tr>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT TYPE</th>
<th>SHORE SLOPE VHML</th>
<th>WIDTH m</th>
<th>LENGTH m</th>
<th>ZONE S UI MI LI</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LO</th>
<th>OILDEPTH</th>
<th>OILED ZONE</th>
<th>OILED COLOR</th>
<th>H2O ZONE</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE-OILED ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

OG COMMENTS: See map.
Section walked consisted of steep redrock breakstone and a steep talus of large angular boulders. 3 small splatters of oil < 15 cm. dia were found in the unit on boulder Biggest Sections skipped showed no oil on previous surveys.
Very little oil was found on this moderately exposed boulder and cobble beach. The intertidal biota appear to be healthy and diverse, with no evidence of recent oil-related impacts. The oil splatters found were located in the upper intertidal zone where little other biota normally exist. In this site there were scattered limpets and barnacles, black lichen, and a few individuals of Fucus (rockweed). Zonation of intertidal fauna and flora was generally as follows:

**Biota:**

<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>
</thead>
<tbody>
<tr>
<td>Limpets</td>
<td></td>
<td></td>
<td>++</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td></td>
<td></td>
<td>++</td>
<td>++</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td></td>
<td></td>
<td>++</td>
<td>++</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td></td>
<td></td>
<td>++</td>
<td>++</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Littorines and others</td>
<td></td>
<td></td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Red Algae</td>
<td></td>
<td></td>
<td>++</td>
<td>++</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Green Algae</td>
<td></td>
<td></td>
<td>++</td>
<td>++</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Brown Algae (not Fucus)</td>
<td></td>
<td></td>
<td>+</td>
<td>+</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

**Legend:**
- Sparse to rare
- Moderate
* Abundant

(continued)

**WILDLIFE OBSERVATIONS**
- Completed on all subdivisions

**BIRDS**

<table>
<thead>
<tr>
<th>Birds</th>
<th># of Species</th>
<th>Total Birds</th>
<th>Fish Observed Species Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MARINE MAMMALS**

<table>
<thead>
<tr>
<th>Marine Mammals</th>
<th># Observed</th>
<th>Species</th>
<th># Observed</th>
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</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sea Lions</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
PY011-A Biology Report, continued

The subdivision has several species that are typical of moderate and high exposure sites. Bull kelp is scattered along small headlands and outcrops. The subtidal zones are dominated heavily by large brown algae.

Common Species on PY011-A

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   - Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   - Alaria marginata, Agaram fimbriatum, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Laminaria saccharina, Nereocystis leutkeana, Ralfsia sp., Sycatosiphon lomentaria
4. Red Algae - Rhodophyta
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera - Halichondria sp., Halichondria panicea,
2. Anenones
   - Anthopleura artemesia, Epiactis ritteri, Metridium senile, Urticina crassicornis, Stomphia sp.
3. Hydroids - Sertularidae - Sertularella?
4. Flatworms - Platyzelminthes - Polyclads
5. Nemertean Worms - Ribbon Worms - Emplectonema gracile
6. Polychaete Worms
   - Nereididae - Nereis spp.
   - Serpulidae - Serpula sp., Eudistylia polymorpha
   - Spiorbidae - Spiorbis sp.
10. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs
      - Hemigrapsus oregonensis, Paguridae (hermit crabs), Oregonia gracilis
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaera oregonensis
11. Mollusca
   a. Chitons - Mopalia sp., M. mucosa, Tonicella lineata,
   b. Snails - Gastropods
      - Amphissa columbiana, Littorina sitkana, L. keenae, Nucella lima
   c. Limpets
      - Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
   d. Nudibranches - Lamellidioris fusca
   e. Mussels and Clams - Mytilus edulis, Pododesmus cepio
12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus,
      Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis
13. Bryozoans - Membranipora sp., Microporina borealis, Phidolopora pacifica,
    Schizoporella sp.
14. Fishes
    Cottidae
    Stichaeidae - Xiphister atropurpureus, X. mucosus
1991 MAYSAP EVALUATION

SEGMENT: PY 011 SUB: C REGION: KEN SURVEY DATE: 5/14/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) RESTRICTED 5/15 - 6/30; OPEN 6/30 - 8/15;
REstricted 8/15 - 9/15

Ecological/Constraints (see page two for details) Pinniped haulout

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

SHPO Signature: Date: 5/24/91

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>
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</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: 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. 41 SEGMENT PY. 011 SUBDIVISION C DATE MAY 14, 1981

ADEC NAME: Charles S. Crosby SIGNATURE: Charles S. Crosby

☑ NTR m3 was recovered from this site. No other oiling

EXXON NAME: George S. Stiles SIGNATURE: George S. Stiles 5/15/81

☑ NTR All recoverable oil remaining was picked up.

LANDMANAGER NAME: John P. Hardster OF USFWS SIGNATURE: John P. Hardster

☑ NTR Oiled material was removed.

USCG/NOAA NAME: Lt(jg) J. McGohan SIGNATURE: J. McGohan

☑ NTR Oiled m3 added

NOAA/ DONALD A. MCDONALD

(Handwritten notes)
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. H

DATE / / 91

TIME 11:58 to 12:10

TIDE LEVEL 4.5 ft. to 6.1 ft.

ENERGY LEVEL: ☑ H ☐ M ☐ L

SURVEYED FROM: ☒ FOOT ☐ BOAT ☐ HELO

WEATHER: ☐ SUN ☒ CLOUDS ☐ FOG ☒ RAIN ☒ SNOW

TOTAL LENGTH SHORELINE SURVEYED: 90 m

NEAR SHORE SHEEN: ☐ BR ☐ RB ☐ SL ☒ NONE

EST. OIL CATEGORY LENGTH: W—m M—m N—m V—m NO—m US 1450 m

<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>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>AP</td>
<td>MS</td>
<td>TB</td>
<td>BOR</td>
<td>CV</td>
<td>CT</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>5</td>
<td>not2</td>
<td>picked up.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISTRIBUTION: C = 81-100%; B = 61-80%; 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 NO.</th>
<th>DEPTH (cm)</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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<tbody>
<tr>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

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

OG COMMENTS: Small cone of oil/ad and ad/ed between bedrock cliffs and talus of large angular bedrock to the west. And bedrock bow outcrop 1 6 1 6 to the east. Lot of dead trees, some clean drift and debris in v.h. 1 pitch of 0.3 x 0.14 ms was found (2 ms) and removed. Rest of subdivision not surveyed as previous survey showed no oil.

REvised 5.19.91
The oil-stained site is located along the highest portion of the upper intertidal where the only biota are sparse black lichen (Verrucaria). Biota are richer and more abundant in the middle to low zone below the site, approximately 10 m distant, where the major species is rockweed (Fucus).

Manual cleanup was performed on this site during the survey. Additional treatment, if necessary, will not harm the biota at the site.

General Characteristics of PY011-C (surveyed cove)

This is a low exposure location with a small stream in the center of a cobble/boulder beach. Cobble in the stream are covered nearly completely by filamentous green algae (Urospora?). This green algae is also present in lower abundance along the lower intertidal zone. The general zonation pattern is illustrated below, with black lichen and bare rock in the highest zone, grading to filamentous green algae, rockweed and barnacles in the middle zone, and clean cobble with patches of dense red algae in the lowest zone. Littorine snails and limpets are quite abundant from the high edge of the middle zone to the low intertidal.

The rockweed population varies from moderate to dense coverage in the middle zone and is the most conspicuous feature of this site. Crustose brown algae (Hildenbrandia sp.) also cover substantial portions of the middle intertidal.

Recruitment or reproduction is evident for several groups of biota, including rockweed, barnacles, limpets, littorine snails, many species of red and green algae, and several species of invertebrates. Small mussels are present in crevices along the most seaward boulders, but few adult individuals were found at this protected location.

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th>N OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Seabirds</td>
<td>2</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td>3</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
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<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th>N OBSERVED</th>
<th>LAND MAMMALS</th>
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</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
No evidence of oil-related impacts were observed at this site, which appears to be quite 'healthy'.

General Zonation Pattern of PY011-C (at surveyed cove)

Biota: Tide Level  SupraTidal  Upper  Middle  Low  Subtidal

<table>
<thead>
<tr>
<th>Oil Spatters</th>
<th>-+- -+-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Lichen</td>
<td>-+++---</td>
</tr>
<tr>
<td>Algal Drift and Debris</td>
<td>- - -</td>
</tr>
<tr>
<td>Green Algae</td>
<td>dense in stream **-- ***</td>
</tr>
<tr>
<td>Littorines and others</td>
<td>-+++++++**********+++-</td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td>-+-----+++--</td>
</tr>
<tr>
<td>Limpets</td>
<td>- +++++++--</td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td>- ++++++++--</td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td>- - - + + + -</td>
</tr>
<tr>
<td>Whelks (Nucella sp)</td>
<td>- + + +</td>
</tr>
<tr>
<td>Branched Red Algae</td>
<td>- - - + + + +</td>
</tr>
<tr>
<td>Crustose Brown Algae (Hildenbrandia)</td>
<td>-++++*+++---</td>
</tr>
<tr>
<td>Thin Red Algae</td>
<td>--- - + + +</td>
</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td>-+++++---</td>
</tr>
</tbody>
</table>

Legend: - Sparse to rare
+ Moderate
* Abundant

Species Common on PY011-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Endocladia muricata, Lithothamnion sp., Membranoptera dimorpha, Microcladia sp., Odonthalia floccosa, Petrocelis sp., Plocamium sp., Porphyra sp., Ptilota filicina
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera - Halichondria sp., Halichondria panicea,
2. Anemones - Anthopleura artemesia, Stomphia sp.
3. Hydroids - Sertulariidae - Sertularella?
5. Flatworms - Platyhelminthes - Polyclads
6. Nemertean Worms - Ribbon Worms - Emplectonema gracile
8. Polychaete Worms
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Eudistylia polymorpha
   Spiorbidae - Spirorbis sp.
PY011-C Biology Report, continued

10. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs - Hemigrapsus oregonensis, Paguridae (hermit crabs), Oregonia gracilis
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis

11. Mollusca
   b. Snails - Gastropods - Amphissa columbiana, Littorina sitkana, L. keenae, Nucella lima, Searesia dira
   c. Limpets - Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
   d. Nudibranches - Lamellidoris fusca
   e. Mussels and Clams - Mytilus edulis

12. Echinoderms
   b. Sea stars - Leptasterias hexactis, Orthasterias keohleri, Pycnopodia helianthoides


14. Fishes
   Cottidae
   Stichaeidae - Xiphister atropurpureus, X. mucosus

III. Birds
   Seabirds - Marbled Murrelet (3), Common Loon (2)
   Waterfowl - Harlequin Duck (3), Greater Scaup (1), ? Duck (2)
   Gulls/Kits - Glaucous-winged Gull (2), Black-legged Kittywake (6)
   Shorebirds - Western Sandpiper (5)
1991 MAYSAP EVALUATION

SEGMENT: PY 011  SUB: C  REGION: KEN  SURVEY DATE: 5/14/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) RESTRICTED 5/15 - 6/30; OPEN 6/30 - 8/15;
RESTRICTED 8/15 - 9/15

Ecological/Constraints (see page two for details) Pinniped haulout

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>
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<tbody>
<tr>
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<td>_______</td>
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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 ____________________________________
ADEC
NAME: Clara S. Crosby
SIGNATURE: Clara S. Crosby

EXXON
NAME: George S. Stiles
SIGNATURE: George S. Stiles 5/15/91

ANDMANAGER
NAME: John P. Hoehler, USFWS
SIGNATURE: John P. Hoehler 5/15/91

USCG/NOAA
NAME: Capt. J. McNaught
SIGNATURE: J. McNaught

NTR
Remark: All recoverable oil remaining was picked up.

NTR
Remark: Oiled material was removed.

NTR
Remark: Agree as above.
# MAYSAP SHORELINE OILING SUMMARY

**Team No.:** 1  
**OG:** J. Semple  
**ADEC:** Clea Crosby  
**BIO:** J. Barry  
**XXXON:** George P. Stiles  
**Landmanager:** John Needham for U.S. Fish & Wildlife  
**USCG/NOAA:** John McVey/McDonald  
**Date:** May 17, 1991  
**Segment:** PY-011  
**Subdivision:** 118  

**Time:** 11:58 to 12:10  
**Tide Level:** V.5 ft. to 6.1 ft.  
**Energy Level:** X H M L  
**Surveyed From:** X Foot ☐ Boat ☐ Helo ☐  
**Weather:** ☐ Sun ☐ Clouds ☐ Fog ☐ Rain ☐ Snow  
**Total Length Shoreline Surveyed:** 80 m  
**Near Shore Sheen:** ☐ BR ☐ RB ☐ SL ☐ None  
**Est. Oil Category Length:**  

<table>
<thead>
<tr>
<th>Distance</th>
<th>Length Surveyed</th>
<th>Near Shore Sheen</th>
<th>Est. Oil Category Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>m</td>
<td>m</td>
<td>m</td>
</tr>
</tbody>
</table>

**Surveyed from:**  
**Surveyed From:** X Foot ☐ Boat ☐ Helo ☐  
**Tide Level:** V.5 ft. to 6.1 ft.  
**Energy Level:** X H M L  
**Weather:** ☐ Sun ☐ Clouds ☐ Fog ☐ Rain ☐ Snow  
**Total Length Shoreline Surveyed:** 80 m  
**Near Shore Sheen:** ☐ BR ☐ RB ☐ SL ☐ None  
**Est. Oil Category Length:** W m M m N m V m NO m  

**Est. Oil Category Length:**  

<table>
<thead>
<tr>
<th>Distance</th>
<th>Length Surveyed</th>
<th>Near Shore Sheen</th>
<th>Est. Oil Category Length</th>
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<tbody>
<tr>
<td>m</td>
<td>m</td>
<td>m</td>
<td>m</td>
</tr>
</tbody>
</table>

**Distribution:**  
- C = 01-100%  
- B = 11-50%  
- P = 1-10%  
- T = <1%  

**Slope:** V = Vertical; H = High Angle; M = Medium Angle; L = Low Angle  
**Photo Roll:** MAYSAP-  
**Frames:**  

**Pit Pit Subsurface Oiled Clean Water Sheen**  
**Oiled Subsurface Oil Character**  
**Clean Below Zone**  
**Surface Color**  
**Subsurface Color**  
**Sediments**  
**Notes**  

**Sheen Color:**  
- B = Brown  
- R = Rainbow  
- S = Silver  
- N = None  

**OG Comments:**  
Small cone of oil between bedrock cliff and kaiola of bushy angular bed to the west and bedrock kaiola on the west basin. Some clean drift and drift was in cm.  
1 pitch of 0.3 x 0.4 m was found (on map) and removed. Rest of subdivision no evidence of previous survey showed no oil.  

**Revised:** 5/18/91
This oiled site is located along the highest portion of the upper intertidal where the only biota are sparse black lichen (Verrucaria). Biota are richer and more abundant in the middle to low zone below the site, approximately 10 m distant, where the major species is rockweed (Fucus).

Manual cleanup was performed on this site during the survey. Additional treatment, if necessary, will not harm the biota at the site.

General Characteristics of PY011-C (surveyed cove)

This is a low exposure location with a small stream in the center of a cobble/boulder beach. Cobble in the stream are covered nearly completely by filamentous green algae (Urospora?). This green algae is also present in lower abundance along the lower intertidal zone. The general zonation pattern is illustrated below, with black lichen and bare rock in the highest zone, grading to filamentous green algae, rockweed and barnacles in the middle zone, and clean cobble with patches of dense red algae in the lowest zone. Littorine snails and limpets are quite abundant from the high edge of the middle zone to the low intertidal.

The rockweed population varies from moderate to dense coverage in the middle zone and is the most conspicuous feature of this site. Crustose brown algae (Hildenbrandia sp.) also cover substantial portions of the middle intertidal.

Recruitment or reproduction is evident for several groups of biota, including rockweed, barnacles, limpets, littorine snails, many species of red and green algae, and several species of invertebrates. Small mussels are present in crevices along the most seaward boulders, but few adult individuals were found at this protected location.

(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>
<th>SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>2</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>3</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td>2</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Shoreline subdivision map showing important biological features attached.
No evidence of oil-related impacts were observed at this site, which appears to be quite 'healthy'.

**General Zonation Pattern of PY011-C (at surveyed cove)**

<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>
</thead>
<tbody>
<tr>
<td>Oil Spatters</td>
<td>++</td>
<td>++</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td>+++++ - ++</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algal Drift and Debris</td>
<td>- - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green Algae</td>
<td>dense in stream <strong>-</strong></td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Littorines and others</td>
<td><strong>---</strong></td>
<td>++++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Limpets</td>
<td>+++++++++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Whelks (Nucella sp)</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Branched Red Algae</td>
<td>+++-</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Crustose Brown Algae (Hildenbrandia)</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Thin Red Algae</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
</tbody>
</table>

Legend: - Sparse to rare
+ Moderate
* Abundant

**Species Common on PY011-B**

**A. Marine Plants**

1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Endocladia muricata, Lithothamnion sp., Membranoptera dimorpha, Microcladia sp., Odonthalia floccosa, Petrocelis sp., Plocamium sp., Porphyra sp., Ptilota filicina
5. Higher Plants - Leymus mollis (beach rye grass)

**II. Marine Animals**

1. Sponges - Porifera - Halichondria sp., Halichondria panicea,
2. Anemones - Anthopleura artemesia, Stomphia sp.
3. Hydrooids - Sertulariidae - Sertularella?
4. Flatworms - Platychelminthes - Polyclads
5. Nemertean Worms - Ribbon Worms - Emplectonema gracile
6. Polychaete Worms
   Nereididae - Nereis spp.
   Serpulidae - Serpula sp., Eudistylia polymorpha
   Siporidae - Spirorbis sp.
10. Crustaceans
   a. Amphipods - Orchestia sp.?  
   b. Barnacles - Balanus glandula, Semibalanus cariosus  
   c. Crabs - Hemigrapsus oregonensis, Paguridae (hermit crabs), Oregonia gracilis  
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis  

11. Mollusca  
   b. Snails - Gastropods  
      Amphissa columbiana, Littorina sitkana, L. keenae, Nucella lima,  
      Searlesia dira  
   c. Limpets - Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites  
   d. Nudibranches - Lamellidoris fusca  
   e. Mussels and Clams - Mytilus edulis  

12. Echinoderms  
   b. Sea stars - Leptasterias hexactis, Orthasterias keohleri, Pycnopodia helianthoides  


14. Fishes  
   Cottidae  
      Stichaeidae - Xiphister atropurpureus, X. mucosus  

III. Birds  
   Seabirds - Marbled Murrelet (3), Common? Loon (2)  
   Waterfowl - Harlequin Duck (3), Greater Scaup (1), ? Duck (2)  
   Gulls/Kitt - Glaucous-winged Gull (2), Black-legged Kittywake (6)  
   Shorebirds - Western Sandpiper (5)
1991 MAYSAP EVALUATION

SEGMENT: PY 011   SUB: B   REGION: KEN   SURVEY DATE: 5/14/91

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>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
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<td></td>
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</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  ______________________  FOSC  ______________________

EXXON  ______________________

USCG  ______________________

NOAA  ______________________
Manual removal of MS, HCR, SOR.
Work crew would have to remove C/S and armor to access areas.
REFERENCE PHOTOS.

The moss remaining in the UI zone has a patchy distribution around the edge of the large boulders and would require trowels to remove the somewhat small amount remaining.

Amount of muck remaining is relatively small and patchy in distribution. Large boulders would prevent removal of any significant amount of remaining muck.

Removal of the reported distribution among the large boulders is highly impractical.
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO. 4**

**OG** J. F. Simple
**BIO** J. Barry

**ADEC** Clara Crosby
**LANDMANAGER** John Headliner of USFWS

**EXXON** George F. Stiles
**USCG/NOAA** John McManus/Dr. Donald

**DATE** May 14, 1991

**TIME** 10:58 to 11:44

**TIDE LEVEL** +2.5 ft. to +3.8 ft.
**ENERGY LEVEL** ☑️ M ☑️ L

**SURVEYED FROM** ☑️ FOOT ☑️ BOAT ☑️ HELO
**WEATHER** ☑️ SUN ☑️ CLOUDS ☑️ FOG ☑️ RAIN ☐ SNOW

**TOTAL LENGTH SHORELINE SURVEYED:** 69 m
**NEAR SHORE SHEEN:** ☑️ BR ☑️ RB ☑️ SL ☐ NONE

**EST. OIL CATEGORY LENGTH:** W — m M — 22 m N — m V — 40 m NO — m US — m

### SURFACE OIL CHARACTER

<table>
<thead>
<tr>
<th>LOC</th>
<th>AP</th>
<th>MS</th>
<th>SB</th>
<th>OR</th>
<th>CV</th>
<th>CT</th>
<th>ST</th>
<th>FL</th>
<th>DB NO</th>
<th>SURFACE SEDIMENT TYPE</th>
<th>SHORE SLOPE</th>
<th>WIDTH</th>
<th>LENGTH</th>
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<tr>
<td>A1</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>W</td>
<td>H</td>
<td>L</td>
<td>M</td>
<td></td>
<td>RaWGrade m</td>
<td>H</td>
<td>5</td>
<td>16</td>
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<td>A2</td>
<td>P</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td>3</td>
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</table>

### DISTRIBUTION

- C = 91-100%
- B = 61-90%
- P = 11-60%
- S = 1-10%
- T = <1%

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

### SURFACE SUBSURFACE OILED ZONE

<table>
<thead>
<tr>
<th>PIT NO.</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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<td>109</td>
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<td>2</td>
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<td>3</td>
<td>20</td>
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<td>4</td>
<td>25</td>
<td>*</td>
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</tr>
</tbody>
</table>

### SHEEN COLOR
- B = BROWN
- R = RAINBOW
- S = SILVER
- N = NONE

### OG COMMENTS:

Small 60 cm core between Bedrock Headlands. Top of oil is low bluish color with very bluish angular boulder, lots of standing dead trees, some large; medium deadwood. Hinterland step scorn with low bluish color of angular sed/soil or 01/08, locally some mixed. Oil core as indicated on map. Note: presence of large boulder collectors and oil on an approximate oil sheen typically < 20 cm on boulder surface. Oil typically below boulder common as penetrated surface from 100 ft

**REVISED 5/18/91**
This small pocket beach had a fair amount of oil remaining, primarily in the upper zone. The intertidal here was generally similar in all the oiled locations. Most of the oil was not located near other biota and no sensitive habitats (e.g., mussel or clam beds) are located nearby. Specific characteristics of the oiled locations will be discussed briefly, followed by a more general discussion of the intertidal biota along the subdivision.

A1 This upper intertidal site has CT/CV/HSOR. Little biota is present at the site. A thin layer of filamentous green algae is present on many cobble at the site, with drift algae nearby. Below the oiled area the intertidal biota are more diverse and abundant, with Fucus as the dominant organism.

Cleanup operations will not adversely affect the intertidal biota at this site.

A2 This oiled area is located at the outlet of a small seep. Many of the cobble and boulders in the vicinity have patchy, but dense cover of filamentous green algae (Enteromorpha and Ulva). Fucus is scattered at the oiled site, as are limpets and barnacles. Littorine snails are abundant in crevices.

A3 Black lichen and green algae (Prasiola meridionalis) were patchy and abundant near the oiled site. Crustose brown algae (Hildenbrandia) is abundant below, as are littorines and limpets.

The zonation pattern below A1, A2, and A3 was similar at all oiled sites. The beach is composed of large cobble and boulders, and has a medium slope. Biota are generally moderate to sparse in the upper zone, with increasing densities of red algae and Fucus in (continued)

Shoreline subdivision map showing important biological features attached.
The middle zone. Littorines, limpets, and whelks (Nucella lima) also become quite abundant in the middle zone. Barnacles are abundant from the middle to low zones. Mussels are sparse throughout the middle zone, but are abundant only on the boulders and bedrock at the outer edge of the shore.

A general view of the zonation pattern is:

<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>
</thead>
<tbody>
<tr>
<td>Oil Spatters</td>
<td>- +++++++-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td>-+++++++--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algal Drift and Debris</td>
<td>-+++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green Algae</td>
<td>-++-+--++++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Algae</td>
<td>-+++++++</td>
<td>++-+++++</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td>-+++++++-++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Littorines and others</td>
<td>-+++++++</td>
<td>+++---++</td>
<td></td>
<td></td>
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<tr>
<td>Barnacles (Balanus)</td>
<td>-+++++++</td>
<td>+++---++</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Limpets</td>
<td>-+++++++</td>
<td>+++---++</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mussels (Mytilus)</td>
<td>-+++---</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Whelks (Nucella sp)</td>
<td>-+++++++</td>
<td>+++---++</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Brown Algae (not Fucus)</td>
<td>-+++++++</td>
<td>+++---++</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: - Sparse to rare
+ Moderate
* Abundant

Species Common on PYO11-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Agarum fimbriatum, Ectocarpus spp., Fucus distichus, Hildenbrandia sp.,
   Ralfsia sp., Sycosiphon lomentaria
4. Red Algae - Rhodophyta
   Cryptosiphonia woodii?, Endocladia muricata, Halosaccion glandiforme,
   Lithothamnion sp., Membranoptera dimorpha, Microcladia sp., Odonthalia floccosa,
   Petrocelis sp., Plocamium sp., Porphyra sp., Ptilota filicina,
   Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera - Halichondria sp., Halichondria panicea,
2. Anemones
   Anthopleura artemesia, Stomphia sp.
3. Hydroids - Sertulariidae - Sertularella?
4. Flatworms - Platyhelminthes - Polyclads
5. Nematode Worms - Ribbon Worms - Emplectonema gracile
6. Polychaete Worms
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Eudistylia polymorpha
   Spiorbididae - Spirorbis sp.
10. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs
      Hemigrapsus oregonensis, Paguridae (hermit crabs), Oregonia gracilis
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis

11. Mollusca
   b. Snails - Gastropods
      Amphissa columbiana, Littorina sitkana, L. keenae, Nucella lima,
      Searlesia dira
   c. Limpets
      Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum,
      Siphonaria thersites
   d. Nudibranches - Lamellidoris fusca
   e. Mussels and Clams - Mytilus edulis, Pododesmus cepio

12. Echinoderms
   b. Sea stars
      Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus,
      Pycnopodia helianthoides
   d. Urchins - Strongylocentrotus droebachiensis


14. Fishes
   Cottidae
   Stichaeidae - Xiphister atropurpureus, X. mucosus
BIO SKETCH MAP
PY oil-B
JP BARRY
14 MAY 1991
1058-1144 pm

- Sparse green filamentous algae, drift algae
  Sparse black lichen, little else. Richer biota below

- Patchy dense green algae around oiled site. Patches of dense
  litorine, some directly on oil. Richer biota below

- Black lichen and
  Thin green algae in
  Patches near oiling.
  Sparse focus near oil.
  Richer biota below

- 2, A3 - Below oiled area
  filamentous green algae, litorine swarms, are
  patches, but often debris from the lower edge
  of the upper zone through the middle zone and beyond.
  Focus is abundant on cobbles, boulders, and branch
  overhang in the middle zone. Branches are abundant
  in the middle zone, mussel generally sparse.
1991 MAYSAP EVALUATION

SEGMENT: PY 011  SUB:  B  REGION:  KEN  SURVEY DATE:  5/14/91

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 Smith  Date:  5/30/91

RECOMMENDATIONS:

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

COMMENTS:

INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE:  May 29, 1991  FOSC APPROVAL DATE:  6/16/91

ADEC  
EXXON  
USCG  
NOAA  

E. E. PAGE, CDR, USCG
CHIEF OF STAFF, FOSC
ADEC
NAME: Clara S. Cady
SIGNATURE: Clara S. Cady
Treatment Recommended:
Manual Removal of MS, HOR, SOUR
Work Crew would have to remove C/30-R
armor to access oiling
REFERENCE PHOTOS

EXXON
NAME: George D. Stiles
SIGNATURE: George D. Stiles
NTR
The moss remaining in the UI zone has a patchy distribution around the edge of the large boulders and would require trowels to remove the somewhat small amount remaining.

LANDMANAGER
NAME: John P. Hardister
SIGNATURE: John P. Hardister
NTR
Amount of moss remaining is relatively small and patchy distribution. Large boulders would prevent removal of any significant amount of remaining oil.

USCG/NOAA
NAME: Lawler, M. and Milton
SIGNATURE: Lawler, M. and Milton
NTR
Removal of the sporadic distribution among the large boulders highly impractical.
## MAYSAP SHORELINE OILING SUMMARY

**Team No.:** 4  
**ADEC:** Clara Crosby  
**ONX:** George P. Stiles

**Bio:**  
**Landmanager:** John Horlick for USFWS  
**USCG/NOAA:** John Mahan/McDonald

**Date:** May 14, 1991  
**Segment:** Py 011  
**Subdivision:** B

**Time:** 10:58 to 11:44  
**Tide Level:** +2.5 ft. to +3.8 ft.  
**Energy Level:** X H □ M □ L

**Surveyed from:** □ foot □ boat □ helo  
**Weather:** □ sun □ clouds □ fog □ rain □ snow

**Total Length Shoreline Surveyed:** 62 m  
**Near Shore Sheen:** □ BR □ RB □ SL □ X none

**Est. Oil Category Length:** W—m M—22 m N—m VL 40 m NO—m US 6 m

### Surface Oil Character

<table>
<thead>
<tr>
<th>LOC</th>
<th>OIL CHARACTER</th>
<th>SEDIMENT TYPE</th>
<th>SLOPE</th>
<th>Width (m)</th>
<th>Length (m)</th>
<th>Zone</th>
</tr>
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<tbody>
<tr>
<td>A1</td>
<td>S 5 5</td>
<td>ENS</td>
<td>V</td>
<td>15</td>
<td>15</td>
<td>X</td>
</tr>
<tr>
<td>A2</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>S 5 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MEDIAN LEVEL:** 1
**DISTRIBUTION:** C = 91-100%; B = 81-90%; P = 71-80%; E = 1-10%; T = <1%

**Slope:** V = Vertical; H = High Angle; M = Medium Angle; L = Low Angle

### Subsurface Oil Character

<table>
<thead>
<tr>
<th>PIT NO</th>
<th>DEPTH (cm)</th>
<th>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>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td></td>
<td>0-10</td>
<td>Y</td>
<td>10</td>
<td>R</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>*</td>
<td>0-8</td>
<td>Y</td>
<td>—</td>
<td>—</td>
<td>k</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>35</td>
<td>*</td>
<td>0-5</td>
<td>Y</td>
<td>15</td>
<td>k</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>35</td>
<td>*</td>
<td>0-1</td>
<td>Y</td>
<td>10</td>
<td>k</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Surface oil
- Subsurface oil

**Sheen Color:** B = Brown; R = Rainbow; G = Silver; N = None

### OG Comments:

Small 60 m cove between Bedrock Headlands. Top of cove low back on composed of very loose angular boulders. Lot of standing but dead trees, small large and medium driftwood. Hinterland steep, over 30' high. Coves low back on composed of angular bedrock on Ch/P, locally over mixed rock/mud. Oiling occurs as indicated on map. Note presence of large boulders. Oil layer from 0.1 to 0.3 cm thick typically 20 cm on boulder surface. Oil typically behind boulders and on 0.2 cm surface film oil. Two feet of oil to an approximate.

**Revised:** 6/18/91 04
This small pocket beach had a fair amount of oil remaining, primarily in the upper zone. The intertidal here was generally similar in all the oiled locations. Most of the oil was not located near other biota, and no sensitive habitats (e.g. mussel or clam beds) are located nearby. Specific characteristics of the oiled locations will be discussed briefly, followed by a more general discussion of the intertidal biota along the subdivision.

A1 This upper intertidal site has CT/CV/HSOR. Little biota is present at the site. A thin layer of filamentous green algae is present on many cobble at the site, with drift algae nearby. Below the oiled area the intertidal biota are more diverse and abundant, with Fucus as the dominant organism.

Cleanup operations will not adversely affect the intertidal biota at this site.

A2 This oiled area is located at the outlet of a small seep. Many of the cobble and boulders in the vicinity have patchy, but dense cover of filamentous green algae (Enteromorpha and Ulva). Fucus is scattered at the oiled site, as are limpets and barnacles. Littorine snails are abundant in crevices.

A3 Black lichen and green algae (Prasiola meridionalis) were patchy and abundant near the oiled site. Crustose brown algae (Hildenbrandia) is abundant below, as are littorines and limpets.

The zonation pattern below A1, A2, and A3 was similar at all oiled sites. The beach is composed of large cobble and boulders, and has a medium slope. Biota are generally moderate to sparse in the upper zone, with increasing densities of red algae and Fucus in the oiled area.

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>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>2</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Shoreline subdivision map showing important biological features attached.
the middle zone. Littorines, limpets, and whelks (Nucella lima) also become quite abundant in the middle zone. Barnacles are abundant from the middle to low zones. Mussels are sparse throughout the middle zone, but are abundant only on the boulders and bedrock at the outer edge of the shore.

A general view of the zonation pattern is:

<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>
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<tbody>
<tr>
<td>Oil Spatters</td>
<td>-</td>
<td>-++*+++</td>
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<tr>
<td>Black Lichen</td>
<td>-++*+++</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Algal Drift and Debris</td>
<td>-++*+++</td>
<td>-</td>
<td>-</td>
<td></td>
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<tr>
<td>Green Algae</td>
<td>-++*+++</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Algae</td>
<td>-++*+++</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td>-++*+++</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Littorines and others</td>
<td>-++*+++</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td>-++*+++</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limpets</td>
<td>-++*+++</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td>-++*+++</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Whelks (Nucella sp)</td>
<td>-++*+++</td>
<td>-</td>
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<tr>
<td>Brown Algae (not Fucus)</td>
<td>-++*+++</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>

Legend: - Sparse to rare
+ Moderate
* Abundant

Species Common on PY011-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Agarum fimbriatum, Ectocarpus spp., Fucus distichus, Hildenbrandia sp.,
   Ralfsia sp., Sycosiphon lomentaria
4. Red Algae - Rhodophyta
   Cryptosiphonia woodii?, Endocladium muricata, Halosaccion glandiforme,
   Lithothamnion sp., Membranoptera dimorpha, Microcladia sp., Odonthalia floccosa,
   Petrocelis sp., Plocamium sp., Porphyra sp., Ptilota filicina,
   Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

B. Marine Animals
1. Sponges - Porifera - Halichondria sp., Halichondria panicea, Anemones
   Anthopleura artemesia, Stomphia sp.
2. Anemones
3. Hydroids - Sertulariidae - Sertularella?
4. Flatworms - Platynematides - Polyclads
5. Nematodes - Nemertina - Nereis - Emplectonema gracile
   Serpulidae - Serpula sp., Eudistylia polymorpha
   Spiorbidae - Spirorbis sp.
10. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs
      Hemigrapsus oregonensis, Paguridae (hermit crabs), Oregonia gracilis
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis

11. Mollusca
   b. Snails - Gastropods
      Amphissa columbiana, Littorina sitkana, L. keenae, Nucella lima, Searlesia dira
   c. Limpets
      Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
   d. Nudibranches - Lamellidoris fusca
   e. Mussels and Clams - Mytilus edulis, Pododesmus cepio

12. Echinoderms
   b. Sea stars
      Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides
   d. Urchins - Strongylocentrotus droebachiensis


14. Fishes
   Cottidae
   Stichaeidae - Xiphister atropurpureus, X. mucosus
**Bio Sketch Map**

**PY 011-B**  
**JP BARRY**  
**14 MAY 1991**  
**1058-1144 AM**

- **A1**: Sparse green filamentous algae, drift algae, sparse black lichen, little else. Richer biota below.
- **A2**: Patches dense green algae around oiled site. Patches of dense lichens, some directly on oil. Richer biota below.
- **A3**: Black lichen and thin green algae in patches near oil. Sparse algae near oil. Richer intertidal below.

- **B1**: Below oiled area. Filamentous green algae, litorine snails, arthropods, but often dense from the lower edge of the upper zone through the middle zone. Flowers are abundant on cobbles, boulders, and benthic outcrops in the middle zone. Samphires most abundant in the middle zone, aligner generally sparse.
REGION: KENAI

SEGMENT: PY-012

SUBDIVISIONS: A (1 OF 3)
SHORELINE EVALUATION

SEGMENT ST/ PY-012   SUBDIVISION A (1 OF 3) DATE  4/3/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4QQ National Wildlife Refuge

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 1639 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
_____Bioremediation
_____Tarmat: Breakup
_____Removal

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE:___________
ADEC___________________________
EXXON___________________________
NOAA___________________________
USCG___________________________

FOSC:_________________ DATE:_________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1  PY 12  SUBDIVISION: A  DATE 4/3/90

USCG/NOAA NAME  JACQUI MICHEL SIGNATURE  Michael

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

No oil was observed.

ADEC NAME  JOHN R. REED SIGNATURE  John R. Reed

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

No oil was spotted.

LAND MANAGER  USFWS NAME  MARY PETERS SIGNATURE  Mary Peters

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

No oil was observed.
SHORELINE OILING SUMMARY

TEAM NO.: 18
TIDE LEVEL: +2.3 ft.
DATE: 3/3/90

SUBDIVISION LENGTH: 1,000 m
LENGTH: 100 m

TOTAL OIL

NO.: 18 TIDELEVEL: +2.3 ft.
DATE: 3/3/90

SUBDIVISION LENGTH: 1,000 m
LENGTH: 100 m

TOTAL SURFACE OIL

APR-03-1990 22:45 FROM Ensco Atlas

SHORELINES here are typical of the more protected shores of the Big Islands. Steep hillside forested with spruce and mountain hemlock and in steep bedrock slots and rubble at the high tide line. Dead, drowned trees are common. Oiling is insignificant but where it occurs, little evidence of wave action since last August exists.
NO SKETCH WAS NEEDED.

LEGEND

1 △ Pit - No Subsurface Oil

2 △ Pit - Subsurface Oil

CT/C Continuous Distribution

CT/B Brokene Distribution

CT/P Patchy Distribution

CT/S Splashed Distribution

Oil Vegetation

1 → Photo location, direction, and number

Character Length (m): AP OC PO OC CV OC CT OC ST OC MS OC PT OC TB OC FL OC NO 1600
**SHORELINE ECOCLOGICAL SUMMARY**

Segment ST/PY-12 Subdivision A (of A-C) Date (mo/day/yr) 4/3/90

- **Time (24 hr):** 13:45
- **Biologist:** M. Carr

(A) Substrate type and % of substrate:
- (1) Bedrock (2) Boulder (3) Cobble (4) Pebble (5) Sand (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 (O)

### BARNACLES

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
<th>Roll No.</th>
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<tr>
<td></td>
<td>1U</td>
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### MYTILUS

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**Wildlife Observations/General Comments:**
- Duck Oyster-catcher (1)
- Bald Eagle (mature) (1)
- Cormorant (1)
- Harlequin ducks (10)

**Ecological Considerations:**
- Sensitivity code: 4-00 (National Wildlife Refuge)
Note: the southern boundary of this segment is incorrectly placed here according to both the 1989 SCAT maps and the 1:1333 scale index map.
REGION: KENAI

SEGMENT: PY-012

SUBDIVISIONS: B  (2 OF 3)
SHORELINE EVALUATION

SEGMENT ST/ PY-012 SUBDIVISION B (2 OF 3) DATE 4/3/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4QQ National Wildlife Refuge

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

ARCHAEOLOGICAL CONSTRAINTS:
Consultation and inspection with an Exxon archaeologist is required prior to treatment. Specific on-site monitoring requirements will be determined at that time.

SHPO SIGNATURE: ___________________ DATE: ____________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 223 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)
X ___ Manual Pickup ___ Absorbents (pads, rolls, etc)
X ___ Bioremediation ___ Spot Washing: ___ Wands
_____ Tarmat: _____ Breakup _______ Beach Cleaner
_____ Removal _______ Other (see comments)

COMMENTS: Manual removal of pooled oil and mousse patties, followed by bioremediation.

TAG COMMENTS:

TAG APPROVAL DATE: __________
ADEC ___________________
EXXON ___________________
NOAA ___________________
USCG ___________________  FOSC: ___________ DATE: _______

NOAA
USCG
FOSC:
FIELD SHORELINE COMMENT SHEET

SEGMENT ST I - DY 12  SUBDIVISION: B  DATE 4/3/90

NAME: JACQUI MICHEL  SIGNATURE: Michael

☐ NO TREATMENT RECOMMENDED  ☒ TREATMENT SUGGESTED

COMMENTS:

Manual removal of pooled oil and mousse patches is highly recommended. These are widely scattered but they are quite large individually.

ADEC
NAME: JOHN R. REED  SIGNATURE: John R. Reed

☐ NO TREATMENT RECOMMENDED  ☒ TREATMENT SUGGESTED

COMMENTS:

Manual removal of mousse and pooled oil with shovel or hand trowel. I have read and agree with all information on the S.S.A.T. Forms.

LAND MANAGER - USFWS
NAME: Mary Partner  SIGNATURE: Mary Partner

☐ NO TREATMENT RECOMMENDED  ☒ TREATMENT SUGGESTED

COMMENTS:

Pooled oil and mousse patches should be manually removed. This could be accomplished using hand trowels and shovels. At this time, the oil is soft and relatively easy to recover by rolling and moving cobbles. No significant weathering of the oil has occurred along this shoreline.
**SHORELINE OILING SUMMARY**

**OIL MAN** □ OCS□NOAA □ MICHEL □ SEGMENT STI □ PY-12 □

**BIO** □ CARR □ LAND REP □ PORTUEE-PLUS □ SUBDIVISION □ B □

**EXXON** □ BOYER □ ADEC □ BASS □ TIME □ 13:55 10.11.90 □

**TEAM NO.:** □ 1B □ TIDE LEVEL: □ 11.0 to 11.8 □ DATE □ Y/3/90 □

**EST. SUBDIVISION LENGTH:** □ 300 m □ Sun □ Clouds □ Fog □ Rain □ Snow □

**UPLANDS DESCRIPTION:** □ Grass □ Forest □ Rock □

**SURVEYED FROM:** □ Foot □ Boat □ Helo □ WORKING DIRECTION: □ NORTH to SOUTH □

**SURFACE SEDIMENTS:** □ R % □ S % □ G % □ O % □ P % □ C % □ L % □ V % □

**SLOPE:** □ Lang % □ Hang % □ Vert % □

**WAVE EXPOSURE:** □ Low □ Med □ High □

**OIL CATEGORY LENGTH:** □ W □ M □ Q □ N □ Q □ V □

**SURFACE OIL**

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<tr>
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<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<td>ASPHALT</td>
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<td>STAIN</td>
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<td>MOUSSE</td>
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<td>YES</td>
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<td>PATTIES</td>
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<td>TARBALLS</td>
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<td>FILM</td>
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<tr>
<td>NO OIL</td>
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**PAVEMENT:** □ H □ F □ S □ 0 sq. m by □ or □

**PATTIES / TARBALLS:** 20 □ BAGS □

**NEAR SHORE SHEEN?** □ 0 □ BR □ RW □ SL □ TL □

**OILED DEBRIS NO □ AMOUNT □** □ SM □ MD □ LG □

**DEBRIS COLLECTED:** □ YES □ NO □

**Photographs:**

Roll No. □ 97/18-3 □
Frames □ 20-24 □

**SUBSURFACE OIL**

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<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
<th>OILED INTERVAL LOC</th>
<th>OIL/FILM COLOR</th>
<th>OIL/FILM COLOR LOC</th>
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<td>B.C.</td>
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**COMMENTS**

Oiling here is very similar to what we observed last August while scouting this shoreline.
~PR-03-1950

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### Shoreline Ecological Summary

**Segment ST1 PY-12 Subdivision B (of A-C)**  
*Date (mo/day/yr)* 4/3/90

#### Substance and % of Segments:
- (1) Bedrock
- (2) Boulder
- (3) Cobble
- (4) Pebble
- (5) Sand
- (6) Silt

#### Overall % cover of biota (% of segment):
- Dense 50%
- Moderate 20%
- Low 30%

#### Density, substrate preference (by number from A, above), & vertical zonation of major taxa:
- **(upper-U; mid-M; low tidal-L)**  
  - Barnacles
  - Mytilus
  - Gastropods
  - Fucus

#### Wildlife Observations/General Comments:

**Ecological Considerations:**

- **Sensitivity codes:** 4 - QQ (National Wildlife Refuge)
Note: The southern boundary of this section is incorrectly placed here according to both the 1989 SCAR maps and the 1:1353 scale index map.
REGION: KENAI

SEGMENT: PY-012

SUBDIVISIONS: C (3 OF 3)
SEGMENT ST/ PY-012  SUBDIVISION C (3 OF 3)  DATE  4/3/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4QQ National Wildlife Refuge

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: 161 m; No Oil: 1875 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  _______________  RSSC: __________ DATE: __________
EXXON __________________
NOAA __________________
USCG  __________________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST 1 PY 12 SUBDIVISION: C- DATE 4/3/90

USCG NOAA NAME: Jacqui Micher SIGNATURE: Michele

☑ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

Widely scattered patterns and CO/ET do not warrant further treatment.

ADEC

NAME: John R. Reed SIGNATURE: John R. Reed

☑ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

Very widely scattered. Does not require cleanup.

AND MANAGER - USFWS

NAME: Mary Porter SIGNATURE: Mary Porter

☑ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

Oil in the form of sheen, stain and patches is widely scattered along this shoreline.
**SHORELINE OILING SUMMARY**

**OG** MANN USCG/NOAA **MICHEL** SEGMENT ST/ PY-12

**BIO** CARB LAND REP. PIERRE - EWS SUBDIVISION G

**EXXON** BOVEY ADEC PEED

**TEAM NO.:** 17 **TIME:** 19:20 to 19:50

**EST. SUBDIVISION LENGTH:** ~1.8 km

**DATE:** 4/3/90

**SURVEYED FROM:** Foot **WORKING DIRECTION:** North to South

**SURFACE SEDIMENTS:** R 75 % B 0 % C 5 % P 0 % G 0 % S 0 % M 0 % V 0 %

**SLOPE:** Long 40 % Hang 10 % Vert 20 %

**WAVE EXPOSURE:** Low

**OIL CATEGORY LENGTH:** W 0 m M 0 m N 0 m V 0 m SL 220 m NO 1910 m

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**PAVEMENT:** H F S 0 sq. m by 0 cm

**PATTIES / TARBALLS** 0 BAGS

**NEAR SHORE SHEEN?** NO

**OILED AMOUNT**

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**Photographs:**

- Roll No.: N/A
- Frames: N/A

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### SUBSURFACE OIL

No landing made due to inaccessible.

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**COMMENTS**

See comments for Subdivision A.

**REVIEWER:** TW **DATE:** 4/19/90
No sketch was needed.

Assumes 10% coverage of CT/ST/MS in area denoted as very light.

Vector Length (m): AP 0 PO 0 CV 0 CT 22 ST 22 MS 0 PT 22 TB 0 FL 0 NO 2108
SHORELINE ECOLOGICAL SUMMARY

Segment ST P-Y-12 Subdivision C (of A-C) Date (mo/day/yr) 4/3/90

8 (24 hr) 1550 Biologist M. CARR

(A) Substrate type and % of segment:
- (1) Bedrock 85
- (2) Boulder 10
- (3) Cobble 5
- (4) Pebble 5
- (5) Sand 5
- (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 (G)

BARNACLES

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Wildlife Observations/General Comments:
- Cormorants (2)
- Harlequin ducks (8)
- Sea otter (1 mature, 1 pup) (2)
- Glaucor-winged gull (1)

Ecological Considerations:
- Sensitivity codes: U-QQ (National Wildlife Refuge)

Photographs:
- Roll No.
- Frames: None
XX Wide
/// Medium
---- Narrow
TTTT Very Light

PY-12

Note: The southern boundary of this segment is incorrectly placed on the 1:1333 scale index map.

Map Key: KEN-84a
Name: Mann
Date: 3 April 90

ADEC Segment Length: 4210m
SHORELINE EVALUATION

SEGMENT ST/ PY-012  SUBDIVISION A (1 OF 3)  DATE  4/3/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4QQ  National Wildlife Refuge

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

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 1639 m
Subsurface Oil Observed: Yes  No X  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:

Beach Cleaner

Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: [4/4/90]
ADEC [Signature]  DATE: [5/1/90]
EXXON  [Signature]
NOAA  [Signature]
USCG  [Signature]
Note: the southern boundary of this segment is incorrectly placed here according to both the 1989 SCAT maps and the 1:1333 scale index map.

Map Key: KEH-84a
Name: Munro
Date: 3 April 90
SHORELINE EVALUATION

SEGMENT ST/ PY-012 SUBDIVISION C (3 OF 3) DATE 4/3/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4QQ National Wildlife Refuge

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: [Signature] DATE: April 14, 1990

OILING CATEGORIZATION:

- Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 161 m: No Oil 1875 m
- Subsurface Oil Observed: Yes No X 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: 4/14/90
ADEC JOHN BADER
EXXON [Signature] DATE: 5-1-90
NOAA [Signature]
USCG [Signature]
Note: the southern boundary of this segment is incorrectly placed here according to both the 1989 SCAT maps and the 1:1333 scale index map.
XXX Wide
/// Medium
---- Narrow
TTTT Very Light

PY-12

PY-13

Map Key: KEN-84b
Name: [Redacted]
Date: 4/3/90
SHORELINE EVALUATION

SEGMENT ST/ PY-012 SUBDIVISION B (2 OF 3) DATE 4/3/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4QQ National Wildlife Refuge

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

ARCHAEOLOGICAL CONSTRAINTS:
Consultation and inspection with an Exxon archaeologist is required prior to treatment. Specific on-site monitoring requirements will be determined at that time.

SHPO SIGNATURE: Charles Effron DATE: April 14, 1990

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 223 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)
X__ Manual Pickup _____ Absorbents (pads, rolls, etc)
X__ Bioremediation _____ Spot Washing: _____ Wands
____ Tarmat: _____ Breakup _____ Beach Cleaner
_____ Removal _____ Other (see comments)

COMMENTS: Manual removal of pooled oil and mousse patties, followed by bioremediation.

TAG COMMENTS:

TAG APPROVAL DATE: 4/14/90
ADEC John Bauer
EXXON ANOT (600) 594-6009
NOAA Bud Wargent
USCG G.M. Reiter
The cut is widely but evenly scattered with ≤1% coverage.
Note: the southern boundary of this segment is incorrectly placed here according to both the 1989 SCAT maps and the 1:1333 scale index map.
1991 MAYSAP EVALUATION

SEGMENT: PY 012  SUB: B  REGION: KEN  SURVEY DATE: 5/14/91

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)  INITIAL  TAG  FOSC

N

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customeblen
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 P4-012          SUBDIVISION B          DATE 9/1/91

ADEC NAME               CLARE S. CROSBY          SIGNATURE               CLARE S. CROSBY

☑ NTR
Survey crew recovered whateling was observed.
Please reference photos.

EXXON
NAME               GEORGE V. STEKES          SIGNATURE               GEORGE V. STEKES 5/6/91

☑ NTR
Survey crew picked up 4 bags of MSS while surveying. No appreciable oil remaining.

LANDMANAGER
NAME               JOHN P. HARDISTER OF USFWS          SIGNATURE               JOHN P. HARDISTER 5/6/91

☑ NTR
 Recoverable oil was removed.

USCG/NOAA
NAME               BILL W. McWHORTER          SIGNATURE               BILL W. McWHORTER

☑ NTR
Concur with above.
MAYSAP SHORELINE OILING SUMMARY

NAME: MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 17 Sample
ADEC Crosby
SON Energy P. Stiles

BIO Nancy
LANDMANAGER Headster for USEWS
USCG/NOAA McMechan/McDonald

DATE MAY 14, 1991
SEGMENT 24-015
SUBDIVISION B

TIME 12:10 to 14:35
TIDE LEVEL 3.4 ft. to 3.6 ft.
ENERGY LEVEL: □ H □ M □ L

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

TOTAL LENGTH SHORELINE SURVEYED: 32.3 m
NEAR SHORE SHEEN: □ BR □ RB □ SL □ NONE

EST. OIL CATEGORY LENGTH: W - m M - m N - m V - 33.3 m NO - m US - m

<table>
<thead>
<tr>
<th>L</th>
<th>O</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>AREA</th>
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<tr>
<td></td>
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<td>TYPE</td>
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<td>WIDTH</td>
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<td>VERTICAL</td>
<td>MEDIUM</td>
<td>LOW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S</td>
<td>L</td>
<td>M</td>
</tr>
</tbody>
</table>

DISTRIBUTION: C = 01-100%; B = 61-100%; S = 1-10%; T = <1%

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

PHOTO ROLL 4 MAY 5 TO 21
FRAMES

PIT NO. PIT
DEPTH (cm) SUBSURFACE OIL CHARACTER OILED ZONE GLOP HORB M OIL OF TR TH NO cm-cm ORN cm-cm Y N (cm) B H B R N S U I M I L I NOTES

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

OG COMMENTS: See map
HSOR is present in splatters in the upper intertidal zone and extend into the middle intertidal at this location. Black lichen (Verrucaria) and filamentous green algae are present near or on the oil in the upper intertidal zone. Crustose brown algae (Hildenbrandia), rockweed (Fucus), sparse densities of barnacles and limpets, and numerous littorine snails are present in the vicinity of the oil in the middle intertidal zone. These intertidal species (and most others) are all more abundant slightly below the tidal level of the oil. Recruitment of rockweed is evident from the dense cover of juveniles 1 to 3 feet below the oiled area. Barnacles are abundant through most of the middle and low zones. Barnacle spat are sparse. Red algae (Palmaria, Halosaccion, Microcladia?) and green algae (Ulva, Cladophora) are abundant below the Fucus zone in the low intertidal. Juvenile mussels are present in scattered patches within crevices and on Fucus, but are not particularly abundant inside this bay. A sparse clam bed (Macoma nasuta, Prototheca staminea, Saxidomus sp.) is present along the shallow sloped portion of the beach.

Manual pickup was performed during the survey. Additional manual pickup, if performed, will not have negative impacts on the local biota.

General Features of PY012-B
This subdivision is located within a small cove exposed to low waves. The shore in this subdivision is nearly all high angle boulders, bedrock outcrops, and cobble, with a few very small medium angle beaches. The upper shore has numerous dead trees that may have been killed by subsidence during the 1964 earthquake. The intertidal zone appears healthy (continued)
and typical of similar protected coves throughout the area. Black lichen is patchy, but quite abundant in the very high shore. Filamentous green algae often forms a zone immediately below the lichen. Fucus, barnacles, littorine snails, and limpets are usually found in the upper through the middle shore. Fucus is generally very dense in the mid-intertidal of the shore. Littorines are somewhat sparse compared to other areas, limpets are moderately abundant. The lower zones have increasing cover of red algae, with scattered patches of green algae. Mussels are found only in small patches in crevices where mostly small individuals are present, with few adults. Clams (Macoma sp., Saxidomus sp.) are found in the low zone in low densities. Sea cucumbers (Eupentacta sp.) are quite abundant below cobble in the low zone, as are bryozoans, hermit crabs, isopods, and amphipods.

List of Common Species from PY012-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Costaria costata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Corallina sp., Endocladia muricata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Pilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera - Halichondria sp.
2. Anemones - Anthopleura artemisia, Epiactis ritteri, Metridium senile, Urticina crassicornis, Stomphia sp.
3. Hydroids - Sertularidae - Sertularella?
5. Flatworms - Platyhelminthes - Polyclads
6. Nemertean Worms - Ribbon Worms - Emplectonema gracile
8. Polychaete Worms
   Glyceridae
   Nepthiidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spiorbidae - Spirorbis sp.
9. Pea Worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
   a. Amphipods - Orchestia sp.
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs - Haplogaster sp., Paguridae (hermit crabs)
   d. Isopods - Cirrida harfordi, Idotea wosnesenskii, Gnirimorsphaeroma oregonensis
11. Mollusca
   a. Chitons - Mopalia mucosa, Katharina tunicata, Tonicella lineata
   b. Snails - Gastropods
      Amphissa columbiana, Littorina sitkana, L. keena, Natica clausa,
      Macella lamellosa, N. lima
   c. Limpets - Acmaea mitra, Lottia digitalis, L. persona, Tectura
      fenestrata, T. persona, T. scutum, Siphonaria thersites
   d. Nudibranchs - Lamellidoris fusca, Melibe leonina
   e. Bivalves - Chlamys hastata, Macoma nasuta, Modiolus modiolus, Mytilus
      edulis, Pododesmus cepio, Prototheca staminea, Saxidomus
      giganteus

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula,
      Leptasterias hexactis, Orthasterias keohleri, Pycnopoida helianthoides,
      Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Cottidae
   Stichaeidae - Xiphister atropurpureus, X. mucosus
BLACK LICHEN, PILAMINOTUS
GREEN ALGAE, VERY NEAR
OIL IN UPPER ZONE. FOCUS
CRUSTOS BROWN ALGAE
FOCUS, SMALLE CUMPS, BALL
ALGAE, LITTLE WAVE NEAR
OIL IN MIDDLE TO HIGH ZONE.
HEALTHY INTER TIDAL
THROUGHOUT. RECENT
RECRUITMENT BY
SEVERAL SPECIES
RICH RED, GREEN, AND
BROWN ALGAE BE IN
LOW ZONE
1991 MAYSAP EVALUATION

SEGMENT: PY 012  SUB:  C  REGION:  KEN  SURVEY DATE: 5/14/91

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>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Pickup (Check as Req.)</td>
<td></td>
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<tr>
<td>Spot Washing</td>
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<tr>
<td>Bio-Customblen only</td>
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<tr>
<td>Bio-Inipol/Customblen</td>
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<tr>
<td>Other</td>
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<tr>
<td>Other</td>
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COMMENTS:

INITIAL: ___________________________________________________  

TAG: ___________________________

FOSC: ___________________________

TAG APPROVAL DATE: ____________  FOSC APPROVAL DATE: ____________

ADEC ___________________________

EXXON ___________________________

USCG ___________________________

NOAA ___________________________
ADEC
NAME Clark G. Crosby
SIGNATURE Clark G. Crosby

☑ NTR
Available past riling data showed no blazing within Subdivision. Spot check revealed very sporadic CT/CV/ms. coverage ≤1% →

EXXON
NAME George P. Stiles
SIGNATURE George P. Stiles

☑ NTR
175 putter were retrieved during the survey that were recoverable therefore no additional treatment is recommended.

LANDMANAGER
NAME John P. Hardister, USFWS
SIGNATURE John P. Hardister, 7/19/91

☑ NTR
No additional treatment necessary.

USCG/NOAA
NAME Curtis W. Mathis
SIGNATURE Curtis W. Mathis

☑ NTR
Abnormal TP/AH with intermittent fatalities of red mullet picked up at scene.
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 4

OG - M. Smegal
ADEC - Crosby

XON - George L. Stiles

BIO - J. Barry
LANDMANAGER - Richard for USFWS
USCG/NOAA - McBeth/McDonald

DATE May 14, 1991

TIME 17:55 to 18:10
TIDE LEVEL 5.9 ft. to 3.4 ft.
ENERGY LEVEL: H M L

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

TOTAL LENGTH SHORELINE SURVEYED: 300 m
NEAR SHORE SHEEN: BR RB SL X NONE

EST. OIL CATEGORY LENGTH: W m M m N m V L 330 m NO m US 1725 m

SURFACE OIL CHARACTER

<table>
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<tr>
<th>L</th>
<th>O</th>
<th>C</th>
<th>AP</th>
<th>MS</th>
<th>TB</th>
<th>CT</th>
<th>ST</th>
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<th>SURFACE SEDIMENT TYPE</th>
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<th>TYPE</th>
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SURFACE OIL CHARACTER

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

PIT NO. 1
SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

OG COMMENTS:

See map.
Steep talus of angular boulders on steep bedrock. Narrow intertidal width of beach face above not to scale, in general it is less than 20 m.

Oil 'ing occurs in area A1 as very dispersed oil and ev splatters on boulder face and an occasional small patch of oil on may sap behind boulders all less than 20 cm diameter and 2-3 cm thick. Coverage < 1%, frequency of occurrence 1 or 2 splatters per 10 m. Size of boulder random observations. Difficult access. (See photos may sap 4.3.18)

Reviewed 5.18.91
My
REVIEWED 5/18/91
Splatters of HSOR occur along the upper intertidal zone at this location. Black lichen (Verrucaria), crustose brown algae (Hildenbrandia), and rockweed (Fucus) are located in the vicinity of the oil. Fucus and Hildenbrandia are much more abundant a few feet below the oiled site. In addition, recruitment of Fucus is evident from the dense cover of juveniles 2 to 3 feet below the oiled area. Barnacles and limpets are also abundant from near the upper zone to the low zone. Red algae (Palmaria, Halosaccion, Microcladia?) and green algae (Ulva, Cladophora) are abundant below the Fucus zone in the low intertidal. Juvenile mussels are present in scattered patches within crevices and on Fucus, but are not particularly abundant inside this bay.

Manual pickup was performed during the survey. Additional manual pickup, if performed, will not have negative impacts on the local biota.

General Features of PY012-C

This subdivision comprises low to high exposure shores. The surveyed portion of the subdivision included only the low exposure shore. This section of the subdivision, located within the cove, is mainly medium to high angle shores of boulders, bedrock outcrops, and cobble. The upper shore has numerous dead trees that may have been killed by subsidence during the 1964 earthquake. Black lichen is patchy, but quite abundant in the very high shore. Filamentous green algae often forms a zone immediately below the lichen. Fucus, barnacles, littorine snails, and limpets are usually found in the upper through the middle shore. Fucus is generally very dense in the mid-intertidal of this shore. Littorines are somewhat sparse compared to other areas. Limpets are moderately abundant. The lower zones have increasing cover of red algae, with scattered patches of (continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
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<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
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<td>Eagles</td>
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<td>Seabirds</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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<td>Sea Otters</td>
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<td>Pinnipeds (specify)</td>
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<tr>
<td>Whales (specify)</td>
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</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
green algae. Mussels are found only in small patches in crevices where mostly small individuals are present, with few adults. Clams (Macoma sp., Saxidomus sp.) are found in the low zone in low densities. Sea cucumbers (Eupentacta sp.) are quite abundant below cobble in the low zone, as are bryozoans, hermit crabs, isopods, and amphipods.

List of Common Species from PY012-C

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Costaria costata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Corallina sp., Endocladia muricata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocellis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera - Halichondria sp.
2. Anemones - Anthopleura artemesia, Epiactis ritteri, Metridium senile, Urticina crassicornis, Stoaphia sp.
3. Hydroids - Sertulariidae
5. Flatworms - Platyhelminthes - Polyclads
6. Nematode Worms - Ribbon Worms - Emplectonema gracile
8. Polychaete Worms
   Glyceridae
   Nephtyidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spiorbidae - Spiorbis sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs - Haploqaster sp., Paguridae (hermit crabs)
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
11. Mollusca
   a. Chitons - Mopalia mucosa, Katharina tunicata, Tonicella lineata
   b. Snails - Gastropods
      Amphissa columbiana, Littorina sitkana, L. keenaæ, Natica clausa, Nucella lamellosa, N. lima
   c. Limpets - Acmaea mitra, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
   d. Nudibranches - Lamellidoris fusca, Melibe leonina
   e. Bivalves - Chlamys hastata, Macoma nasuta, Modiolus modiolus, Mytilus edulis, Pododesmus cepio, Prototheca stominea, Saxidomus giganteus
12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula,
      Lophtasterias hexactis, Orthasterias keohleri, Pycnopodia helianthoides,
      Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Cottidae
   Stichaeidae - Xiphister atropurpureus, X. mucosus
BLACK LICORICE, CRUSTOSE BROWN ALGAE (HILON-BRANDIA), ROCKWEGO (FUCUS), SCATTERED BRANNALLUS, LIMETS, AND NEAR OIL.
RICH FUCUS, RED MERC, BRANNALLUS BELOW
NO EVIDENCE OR RECENT OIL RELATED IMPACTS.
Subdivision Field Map

Map Key: KENPY012Cb

Name: [Signature]

Date: May 14, 19__

Date Entered: [Signature]

ADEC Subsegment Length: 2035m

XXX Wide

/// Medium

---- Narrow

TTTT Very Light

0000 No Oil

AK State Plane Zone 4
app012cb

Reviewed 5.18.91 GJ
Reviewed 20 10.MAI
1991 MAYSAP EVALUATION

SEGMENT: PY 012  SUB: B  REGION: KEN  SURVEY DATE: 5/14/91

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:  5/24/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N)  N  TAG  FOSC

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

COMMENTS:

INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE:  MAY 24/91
ADEC
EXXON
USCG
NOAA

FOSC APPROVAL DATE:  5/29/91
E. E. PAGE, CDR, USCG
CHIEF OF STAFF, FOSC
Survey crew recovered what oiling was observed. Please reference photos.

Survey crew picked up 4 bags of MS while surveying. No appreciable oil remaining.

Recoverable oil was removed.
MAYSAP SHORELINE OILING SUMMARY  

Team No. 4  

Starting at:  

Surveyed From:  

Date: May 14, 1991  

Segment: P7-0015  

Subdivision: B  

Surveyed From:  

Date: May 14, 1991  

TOTAL LENGTH SURVEYED: 92.3 m  

NEAR SHORE SHEEN:  

EST. OIL CATEGORY LENGTH:  

<table>
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<tr>
<th>LEFT</th>
<th>CENTER</th>
<th>RIGHT</th>
<th>ZONE</th>
<th>NOTES</th>
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<tr>
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<td>S</td>
<td>S</td>
<td>1.0</td>
<td>V</td>
</tr>
<tr>
<td>A2</td>
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<td>S</td>
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<td>V</td>
</tr>
<tr>
<td>A3</td>
<td>T</td>
<td>T</td>
<td>1.0</td>
<td>V</td>
</tr>
</tbody>
</table>

Distribution:  

Slope:  

Pit Depth: (cm)  

Subsurface Oil Character:  

Oiled Zone:  

Clean H2O Below Level:  

Sheen Color:  

Subsurface Sediments:  

OG Comments:  

See map  

U. Relief 5/18
DATE/TIME: May 14, 1991 1830 - 1927

TIDAL HEIGHT (Range): +3.4 => +2.6

BIOLOGIST: JIM BARRY

WIND SPEED/DIRECTION: Variable 0-10 kt, rain

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

A1-A4

HSOR is present in splatters in the upper intertidal zone and extend into the middle intertidal at this location. Black lichen (Verrucaria) and filamentous green algae are present near or on the oil in the upper intertidal zone. Crustose brown algae (Hildenbrandia), rockweed (Fucus), sparse densities of barnacles and limpets, and numerous littorine snails are present in the vicinity of the oil in the middle intertidal zone. These intertidal species (and most others) are all more abundant slightly below the tidal level of the oil. Recruitment of rockweed is evident from the dense cover of juveniles 1 to 3 feet below the oiled area. Barnacles are abundant through most of the middle and low zones. Barnacle spat are sparse. Red algae (Palmaria, Halosaccion, Microcladia?) and green algae (Ulva, Cladophora) are abundant below the Fucus zone in the low intertidal. Juvenile mussels are present in scattered patches within crevices and on Fucus, but are not particularly abundant inside this bay. A sparse clam bed (Macoma nasuta, Prototheca staninea, Saxidomus sp.) is present along the shallow sloped portion of the beach.

Manual pickup was performed during the survey. Additional manual pickup, if performed, will not have negative impacts on the local biota.

General Features of PY012-B

This subdivision is located within a small cove exposed to low waves. The shore in this subdivision is nearly all high angle boulders, bedrock outcrops, and cobble, with a few very small medium angle beaches. The upper shore has numerous dead trees that may have been killed by subsidence during the 1964 earthquake. The intertidal zone appears healthy (continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

BIRDS

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</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>6</td>
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<td>Shorebirds</td>
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<td>Other Birds</td>
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FISH OBSERVED

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LAND MAMMALS

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<tr>
<td>Pinnipeds (specify)</td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
and typical of similar protected coves throughout the area. Black lichen is patchy, but, quite abundant in the very high shore. Filamentous green algae often forms a zone immediately below the lichen. Fucus, barnacles, littorine snails, and limpets are usually found in the upper through the middle shore. Fucus is generally very dense in the mid-intertidal of this shore. Littorines are somewhat sparse compared to other areas. Limpets are moderately abundant. The lower zones have increasing cover of red algae, with scattered patches of green algae. Mussels are found only in small patches in crevices where mostly small individuals are present, with few adults. Clams (Macoma sp., Saxidomus sp.) are found in the low zone in low densities. Sea cucumbers (Eupentacta sp.) are quite abundant below cobble in the low zone, as are bryozoans, hermit crabs, isopods, and amphipods.

List of Common Species from PY012-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Costaria costata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Sycosiphon lomentaria
4. Red Algae - Rhodophyta
   Corallina sp., Endocladium mucicata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

B. Marine Animals
1. Sponges - Porifera - Halichondria sp.
2. Anemones - Anthopleura artemesia, Epiactis ritteri, Metridium senile, Urticina crassicornis, Stomphia sp.
3. Hydroids - Sertularidae - Sertularella?
4. Flatworms - Platyhelminthes - Polyclads
5. Nemerteans - Ribbon Worms - Emplectonema gracile
6. Polychaete Worms
   Glyceridae
   Nepthidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spriortidae - Spirorbis sp.
7. Pea Nut Worms - Sipunculids - Phascolosoma agassizii
8. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs - Haplogaster sp., Paguridae (hermit crabs)
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnornimorsphaeroma 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
   c. Limpets - Acmaea mitra, Lottia digitalis, L. persona, Tectura
      fenestrata, T. persona, T. scutum, Siphonaria thersites
   d. Nudibranches - Lamellidoris fusca, Melibe leonina
   e. Bivalves - Chlamys hastata, Macoma nasuta, Modiolus modiolus, Mytilus
      edulis, Pododesmus cepio, Prototheca staminea, Saxidomus
      giganteus

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula,
      Leptasterias hexactis, Orthasterias keohleri, Pycnopodia helianthoides,
      Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylometron dorebachiensis


15. Fishes
   Cottidae
   Stichaeidae - Xiphister atropurpureus, X. mucosus
BIO SKETCH MAP
J.P. BARRY
1Y MAY 91
1870-1935

- Steep rockfall/shale
- Cubic

A1-A4: BLACK LICHEN, PILAMENOUS
GREEN ALGAE, VERY NEAR
OIL IN UPPER ZONE. FOCUS;
CRUSTOSE BROWN ALGAE
FOCUS, SHARSE LIMPETS, BARN
ALGAE, UTTERLIES NEAR
OIL (W) MIDDLE TO HIGH
ZONE. HEALTHY INTERTIDAL
THROUGHOUT. RECENT
RECRUITMENT BY
SEVERAL SPECIES-
RICH RED, GREEN, AND
BROWN ALGAE BE IN
LOW ZONE.
1991 MAYSAP EVALUATION

SEGMENT: PY 012  SUB:  A  REGION:  KEN  SURVEY DATE:  5/14/91

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:

<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>
<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: MAR 24 1991

ADJC

EXXON

USCG

NOAA

FOSC APPROVAL DATE: 5/24/91

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

TEAM NO. __ SEGMENT 24-012 SUBDIVISION A DATE 1/14/91

ADEC
NAME: Clara J. Crosby
SIGNATURE: Clara J. Crosby

☒ NTR Jean Marie Sample comments are applicable, there was no available data to indicate previous oiling.

EXXON
NAME: George R. Stites
SIGNATURE: George R. Stites 5/16/91

☒ NTR No recoverable oil seen.

LANDMANAGER
NAME: John P. Hardister
SIGNATURE: John P. Hardister 5/14/91

☒ NTR Concern with comments of ADEC and EXXON representatives.

USCG/NOAA
NAME: Capt. J. McElroy
SIGNATURE: McElroy

☒ NTR No oil or no recover.
**MAYSAP SHORELINE OILING SUMMARY**

**SEGMENT:** PY 012

**SUBDIVISION:** A

**DATE:** May 14, 1981

**TIME:** 14:45 to 15:00

**TIDE LEVEL:** +2.6 ft. to +2.1 ft.

**ENERGY LEVEL:**
- H: High
- M: Medium
- L: Low

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

**TOTAL LENGTH SHORELINE SURVEYED:** 1059 m

**NEAR SHORE SHEEN:**
- BR: Brown
- RB: Rainbow
- SL: Silver
- NONE

**EST. OIL CATEGORY LENGTH:**
- W: Water
- M: medium
- N: near
- VL: very long
- NO: none
- US: US

**SURFACE OIL CHARACTER**

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<th>LOC</th>
<th>AP</th>
<th>MS</th>
<th>TB</th>
<th>SOH</th>
<th>CV</th>
<th>CT</th>
<th>ST</th>
<th>FL</th>
<th>DB</th>
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**SURFACE SEDIMENT**

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<th>TYPE</th>
<th>V</th>
<th>H</th>
<th>M</th>
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**SHORE TYPE**

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<th>SLOPE</th>
<th>VH</th>
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**AREA**

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<th>WIDTH</th>
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<th>ZONE</th>
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**NOTES**

**DISTRIBUTION:**
- C: 91-100%
- B: 61-60%
- P: 11-50%
- S: 1-10%
- T: <1%

**SLOPE:**
- V: Vertical
- H: High Angle
- M: Medium Angle
- L: Low Angle

**PHOTO ROLL #**

**FRAMES**

**PIT NO.**

<table>
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<tr>
<th>DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN</th>
<th>H2O LEVEL</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE-SUBSURFACE</th>
<th>NOTES</th>
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</tbody>
</table>

**SHEEN COLOR:**
- B: Brown
- R: Rainbow
- S: Silver
- N: None

**OG COMMENTS:**

This subdivision was surveyed by Zodiac only. No oil has been reported since previously. Oil not seen is mainly of May 13th boxes.

**REVIEWED:** 5/18/81 KG
Subdivisions surveyed by Zodiac only. Not many landing sites and no oil reported during previous surveys. No oil seen.
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4
SEGMENT # PY012
SUBDIVISION C
SEA STATE Calm

TIDAL HEIGHT (Range) +2.6 => +2.1
BIOLeGIST JIM BARRY
WIND SPEED/DIRECTION Variable 0-10 kt, rain

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

General Features of PY012-A
This is a fairly long subdivision which extends from inside a protected cove where the shore is mostly high angle boulder or bedrock, to a highly exposed coast with sheer cliffs and boulder beaches. The biota along this shore change according to exposure. The most conspicuous changes are the increase in species typical of high exposure shores towards the outer coast of the subdivision. Mussels (Mytilus), which are sparse inside the cove, form a distinct band in the middle zone along the steep cliffs of the outer coast. Alaria marginata, a brown alga found only in the low intertidal of exposed beaches, is densely abundant along the outer coast, but absent within the cove. The general pattern of zonation along the outer shore is illustrated below. We surveyed the entire subdivision by boat, finding no areas with detectable oil.

Zonation on Outer Shore of PY012-A

Biota: Tide Level SupraTidal Upper Middle Low Subtidal

Oil Spatters none observed

Black Lichen ---+*-----
Green Algae ***-++---
Barnacles (Balanus) ++++++++---++---
Rockweed (Fucus) --+++---
Mussels (Mytilus) ---------------***-
Branched Red Algae ----++***--
Crustose Brown Algae (Hildenbrandia) ------++++
Thin Red Algae -*--
Upright Brown Algae (not Fucus) --- ++++++++

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant
(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

BIRDS

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
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<td>Seabirds</td>
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<td>8</td>
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<td>Waterfowl</td>
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<td>Gulls/Kittiwakes</td>
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<tr>
<td>Shorebirds</td>
<td>1</td>
<td>2</td>
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</tr>
<tr>
<td>Corvids</td>
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<tr>
<td>Other Birds</td>
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MARINE MAMMALS

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<tr>
<td>Sea Otters</td>
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<td>Pinnipeds (specify)</td>
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<tr>
<td>Whales (specify)</td>
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</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
List of Common Species from PY012-A

A. Marine Plants
1. Diatoms, Blue Greens
   - Cladophora sp., Prasiola meridionalis, Ulva sp., Urospora sp.
2. Green Algae - Chlorophyta
   - Cladophora sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   - Alaria marginata, Agarum fimbriatum, Costaria costata, Ectocarpus sp., Fucus distichus, Hedophyllum sessile, Hildenbrandia sp., Laminaria saccharina
   - Nemecystis leutkeana, Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   - Bossiella sp., Calliarthron sp., Corallina sp., Cryptosiphonia woodii, Cumagloia andersonii, Endocladia muricata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyr a sp., Ptilota sp., Porphyra sp., Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera
   - Halichondria sp., Halichondria panicea, Tethys sp.
2. Anemones - Anthopleura artemesia, A. elegantissama, A. xanthogrammica, Epiactis ritteri, Metridium senile, Urticina crassicornis
3. Hydroids - Sertularidae - Sertularella?
8. Polychaete Worms
   - Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   - Spirorbidae - Spirorbis sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
   a. Amphipods - Orchestia sp.? 
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs - Haplogaster sp., Hemigrapsus oregonensis, Paquidae (hermit crabs), Pugettia sp.,
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnornimorsphaeroma oregonensis
11. Mollusca
   a. Chitons - Mopalia mucosa, Katharina tunicata, Tonicella lineata,
   b. Snails - Gastropods - Littorina sitkana, L. keenae, Nucella lamellosa, N. lima
   c. Limpets - Acmaea mitra, Lottia digitalis, L. persona, Tectura fenestra, T. persona, T. scutum, Siphonaria thersites
   e. Bivalves - Modiolus modiolus, Mytilus edulis
   f. Cephalopods - Octopus do fleini
12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars - Dermasterias imbricata, Evasterias truscheli, Henricia levi insula, H. sanguinolenta, Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis
15. Fishes
   a. Cottidae
   - Xiphister atropurpureus, X. mucosus
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: 5/3/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N) N

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

COMMENTS:
INITIAL: ____________________________________________

TAG: _______________________________________________

FOSC: _____________________________________________

TAG APPROVAL DATE: MAY 29 1991

EXXON
USCG
NOAA

FOSC APPROVAL DATE: 6/15/91

E. E. PAGE, CDR, USCG
CHIEF OF STAFF, FOSC
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<th>SUBDIVISION</th>
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<td>C</td>
<td>MAY/14/91</td>
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<td>Clara S. Crosby</td>
<td>Clara S. Crosby</td>
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<table>
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<tr>
<th>NTR</th>
<th>Available past riling data showed no oiling within Subdivision. Spot check revealed very sporadic CT/CV/MVS coverage ±17 ft.</th>
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<td>George P. Stiles</td>
<td>George P. Stiles</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NTR</th>
<th>175 permits were retrieved during the survey that were recoverable therefore no additional treatment is recommended.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>NAME</th>
<th>SIGNATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>John P. Hardister</td>
<td>John P. Hardister</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>NTR</th>
<th>No additional treatment necessary.</th>
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</thead>
</table>

<table>
<thead>
<tr>
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<th>SIGNATURE</th>
</tr>
</thead>
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<tr>
<td>Charlie H. Meller</td>
<td>Charlie H. Meller</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>NTR</th>
<th>Abnormal TP/PA with intertidal patches of Old Mouse, picked up at scene.</th>
</tr>
</thead>
</table>
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO.**

**OG**

**DEC**

**ADN**

**BIO**

**LANDMANAGER**

**MACRO**

**USCG/NOAA**

**DATE**

**TIME**

**TIDE LEVEL**

**ENERGY LEVEL**

**SURVEYED FROM**

**WEATHER**

**TOTAL LENGTH SHORELINE SURVEYED**

**NEAR SHORE SHEEN**

**EST. OIL CATEGORY LENGTH**

**TIDE LEVEL**

**ENERGY LEVEL**

**SURVEYED FROM**

**WEATHER**

**TOTAL LENGTH SHORELINE SURVEYED**

**NEAR SHORE SHEEN**

**EST. OIL CATEGORY LENGTH**

**DISTRIBUTION:**

- C = 91-100%
- B = 81-90%
- P = 71-80%
- S = 61-70%
- T = 0-10%

**SLOPE:**

- V = VERTICAL
- H = HIGH ANGLE
- M = MEDIUM ANGLE
- L = LOW ANGLE

**PHOTO ROLL**

**FRAMES**

**PIT**

**PIT DEPTH**

**OILED ZONE**

**CLEAN ZONE**

**H2O LEVEL**

**SHEEN COLOR**

**PIT ZONE**

**SURFACE-SUBSURFACE SEEDMETS**

**NOTES**

**OG COMMENTS:**

See map.
PY012 C

Subdivision Field Map
Map Key: KENPY012Cb
Name: [Signed]
Date: May 14/19
Data Entered:

Wide
Medium
Narrow
Very Light
No Oil

ADEC Subsegment Length: 2035m
METERS

500 1000 2000
AK State Plane Zone 4
app012ab

Reviewed 5/18 97
Steep talus of angular boulders on steep bedrock. Narrow intertidal width of head face above not to scale, in general, it is less than 20 m.

Oil ring occurs in area A1 as very dispersed at and eu splatters on boulder face and occasional small patches of NS on roadmap behind boulders all less than 20 cm diameter and 2-3 cm thick. Coverage < 1%, frequency of occurrence 1/10 2 splatter per 10 m. Size of boulder render observations difficult access. (See photos map 4.3.18)

Picked up all that could be removed
4.3.17 location index photo
Splatters of HSOR occur along the upper intertidal zone at this location. Black lichen (Verrucaria), crustose brown algae (Hildenbrandia), and rockweed (Fucus) are located in the vicinity of the oil. Fucus and Hildenbrandia are much more abundant a few feet below the oiled site. In addition, recruitment of Fucus is evident from the dense cover of juveniles 2 to 3 feet below the oiled area. Barnacles and limpets are also abundant from near the upper zone to the low zone. Red algae (Palmaria, Halosaccion, Microcladia?) and green algae (Ulva, Cladophora) are abundant below the Fucus zone in the low intertidal. Juvenile mussels are present in scattered patches within crevices and on Fucus, but are not particularly abundant inside this bay.

Manual pickup was performed during the survey. Additional manual pickup, if performed, will not have negative impacts on the local biota.

General Features of PY012-C

This subdivision comprises low to high exposure shores. The surveyed portion of the subdivision included only the low exposure shore. This section of the subdivision, located within the cove, is mainly medium to high angle shores of boulders, bedrock outcrops, and cobble. The upper shore has numerous dead trees that may have been killed by subsidence during the 1964 earthquake. Black lichen is patchy, but quite abundant in the very high shore. Filamentous green algae often forms a zone immediately below the lichen. Fucus, barnacles, littorine snails, and limpets are usually found in the upper through the middle shore. Fucus is generally very dense in the mid-intertidal of this shore. Littorine snails are somewhat sparse compared to other areas. Limpets are moderately abundant. The lower zones have increasing cover of red algae, with scattered patches of

(continued)
green algae. Mussels are found only in small patches in crevices where mostly small individuals are present, with few adults. Clams (Macoma sp., Saxidomus sp.) are found in the low zone in low densities. Sea cucumbers (Eupentacta sp.) are quite abundant below cobble in the low zone, as are bryozoans, hermit crabs, isopods, and amphipods.

List of Common Species from PY012-C

A. Marine Plants
   1. Diatoms, Blue Greens
   2. Green Algae - Chlorophyta
      Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
   3. Brown Algae - Phaeophyta
      Costaria costata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Sycosiphon lomentaria
   4. Red Algae - Rhodophyta
      Corallina sp., Endocladia muricata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrolcis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
   5. Higher Plants - Leymus mollis (beach ryegrass)

II. Marine Animals
   1. Sponges - Porifera - Halichondria sp.
   2. Anemones - Anthopleura artemesia, Epiactis ritteri, Metridium senile, Urticina crassicornis, Stomphia sp.
   3. Hydroids - Sertularidae - Sertularella?
   5. Flatworms - Platyhelminthes - Polyclads
   6. Nemertean Worms - Ribbon Worms - Emplectonema gracile
   8. Polychaete Worms
      Glyceridae
      Nepthidae
      Nereidae - Nereis spp.
      Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
      Siporidae - Siporbidis sp.
   9. Peanut worms - Sipunculids - Phascolosoma agassizii
   10. Crustaceans
      a. Amphipods - Orchestia sp.?
      b. Barnacles - Balanus glandula, Semibalanus cariosus
      c. Crabs - Haplogaster sp., Paguridae (hermit crabs)
      d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oragonensis
   11. Mollusca
      a. Chitons - Mopalia mucosa, Katharina tunicata, Tonicella lineata
      b. Snails - Gastropods
         Amphissa columbiana, Littorina sitkana, L. keenae, Natica clausa, Nucella lamellosa, N. lirma
      c. Limpets - Acmaea mitra, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
      d. Nudibranchs - Lamellidoris fusca, Melibe leonina
      e. Bivalves - Chlamys hastata, Macoma nasuta, Modiolus modiolus, Mytilus edulis, Pododesmus cepio, Prototheca staminea, Saxidomus giganteus
12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula,
      Leptasterias hexactis, Orthasterias keohleri, Pycnopodia helianthoides,
      Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Cottidae
   Stichaeidae - Xiphister atropurpureus, X. mucosus
BLACK LICEEN, CRUSTOSE BROWN ALGAE (Hildenbrandia), ROCKWEED (Fucus), SCATTERED BARNACLES, LIMPETS, AND NEAR OIL.

HICH FUCUS, RED ALGAE, BARNACLES BELOW
NO EVIDENCE OF RECENT OIL RELATED IMPACT.
<table>
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<th>Width</th>
<th>Description</th>
<th>ADEC Subsegment Length: 2035m</th>
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<tbody>
<tr>
<td>XXXX</td>
<td>Wide</td>
<td></td>
</tr>
<tr>
<td>/////</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>Narrow</td>
<td></td>
</tr>
<tr>
<td>TTTT</td>
<td>Very Light</td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>No Oil</td>
<td></td>
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</tbody>
</table>

**PY012 C**

**Subdivision Field Map**

**Map Key:** KENPY012cb

**Name:** Jim Sample

**Date:** May 14, 1994

**Date Entered:**

Reviewed 5-18-94

Reviewed CD 16 May
1991 MAYSAP EVALUATION

SEGMENT: PY 012  SUB: A  REGION: KEN  SURVEY DATE: 5/14/91

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:  INITIAL  TAG  FOSC

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____________________
Jean Marie Semples comments are applicable, there was no available data to indicate previous action.

No recoverable oil seen.

Concern with comments of ADEC and Exxon representative.

No oil to recover.
MAYSAP SHORELINE OILING SUMMARY

SEGMENT DU 019
SUBDIVISION A
LANDMANAGER Nordestre for USCG
DATE May 14, 1991

SURVEYED FROM □ FOOT □ BOAT □ HELO
WEATHER □ SUN □ CLOUDS □ FOG □ RAIN □ SNOW

TOTAL LENGTH SHORELINE SURVEYED 1059 m
NEAR SHORE SHEEN □ BR □ RB □ SL □ NONE

EST OIL CATEGORY LENGTH
W — m M — m N — m VL — m NO 1059 m US 552 m

<table>
<thead>
<tr>
<th>L O</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>AREA</th>
<th>ZONE</th>
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<td>TYPE</td>
<td>V H M L</td>
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<td>m</td>
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<tr>
<td>C</td>
<td>AP MS TB SB OR CV CT ST FL DB NO</td>
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<table>
<thead>
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<table>
<thead>
<tr>
<th>L O</th>
<th>OILED ZONE</th>
<th>CLEAN BELOW</th>
<th>H2O LEVEL</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
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<tr>
<td></td>
<td>cm-cm</td>
<td>Y/N</td>
<td>(cm)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>BR SN S</td>
<td>UI MI LI</td>
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<table>
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<thead>
<tr>
<th>SHEEN COLOR: B = BROWN, R = RAINBOW S = SILVER, N = NONE</th>
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<table>
<thead>
<tr>
<th>PIT NO</th>
<th>PIT DEPTH (cm)</th>
<th>OIL CHARACTER</th>
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<tr>
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<table>
<thead>
<tr>
<th>DISTRIBUTION</th>
<th>C = 91-100% B = 51-60% P = 11-50% S = 1-10% T = &lt;1%</th>
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<th>SUBSURFACE OIL CHARACTER</th>
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<table>
<thead>
<tr>
<th>NOTES</th>
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</table>

OG COMMENTS: The subdivision was surveyed by 300 a, only no oil was observed. Radiation was non-detection. The sand is mainly of shellbed.<br>

Signed J. B. Hurst
Signed 5/18/91
OG Sketch Map
PY 012 A
17 Samples
May 14/91
1440 - 2200

Legend
☑ Step bedrock
with occasional
talus of angular
boulders/faults.

Subdivision survey
by Zodiac only; not many
landing sites and no oil
reported during previous
survey. No oil seen.
FiAYSAP BIIJl.DSICAL stlfi'IWIY F!JRH

DATE/TIME
May 14, 1991 1930 - 2000

TIDAL HEIGHT (Range) +2.6 => +2.1

BIOLOGIST
JIM BARRY

WIND SPEED/DIRECTION
Variable 0-10 kt, rain

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

General Features of PY012-A
This is a fairly long subdivision which extends from inside a protected cove where the shore is mostly high angle boulder or bedrock, to a highly exposed coast with sheer cliffs and boulder beaches. The biota along this shore change according to exposure. The most conspicuous changes are the increase in species typical of high exposure shores towards the outer coast of the subdivision. Mussels (Mytilus), which are sparse inside the cove, form a distinct band in the middle zone along the steep cliffs of the outer coast. Alaria marginata, a brown alga found only in the low intertidal of exposed beaches, is densely abundant along the outer coast, but absent within the cove. The general pattern of zonation along the outer shore is illustrated below. We surveyed the entire subdivision by boat, finding no areas with detectable oil.

Zonation on Outer Shore of PY012-A

Biota: Tide Level SupraTidal Upper Middle Low Subtidal

Oil Spatters

Black Lichen

Green Algae

Barnacles (Balanus)

Rockweed (Fucus)

Mussels (Mytilus)

Branched Red Algae

Crustose Brown Algae (Hildenbrandia)

Thin Red Algae

Upright Brown Algae (not Fucus)

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

WILDLIFE OBSERVATIONS - Completed on all subdivisions

BIRDS

<table>
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<tr>
<th></th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
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</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>Seabirds</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Streamers</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>2</td>
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</table>

Other Birds

FISH OBSERVED SPECIES PRESENT

MARNINE MAMMALS

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<tr>
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<th># OBSERVED</th>
<th>SPECIES</th>
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<tbody>
<tr>
<td>Sea Otters</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td>2</td>
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LAND MAMMALS

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<th></th>
<th># OBSERVED</th>
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<tbody>
<tr>
<td>Frogs</td>
<td>2</td>
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</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
**List of Common Species from PY012-A**

### A. Marine Plants
1. **Diatoms, Blue Greens**
2. **Green Algae - Chlorophyta**
   - Cladophora sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. **Brown Algae - Phaeophyta**
   - Alaria marginata, Agarum fimbriatum, Costaria costata, Ectocarpus spp., Fucus distichus, Hedophyllum sessile, Hildenbrandia sp., Laminaria saccharina, Nereocystis leutkeana, Ralfsia sp., Syctosiphon lomentaria
4. **Red Algae - Rhodophyta**
   - Bossiella sp., Calliarthron sp., Corallina sp., Cryptosiphonia woodii, Cumaegloia andersonii, Endocladia muricata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Pttilota filicina, Rhodomela larix
5. **Higher Plants - Leymus mollis (beach rye grass)**

### II. Marine Animals
1. **Sponges - Porifera**
   - Halichondria sp., Halichondria panicea, Tethys sp.
2. **Anemones - Anthopleura artemesia, A. elegantissama, A. xanthogrammica, Epiactis ritteri, Metridium senile, Urticina crassicornis**
3. **Hydroids - Sertularidae - Sertularella?**
8. **Polychaete Worms**
   - Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha, Spiorbidae - Spiorbis sp.
9. **Peanut worms - Sipunculids - Phascolosoma agassizii**
10. **Crustaceans**
    - **a. Amphipods - Orchestia sp.?**
    - **b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus**
    - **c. Crabs - Haplogaster sp., Hemigrapsus oregonensis, Paguridae (hermit crabs), Pugettia sp.**
    - **d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis**
11. **Mollusca**
    - **a. Chitons - Mopalia mucosa, Katharina tunicata, Tonicella lineata**
    - **b. Snails - Gastropods - Littorina sitkana, L. keenae, Nucella lamellosa, N. lima**
    - **c. Liopets - Acmaea mitra, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites**
    - **e. Divalves - Modiolus modiolus, Mytilus edulis**
    - **f. Cephalopods - Octopus dofleini**
12. **Echiurans**
    - **a. Brittle Stars - Ophiolus sp., ?**
    - **b. Sea stars - Dermasterias imbricata, Evasterias truscheli, Henricia leviscula, H. sanguinolenta, Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.**
    - **c. Sea Cucumbers - Holothurians - Eupentacta sp.**
    - **d. Urchins - Strongylocentrotus droebachiensis**
13. **Bryozoa - Membranipora sp., Microporina borealis, Schizoporella sp.**
15. **Fishes**
    - **Cottidae - Stichaeidae - Xiphius atropurpureus, X. aequor**
**ADDENDUM: SUBDIVISION CONSTRAINTS**

SEGMENT PY-12 SUBDIVISION B (2 of 3)

<table>
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<tr>
<th>Manual Pickup</th>
<th>OPEN (USFWS MONITOR REQ.)</th>
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<tbody>
<tr>
<td>Bioremediation*</td>
<td>OPEN (USFWS MONITOR REQ.)</td>
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</tbody>
</table>

*Customblen may be used in ITZ following manual pickup.

**ARCHAEOLOGICAL INSPECTION/CONSULTATION REQUIRED.**

>>> PHONE 564-3274 (Anchorage) OR 229-1508 (24 hrs.) <<<

**APPLICABLE ECOLOGICAL TIME CONSTRAINTS**

No applicable time constraints.

**OTHER ECOLOGICAL CONSIDERATIONS**

Avoid any unnecessary disturbance or damage to unrolled biota and substrate.

Prepared by [Signature] Date 7-3-90

Date 7/3/90
WORK PLAN ADDENDUM

Segment PY-012 Subdivision B Dated 5/16/90

MODIFICATION

1. REASON FOR MODIFICATION
   • FOSC requirement.
   • Landowner recommendation.

2. ADJUSTMENT TO WORK PLAN
   • Custumblen may be used in the ITZ as indicated on the sketch following manual removal of mousse and patties.
   • A USFWS representative must be on site for treatment.

SHPO APPROVAL NEEDED YES [ ] NO [x] SHPO SIGNATURE ______________________

TAG APPROVAL DATE 5/19/90
ADEC ART WEER [signature]
EXXON AWAY TEL [signature]
FOSC [signature] DATE 5/18/90
SHORELINE EVALUATION

SEGMENT ST/ FY-012  SUBDIVISION B (2 OF 3)  DATE  4/3/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4QQ  National Wildlife Refuge

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

ARCHAEOLOGICAL CONSTRAINTS:
Consultation and inspection with an Exxon archaeologist is required prior to treatment. Specific on-site monitoring requirements will be determined at that time.

SHPO SIGNATURE: Charles F. Dobrow  DATE: April 14, 1990

OILING CATEGORIZATION:

Wide 0 m; Medium 0 m; Narrow 0 m; V.Light 223 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)
 X Manual Pickup  Absorbents (pads, rolls, etc)
 X Bioremediation  Spot Washing: Wands
 ___Tarmat: Breakup  Other: Beach Cleaner
 ___Removal  Other (see comments)

COMMENTS: Manual removal of pooled oil and mousse patties, followed by bioremediation.

TAG COMMENTS:

TAG APPROVAL DATE: 4/14/90
ADEC  John Bauer  (No. 1)
EXXON  4/14/90
NOAA  4/14/90
USCG  4/14/90

FOSC:  DATE: 5/1/90

Do not bioremediate Iowa Lake debris.
REGION: KENAI

SEGMENT: ST/PY-013

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ PY-013 SUBDIVISION A (1 OF 1) DATE 4/4/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4QQ National Wildlife Refuge
5T Bald eagles observed in segment (possible nest area)

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 3089 m; No Oil 5149 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 ____________________ FOSC: __________ DATE: ________
NOAA _______________________
USCG ______________________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST/ SY 13     SUBDIVISION: A      DATE 4/3/90

USCG/NOAA  NAME: JACQUI MICHEL,  SIGNATURE: [Signature]
☐ NO TREATMENT RECOMMENDED    ☐ TREATMENT SUGGESTED

COMMENTS
The very scattered splatters of oil on this moderate energy, rocky shoreline do not warrant further treatment.

ADEC
NAME: JOHN R. REED,  SIGNATURE: [Signature]

☐ NO TREATMENT RECOMMENDED    ☐ TREATMENT SUGGESTED

COMMENTS
Very scattered. Does not need cleanup. I have read and agree that all information on SSAT. Forms are correct.

LAND MANAGER - USFWS
NAME: Mary Porter,  SIGNATURE: [Signature]

☐ NO TREATMENT RECOMMENDED    ☐ TREATMENT SUGGESTED

COMMENTS
The oil is very scattered along this shoreline. Treatment is not warranted at this time.
SHORELINE OILING SUMMARY

OG MANU USCG/USFA MICHEL SEGMENT ST/ PY 13
BIO CARR LAND REP PARTNER - PWS SUBDIVISION A (1/1)
EXXON BOYER ADEC FEED TIME 12:55 to 13:42

TEAM NO.: 18 TIDE LEVEL: +3.5 to +2.4
DATE 4/13/90

EST. SUBDIVISION LENGTH: 1601 m

LAND REP SUBDIVISION A (1/1)

TEAM NO.: 18 TIDE LEVEL: +3.5 to +2.4
DATE 4/13/90

EST. SUBDIVISION LENGTH: 1601 m

LAND REP SUBDIVISION A (1/1)

SURFACE OIL

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PAVEMENT: H F S 0 sq. m by 0

PATTIES / TARBALLS 0 BAGS

NEAR SHORE SHEEN? NO BR RW SL TL

OILED DEBRIS NO AMOUNT

Logs
Vegetation
Trash
Debris

#BAGS N/A

Photographs:
Roll No. ST18 - 3
Frames 18-19

SUBSURFACE OIL NO PITS WERE DUG BECAUSE OF BEDROCK AND BOULDER SUBSTRATE.

PIT NO. PIT DEPTH (cm) OILED INTERVAL OILED INTERVAL (cm-deg) OILED INTERVAL (cm-deg) OILED INTERVAL (cm-deg)

COMMENTS

PY-13 has slightly higher wave energy than PY-12. It is otherwise very similar in geomorphology and oiling.

Page 1 of 1

REVIEWED DATE: 4/1/90
No sketch was made

Assumes 5% CV/ET coverage within the VL category.
Segment PY-13, subdiv A

SKETCH SITE #1

(This was Site B of the August 1989 site report)

This is not a subdivision map.
SHORELINE ECOLOGICAL SUMMARY

Segment ST PY// Subdivision A (of A) Date (mo/day/yr) 4/3/90

Time (24 hr) 12:55 Biologist M. CARK

(A) Substrate type and % of segment:
(1) Bedrock 30 (2) Boulder 10 (3) Cobble 30 (4) Pebble 40 (5) Sand 30 (6) Silt 10

(B) Overall % cover of biota (% of segment): Dense 60 Moderate 30 Low 10

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

BARNACLES

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</tbody>
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NOT PRESENT

Wildlife Observations/General Comments:

- Surf scoter (6)
- Black oyster-catcher (6)
- Harlequin duck
- Raven (1)
- Sea otter (3) (2 mature + 1 pup)
- Red-faced comorant (1)
- Bald eagle (3) (2 mature + 1 immature)
- Ecological Considerations: Sensitivity code: Y-QA (Natural Wildlife Refuge)
SHORELINE EVALUATION

SEGMENT ST/ PY-013 SUBDIVISION A (1 OF 1) DATE 4/4/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4QQ National Wildlife Refuge
5T Bald eagles observed in segment (possible nest area)

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: [Signature] DATE: 4/17/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 3089 m: No Oil 5149 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: 4/17/90
ADEC [Signature] DATE: 4-12-90
EXXON [Signature] DATE: [Signature]
NOAA [Signature] DATE: [Signature]
USCG [Signature] DATE: [Signature]
Segment PY-13, subdiv. A

SKETCH SITE #1

(This was Site B of the August 1989 Scat report)

15m long x 3m wide
CT/S, MS/S;
4 pits, all 15cm deep, no subsurface oil, all UIRT

This is not a subdivision map.
REGION: KENAI

SEGMENT: PY-014

SUBDIVISIONS: A (1 OF 1)
SEGMENT ST/ PY-014 SUBDIVISION A (1 OF 1) DATE 4/6/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4QQ National Wildlife Refuge

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/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:____________________

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 184 m: No Oil 1823 m
Subsurface Oil Observed: Yes X No Maximum Depth 25 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: __________
ADEC __________________________
EXXON __________________________ FOSC: __________ DATE: __________
NOAA __________________________
USCG __________________________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1  PY 14  SUBDIVISION:  A  DATE  4/6/90

USCG / NOAA
NAME:  JACQU. MICHEL  SIGNATURE:  J.MICHEL

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

The very light oil occurs in a large core and the central part of the northern shore, as scattered splatters on rocks and accumulations at the base of builders in pocket beaches. No further treatment is warranted. This segment is readily exposed to wave energy.

ADEC
NAME:  JOHN R. REED  SIGNATURE:  John R. Reed

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Very light oiling in bedrock and boulder substrate that is mostly in the form of splatters. These type B cleanup took place last year. This site is mostly stain and does not require cleanup. I have Reed and agree with all data on S.E.A.T. Forms.

LAND MANAGER
NAME: マー・バーナー  SIGNATURE: マー・バーナー

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

The oil remaining in this core occurs as a separate 5m x 2.3m w.x.h.

REVISION NO. 02/21/90
## SHORELINE OILING SUMMARY

**SEGMENT ST:** PY-14

**TIME:** 15:47 to 16:55

**DATE:** 4/16/90

**AM NO.:** 18

**TIDE LEVEL:** 9.0 to 1.5

**BEST SUBDIVISION LENGTH:** 3425 m

**UPLANDS DESCRIPTION:** Grass, Forest, Rock

**SURVEYED FROM:** Foot, Boat, Helo

**WORKING DIRECTION:** E to W

### SURFACE OIL

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<tr>
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<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<td>Tarballs</td>
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<td>Film</td>
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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 NO AMOUNT**

- Logs
- Vegetation
- Trash
- Debris

**DEBRIS COLLECTED**

- YES
- NO

**TYPE** NA

**BAGS** 0

**Photographs:**

- Roll No.: ST-F-4
- Frames: 1-3

### SUBSURFACE OIL

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<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
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<td>O</td>
<td>0.25</td>
<td>NO</td>
<td>CB Throughout</td>
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**COMMENTS:**

- All pits were dug at the sketch site.

The oil remaining on this steep, bouldery coastline is hard to find. At sketch site 2, most of the remnant oil is down between the boulders and cobble of the shore - probably washed there by the type B cleanup.
NO SKETCH REQUIRED

30% of VL is CF + ST
< 1% of VL is PR/IS

Character Length (in): AP 0 PO 0 CV 0 CT 500 ST 500 MS 0 PT 60 TB 0 FL 0 NO 3125
PY-14 6 April 1990 Mann Team 18 Site Sketch Map #1
(Site A in August 1989)

3m x 25m band of 5T/5, CT/5; surface coverage <10%

Note: Most of the oil remaining here is in the subsurface as CT and ST penetration to 25cm. Three pits dug here.
**SHORELINE ECOLOGICAL SUMMARY**

Segment ST1 | Subdivision A (of A) | Date (mo/day/yr) | 4/14/80
---|---|---|---
Time (24 hr) | 1545 | Biologist | M. CARR

(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 80 Moderate 60 Low 20

(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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Wildlife Observations/ General Comments:
- Common eel grass
- Bald eagle
- Harlequin ducks (8)

Ecological Considerations:
- Sensitivity color: 4-QQ (National Wildlife Refuge)
SHORELINE EVALUATION

SEGMENT ST/ PY-014 SUBDIVISION A (1 OF 1) DATE 4/6/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4QQ National Wildlife Refuge

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

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

SHPO SIGNATURE: Charles ||| DATE: April 14, 1990

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 1844 m: No Oil 1823 m
Subsurface Oil Observed: Yes X No Maximum Depth 25 cm

RECOMMENDATIONS:
X____ No Treatment Recommended
____ Treatment Recommended
____ Manual Pickup
____ Bioremediation
____ Tarmat: ____ Breakup
____ Removal

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 4/14/90
ADEC Art Weissman
EXXON Lame Cheese Date: FOSC: L Date: 5-1-90
NOAA By: Warrick
USCG Capt. Hester Capt. Hester
PY-14 6 April 1990 Mann Team 18 Site Skel Map #1
(Site A in August 1987)

3m x 25m band of ST/5, CT/5; surface coverage <10%

Note: most of the oil remaining here is in the subsurface as CT and ST penetrated to 25cm. Three pits dug here.
REGION: KENAI

SEGMENT: ST/PY-015

SUBDIVISIONS: A (1 OF 4)
SHORELINE EVALUATION

SEGMENT ST/ PY-015 SUBDIVISION A (1 OF 4) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ)

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 845 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: __________
ADEC ______________________
EXXON ______________________
NOAA ______________________
USCG ______________________

FOSC: __________ DATE: ______
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1 PY 15  SUBDIVISION: A  DATE 3/31/90

USCG/NOAA

NAME  JASON MICHEL  SIGNATURE  [Signature]

☐ NO TREATMENT RECOMMENDED  □ TREATMENT SUGGESTED

COMMENTS

The very light distribution of oil does not warrant any further treatment.

ADEC

NAME  JOHN R. REED  SIGNATURE  [Signature]

☐ NO TREATMENT RECOMMENDED  □ TREATMENT SUGGESTED

COMMENTS

Due to the location and amount of oil I am suggesting no treatment.

LAND MANAGER - USFWS

NAME  MARY PARKER  SIGNATURE  [Signature]

☐ NO TREATMENT RECOMMENDED  □ TREATMENT SUGGESTED

COMMENTS

Oiling in this subdivision consists of sporadic cret and stain on mostly vertical rock faces. Due to the distribution and character treatment will be difficult.
SHORELINE OILING SUMMARY

DATE: APR-03-1990 23:10  FROM Enesco Atlas  Enesco TO SSAT  P.01

REVIEWED  BA7  DATE  15 April 90

OG: MAUI  USCG/NAWC  MICHEL  SEGMENT ST/ PY 15

BIO: CARR  LAND REP: PERTHER - EWS  SUBDIVISION: A

ENEXON: BOYER  ADEC: REED  TIME 10:45 to 11:00

TEAM NO.: 18  TIDE LEVEL: -1.1 to -1.0  DATE: 3/3/90

EST. SUBDIVISION LENGTH: 950 m  TIDE: Sun  ☐ Clouds  ☐ Fog  ☐ Rain  ☐ Snow

UPLANDS DESCRIPTION: ☐ Grass  ☐ Forest  ☐ Rock  WORKING DIRECTION: WEST to EAST

SURVEYED FROM: ☐ Foot  ☐ Boat  ☐ Helo  SURVEYED: ☐ No

SURFACE SEDIMENTS: ☐ 100% B  ☐ 0% C  ☐ 0% P  ☐ 0% G  ☐ 0% S  ☐ 0% M  ☐ 0% V

SLOPE: Lang 40%  Hang 40%  Vert 20%  WAVE EXPOSURE: ☐ Low  ☐ Med  ☐ High

OIL CATEGORY LENGTH: W 0 m  M 0 m  N 0 m  VI 950 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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<tbody>
<tr>
<td>ASPHALT PAVEMENT</td>
<td>☐ ☐ ☐ ☐</td>
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<tr>
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<tr>
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<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
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</tbody>
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PAVEMENT: H F S N/A sq.m.by 0 cm

PATTIES/TARBALLS N/A  BAGS

NEAR SHORE OILING NO Bbags

OILED DEBRIS N/A AMOUNT

Loge

Vegetation

Trash

Debris

Photos:

Roll No. N/A

Frames

SUBSURFACE OIL  NO PITS  DUG  THIS SUBDIVISION IS ALL BEDROCK AND INACCESSIBLE.

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH</th>
<th>OILED INTERVAL</th>
<th>OILED OIL CHARACTER</th>
<th>OIL/FILM COLOR</th>
<th>PIT ZONE</th>
<th>SUBSURFACE SEDIMENTS</th>
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<tbody>
<tr>
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</table>

COMMENTS: This graniteic rocky shore has only very scattered oil as drips and thin bands along the high tide line.
SKETCH MAP

(No sketch map made of this large subdivision
- see G15 map).

LEGEND

1 A
- Pit - No Subsurface Oil

2 A
- Pit - Subsurface Oil

CT/C
- Concenetrated Distribution

CT/8
- Broken Distribution

CT/12
- Patchy Distribution

CT/25
- Splattered Distribution

Oil Stained Vegetation

1 C
- Photo location, direction, and number

Oil Character Length (m): AP 0 PO 0 CV 0 CT 10 ST 25 MG 0 PT 0 TB 0 FL 0 NO 915
### SHORELINE ECOLOGICAL SUMMARY

**Date (mo/day/yr):** 3-31-90  
**Biotopist:** M. Carr  
**Segment ST:** P415  
**Subsection:** A (of A-D)

<table>
<thead>
<tr>
<th><strong>Substrate Type</strong></th>
<th><strong>(1) Bedrock</strong></th>
<th><strong>(2) Boulder</strong></th>
<th><strong>(3) Cobble</strong></th>
<th><strong>(4) Pebble</strong></th>
<th><strong>(5) Sand</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>% of Substrate</strong></td>
<td>Rare</td>
<td>Rare</td>
<td>Rare</td>
<td>Rare</td>
<td>Rare</td>
</tr>
</tbody>
</table>

**Overall % cover of Biodiversity:** Dense 70  
**vertical zonation of major taxa:** (juveniles/adults)

**Biota:**
- **Dense:**  
- **Moderate:**  
- **Low:**
- **Sparse:**

**Ecological Considerations:**
- Common Mussels (A)  
- Barnacles (B)  
- M. Carr

**Wildlife Observations/General Comments:**
- Surfin' Goldie-eye (A)  
- Harlequin duck (C)  
- Snowy egret (B)  
- Tombolo martin (C) in upper intertidal.

**Sensitivity Cues:**
- 4-00  
- (national wildlife refuge)

**Photographs:**
- Roll No: ____________
- Frame No: ____________
- NOT PRESENT

**Roll No:** ____________
- NOT PRESENT
- NOT PRESENT
- NOT PRESENT
- NOT PRESENT
Sites

PY-15

Bald Eagle Nest

Sketch #1

Subdiv. C

Subdiv. D

Subdiv. A

Subdiv. B

All is narrow oiling

To sheet #2 (middle)

Pit #1

Pit #2

MR-1

Len 970 → Ken B7A

Sap 970 → Ken B7A
REGION: KENAI

SEGMENT: ST/PY-015

SUBDIVISIONS: B (2 OF 4)
SEGMENT ST/PY-015  SUBDIVISION B (2 OF 4)  DATE  3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ)

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 0 m: Narrow 239 m: V.Light 0 m: No Oil 0 m
Subsurface Oil Observed: Yes X No _____ Maximum Depth 20 cm

RECOMMENDATIONS:

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

COMMENTS: The treatment recommendations are as follows: 1) Manual pick up of mousse and pooled oil, 2) Tarmat removal and, 3) Bioremediate area of pooled oil and broken cover as shown on attached sketch map. No time constraints identified.

TAG COMMENTS:

TAG APPROVAL DATE: __________  ADEC: __________
EXXON: __________  NOAA: __________
NOAA: __________  USCG: __________

FOSC: __________  DATE: __________
SEGMENT ST __PY 15 ___SUBDIVISION: B ___DATE 31 Mar 90

USCG/NARR
NAME jacqui michel SIGNATURE j.michie

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS
Manual removal of pavements & mousse patches by shovels;
Manual removal by wiping w/ pom-poms of pooled oil -
especially in crevices in rocks.

ADEC
NAME john r. reed SIGNATURE john r. reed

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS
Manual removal of asphalt pavements, pooled oil, and
mousse patches could be accomplished with shovels or
hand trowels. Pom poms may also be used on the
pooled oil. I have read and agree with all information
on the S.S.A.T. Forms.

LAND MANAGER
NAME Mary Partner SIGNATURE Mary Partner

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS
Despite treatment in 1989 residual oil remains at this site.
I recommend manual removal of the asphalt pavement
indicated on the map, using shovels and hand trowels,
and between the boulders and
pooled oil and residue on and between the boulders, oil
should be recovered using pom-poms w/extensions,
cables should be recovered using pom-poms w/extensions,
and trowels etc.
SHORELINE OILING SUMMARY

SURVEYED FROM: [Foot  Boating  Helo]
Helo WORKING DIRECTION: N to S

SURFACE SEDIMENTS: R 30% B 60% C 10% P 0% G 0% S 0% M 0% V 0%

SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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</thead>
<tbody>
<tr>
<td>ASPHALT PAVEMENT</td>
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<tr>
<td>POOLED</td>
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<tr>
<td>COAT</td>
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</tr>
<tr>
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<tr>
<td>FILM</td>
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<tr>
<td>NO OIL</td>
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</tr>
</tbody>
</table>

PAVEMENT: H (S 20 sq m by 5 cm)
PATTIES / TARBALLS: 0 BAGS
NEAR SHORE SHEEN? NO

SURFACE OIL

PAVEMENT: H (S 20 sq m by 5 cm)
PATTIES / TARBALLS: 0 BAGS
NEAR SHORE SHEEN? NO

OILED DEBRIS: NO

<table>
<thead>
<tr>
<th>TYPE</th>
<th>AMOUNT</th>
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<tr>
<td>SM</td>
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DEBRIS COLLECTED

Photographs:

Roll No. 18-2
Frames 4-15

SUBSURFACE OIL

<table>
<thead>
<tr>
<th>PITT NO.</th>
<th>PITT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
<th>OILED DEBRIS NO.</th>
<th>OIL / FILM COLOR</th>
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<th>SUBSURFACE SEDIMENTS</th>
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<td>N B.C.P.G</td>
</tr>
</tbody>
</table>

COMMENTS: PITS # 2, 3, 4 REACHED PEAT/ SOIL INTERFACE.

The shore here consists of boulders and cobble accumulations between bedrock points. Oil spots and splashes on slabs show little evidence of erosion by waves. Asphalt is present as remnants in area of cobble-boulder.

Page 1 of 2

REVIEWED [AT]  DATE 10/24/90
### Subsurface Oil (Continued)

<table>
<thead>
<tr>
<th>Pit No.</th>
<th>Pit Depth (cm)</th>
<th>Subsurface Oil Character</th>
<th>Oiled Interval (cm)</th>
<th>Below Oil/Film Color</th>
<th>Pit Zone</th>
<th>Ana</th>
<th>Subsurface Sediments</th>
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</table>

**Comments:** Pit 9 had a sheen on water surface. Pit #8 was purposefully dug through a patch of asphalt. The asphalt pavement is 5 cm thick.
SHORELINE ECOLOGICAL SUMMARY

Segment STJ P7.5 Subdivision B (of A-D) Date (mo/day/yr) 3/31/90

Time (24 hr) 0500 Biologist M. CARR

(A) Substrate type and % of segments:
   (1) Bedrock 30 (2) Boulder 60 (3) Cobble 60 (4) Pebble 60 (5) Sand 60 (6) Silt 60

(B) Overall % cover of biota (% of segment): Dense 60 Moderate 60 Low 60

(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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<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
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<td>M</td>
<td>L</td>
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</table>

Wildlife Observations/General Comments:

Commerat (1)

Ecological Considerations:

Cobble/boulder area known to have been hot-water treated, with dense
barnacle cover and high littorine / moderately regular recruitment.

Sensitivity codes: 4-09 (National Wildlife Refuge)
PY-8

--- Narrow
TTTT Very Light

XXX Wide
/// Medium

Subdiv. C
Subdiv. B
Subdiv. A

all is "narrow" oiling

→ to sheet #2 (middle)

pit #1

KENB7A

PY-15

Sheet 393 (east)
Map Key: KEN-87b
Name: Mann
Date: 31 March 90

ADEC Segment Length: 91862m
REGION: KENAI

SEGMENT: ST/PY-015

SUBDIVISIONS: C (3 OF 4)
SHORELINE EVALUATION

SEGMENT ST/ PY-015 SUBDIVISION C (3 OF 4) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ)

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 4083 m: No Oil 3110 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 __________________________ FOSC: __________ DATE:___________
EXXON __________________________
NOAA __________________________
USCG __________________________
**FIELD SHORELINE COMMENT SHEET**

SEGMENT ST / FY 15  
SUBDIVISION: C  
DATE 31 MAR 90

**USCG/NOAA**

NAME: Jacqui Michel  
SIGNATURE: [Signature]

**ADEC**

NAME: John R. Reed  
SIGNATURE: [Signature]

**LAND MANAGER - USFWS**

NAME: Mary Porter  
SIGNATURE: [Signature]

**COMMENTS**

☐ NO TREATMENT RECOMMENDED  
☐ TREATMENT SUGGESTED

The small amount of scattered oil on bedrock does not warrant further treatment.

Small amount of very light oil does not warrant treatment. I have read and agree with the information on the S.S.A.T. Form.

Oiling in this subdivision consists of sporadic spot and stain on mostly vertical rock faces. Due to the distribution and character of the oil, treatment will be difficult.
SHORELINE OILING SUMMARY

TEAM NO.: 18  TIME: 12:15 to 12:45  DATE: 3/31/90

EST. SUBDIVISION LENGTH: 7050 m

Pavement: H F S N/A sq. m by O

OIL CATEGORY LENGTH: W 0 m M 0 m N 0 m V 3850 m NO 3200 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>
<td></td>
<td></td>
</tr>
<tr>
<td>POOLED</td>
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<tr>
<td>COVER</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>COAT</td>
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<td>✓</td>
<td>✓</td>
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PAVEMENT: H F S N/A sq. m by O

OILED DEBRIS N AMOUNT SM MD LG

DEBRIS COLLECTED: ☐ YES ☐ NO

TYPE N/A

Photographs:
Roll No. N/A
Frames N/A

SUBSURFACE OIL

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COMMENTS

This monotonous granite shoreline is formed of bedrock slabs and faces with associated angular boulders. There is very little fine sediment. Oiling is consistently splattered and short stretches (<3 m long) of coated oil. Geomorphology and oiling is identical to Subdivision A and D. Very little weathering of oil is evident from condition in 1990.
No sketch map made of the extensive subdivisions.
See 615 map.
**SHORELINE ECOLOGICAL SUMMARY**

**Segment ST PY-15**  
**Subdivision C**  
**Date (mo/day/yr): 5/31/90**

**Time (24 hr): 12:5**  
**Biologist: M. CARR**

(A) **Substrate type and % of segment:**
- Bedrock -- (1)
- Boulder -- (2)
- Cobble -- (3)
- Pebble -- (4)
- Sand -- (5)
- Shale -- (6)

(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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**GASTROPODS**

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Wildlife Observations/ General Comments:

Ecological Considerations:

**Sensitivity code: 4-QQ (National Wildlife Refuge)**
REGION: KENAI

SEGMENT: ST/PY-015

SUBDIVISIONS: D (4 OF 4)
SEGMENT ST/ PY-015 SUBDIVISION D (4 OF 4) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4Q2) and bald eagle nest (5T) - 3/1 to 6/1. See attached Ecological Constraint Sheet for specific constraints and contacts.

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 0 m: Narrow 0 m: V.Light 1638m: No Oil 1569 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 _____ Beach Cleaner
_____ Removal _____ Other (see comments)

COMMENTS: Recommend manual removal and bioremediation of pooled oil as shown on attached sketch map. Conduct work after 6/2 per above eagle constraint.

TAG COMMENTS:

TAG APPROVAL DATE: ____________
ADEC __________________________
EXXON __________________________
NOAA __________________________
USCG __________________________

FOSC: ____________ DATE: ________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST  PY 15  SUBDIVISION: D  DATE 2 APR 90

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

The oiled sediments adjacent to the tidal pools (see sketch for site #7) should be manually removed. No other cleanup is recommended elsewhere on this subdivision.

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

Manual removal of oiled sediments with a shovel or hand trowel is suggested. There is a very rich inter-tidal pool at this site that should be monitored during cleanup. I have read and agree with all the information on the S.S.T. Form.

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

Oiled sediments adjacent to the tidal pools may be removed with a shovel and trowel. Due to the presence of rich tidal pools on the bedrock any treatment utilized should be done very carefully so that sensitive areas are not contaminated or disturbed. A very small crew should be used and an agency monitor must be on site. (See Sketch 1).
**SHORELINE OILING SUMMARY**

**FROM:** Ensco Atlas

**TO:** SSAT P.01

**DATE:** 4/2/90

**TIME:** 13:50 to 15:40

**TEAM NO.:** 18

**EST. SUBDIVISION LENGTH:** 3190 m

**TIDE LEVEL:** +1.1

**TIME:** 4/2/90

**UPLANDS DESCRIPTION:**
- Grass
- Forest
- Rock

**SURVEYED FROM:**
- Foot
- Boat
- Helo

**WORKING DIRECTION:** East to West

**SURFACE OIL**

**CHARACTER**
- Asphalt Pave
- Pool
- Cover
- Coat
- Stain
- Mousse
- Patties
- Tarballs
- Film
- No Oil

**DISTRIBUTION**
- Oiled
- Patch
- Stain
- Mousse

**OIL/FILM COLOR**
- Impact

**IMPACTED ZONES**
- SU
- UI
- LI

**PAVEMENT:**
- H F S
- N A sq. m by 0 cm

**PATTIES/TARBALLS:**
- N/A
- Bags

**NEAR SHORE SHEEN?**
- No

**OILED DEBRIS**
- Logs
- Vegetation
- Trash
- Debris

**DEBRIS COLLECTED**
- Yes
- No

**TYPE**
- N/A

**#BAGS**
- N/A

**Photographs:**
- Roll No. 5/18-3
- Frames (12-17)

**SUBSURFACE OIL**

**PIT NO.**
- 1
- 2
- 3

**PIT DEPTH (cm):**
- 15

**SUBSURFACE OIL CHARACTER**
- Oiled
- Interval

**OILED INTERVAL**
- Below

**Oil/Film Color**
- Impact

**PIT ZONE**
- N

**ANA**
- B.C.P 1

**SUBSURFACE SEEDIMENTS**
- B.C.P 2

**COMMENTS**

Geomorphology and colors are identical in character subdivisions A and C. Very little intermixing of oil is evident from August 1989.
NO sketch map made of this extensive subdivision.
See GIS and small sketch file.
Sketch of oiling in PY-15, subdiv. D

This was "PY-15, Site D" during 1987, August SCAT Report

Note: a sketch site is a place where oil occurs but the affected area is either too small (< 25m) or not different enough from oiling along the rest of subdivision to warrant classification as a separate subdivision.
Segment PY-15, subdiv. D

SKETCH SITE #2

(This was Site B of the August 1989 Seiz report)

This is not a subdivision map.
SHORELINE ECOLOGICAL SUMMARY

Segment ST, DY-15 Subdivision D (of A-D) Date (mo/day/yr) 4/2/90

Biol. (24 hr.) 1350 M. CARR

(A) Substrate type and % of segments:

(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)

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Wildlife Observations/ General Comments:

Common merganser, (2-1)

Harlequin ducks (5)

Common loon (3), double crested (1)

Surf scoter (2)

White-winged scoter (2)

Bold eagle (mature) (2)

Ecological Considerations:

Sensitivity codes: ST (Eagle nest), 4-00 (National Wildlife Refuge)
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 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 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 6/15)
Restrict boat traffic to essential minimum. Avoid damage to unvegged 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.

3O, 3Q 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 (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 500m horizontal, 500m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

6U Recreation: Tent sites (6/1 to 9/15)
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)
7HH Finfish harvesting
7II Deer harvesting (9/15 to 2/28)
7JJ Invertebrates harvesting
For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
Special Sites

PY-15

sketch #1

subdiv. C

bald eagle nest

+ KEN 81A

- KEN 110

all is "narrow" oiling

subdiv. B

subdiv. C

not surveyed

← to sheet #2 (middle)
ADDENDUM: SUBDIVISION CONSTRAINTS
SEGMENT PY-15 SUBDIVISION B (2 of 4)

WORK WINDOW

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<td>*Bioremediation</td>
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*SUBJECT TO LANDOWNER APPROVAL

ARCHAEOLOGICAL INSPECTION/CONSULTATION REQUIRED.

>> > PHONE 564-3274 (Anchorage) OR 229-1508 (24 hrs.) <<<

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

No ecological time constraints.

OTHER ECOLOGICAL CONSIDERATIONS

Avoid any unnecessary disturbance or damage to unoiied biota and substrate.

Prepared by: Andrew May
Date: 5/21/90
ECOLOGY MAP
SEGMENT PY-15
SUBDIVISION B (of 4)

★ Seabird Colony
▲ Eagle Nest
SHORELINE EVALUATION

SEGMENT ST/ PY-015 SUBDIVISION B (2 OF 4) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ)

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

ARCHAEOLOGICAL CONSTRAINTS: Consultation and inspection with an Exxon archaeologist is required prior to treatment. Specific on-site monitoring requirements will be determined at that time.

SHPO SIGNATURE: [Signature] DATE: 4/17/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 239 m: V.Light 0 m: No Oil 0 m
Subsurface Oil Observed: Yes X No____ Maximum Depth 20 cm

RECOMMENDATIONS:
_____No Treatment Recommended
X Treatment Recommended
X Manual Pickup
X Bioremediation
X Tarmat: Breakup
X Removal
_____Snare/Absorbent Booms
_____Oil Snares (pom poms)
_____Absorbents (pads, rolls, etc)
_____Spot Washing: Wands
_____Beach Cleaner
_____Other (see comments)

COMMENTS: The treatment recommendations are as follows: 1) Manual pickup of mousse and pooled oil, 2) Tarmat removal and, 3) Bioremediate area of pooled oil and broken cover as shown on attached sketch map. No time constraints identified.

TAG COMMENTS:

TAG APPROVAL DATE: 4/17/90
ADEC [Signature] DATE: 4/22-90
EXXON [Signature] FOSC: [Signature] NOAA [Signature]
USCG [Signature] Reclamation subject to land owner approval - if not obtained, do not bioremediate
ADDENDUM: SUBDIVISION CONSTRAINTS
SEGMENT PY-15 SUBDIVISION D (4 of 4)

ARCHAEOLOGICAL STANDARD CONSTRAINT
If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS
5T  2 Eagle Nests
NO CONSTRAINT. Bald Eagle nests located in adjacent segments PY-2 and MR-1 are more than 400m from work area.

OTHER ECOLOGICAL CONSIDERATIONS
No access permitted in the tide pool area. Avoid any unnecessary disturbance or damage to uncoiled biota and substrate.

TAG ADDENDUM DATE 5/21/90
ADEC Art Waws
EXON
NOAA
USCG
FOSC
DATE 5-21-90

Prepared by: Andrew Meyer  Date: 5/19/90
SHORELINE EVALUATION

SEGMENT ST/ PY-015 SUBDIVISION D (4 OF 4) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ) and bald eagle nest (5T) - 3/1 to 6/1. See attached Ecological Constraint Sheet for specific constraints and contacts.

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: 4/12/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 1638m: No Oil 1569 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 ___ Beach Cleaner
___ Removal ___ Other (see comments)

COMMENTS: Recommend manual removal and bioremediation of pooled oil as shown on attached sketch map. Conduct work after 6/2 per above eagle constraint.

TAG COMMENTS:
DUE TO PROXIMITY OF TIDE POOLS AND LOW ENERGY ENVIRONMENT BIOREMEDIATION SHOULD NOT BE USED. NO ACCESS SHOULD BE ALLOWED TO THE TIDE POOL AREA UNLESS REPRESENTING TO BE ON SITE.

TAG APPROVAL DATE: 4/12/90
ADEC ART WEINER DATE: 4/12/90
EXXON DATE: 4/12/90
NOAA DATE: 4/12/90
USCG DATE: 4/12/90
SHORELINE EVALUATION

SEGMENT ST/ PY-015 SUBDIVISION D (4 OF 4) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4Q0) and bald eagle nest (5T) - 3/1 to 6/1. See attached Ecological Constraint Sheet for specific constraints and contacts.

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: 

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 1638m: No Oil 1569 m
Subsurface Oil Observed: Yes___ No X___ Maximum Depth___

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

COMMENTS: Recommend manual removal and bioremediation of pooled oil as shown on attached sketch map. Conduct work after 6/2 per above eagle constraint.

TAG COMMENTS:
Due to proximity of tide pools and low energy environment bioremediation should not be used. No access should be allowed to the tide pool area USF&W representative to be onsite.

TAG APPROVAL DATE: 4/17/90
ADEC ___ ART WEAVER___ 4/17/90
EXXON ___ J. W. CLEWES ___ 4/17/90
NOAA ___ J. W. CLEWES ___ 4/17/90
USCG ___ KENNETH WEAVER ___ 4/17/90
MR-1

Sites

PY-15

Subdiv. A

Subdiv. B

not surveyed

Subdiv. C

all is "narrow oiling"

→ to sheet #2 (middle)

sketch #1

subdiv. C

sketch #1

subdiv. C

pits 1

pits 2

subdiv. C

subdiv. C

subdiv. C

Subdiv. C

Bald Eagle Nest

LEN A7A

KEN A7A

LEN B7A

KEN B7A
PY-15 sites

Sites

Subdiv. C

Sketch #1

Subdiv. C

Bald Eagle Nest

Ken 07A

Pil 2

Ken 87A

Subdiv. A

Subdiv. B

All is narrow oiling

To sheet #2 (middle)
SHORELINE EVALUATION

SEGMENT ST/ PY-015 SUBDIVISION C (3 OF 4) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (40Q)

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: [Signature] DATE: 4/17/90

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 4083m: No Oil 3110 m
Subsurface Oil Observed: Yes No X Maximum Depth

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: 4/17/90
ADEC
EXXON
NOAA
USCG

DATE: 4/22/90
SHORELINE EVALUATION

SEGMENT ST/ PY-015 SUBDIVISION B (2 OF 4) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ)

SUBDIVISION ECological CONSTRAINTS:
Avoid disturbance/damage to unooled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS: Consultation and
inspection with an Exxon archaeologist is required
prior to treatment. Specific on-site monitoring
requirements will be determined at that time.

SHPO SIGNATURE:
DATE: 4/17/90

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 239 m: V.Light 0 m: No Oil 0 m
Subsurface Oil Observed: Yes X No Maximum Depth 20 cm

RECOMMENDATIONS:

____ No Treatment Recommended
X Treatment Recommended

X Manual Pickup
X Bioremediation
X Tarmat: Breakup
X Removal

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

COMMENTS: The treatment recommendations are as follows: 1) Manual pick
up of mousse and pooled oil, 2) Tarmat removal and, 3) Bioremediate area
of pooled oil and broken cover as shown on attached sketch map. No time
constraints identified.

TAG COMMENTS:

TAG APPROVAL DATE: 4/17/90
ADEC
EXXON
NOAA
USCG

DATE: 4/23-90

Recommends: Subject to Land Owner
Approval - If not obtained, do not
Bioremediate!
SHORELINE EVALUATION

SEGMENT ST/ PY-015 SUBDIVISION A (1 OF 4) DATE 3/31/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ)

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: 4/17/90

OILING CATEGORIZATION:

Wide_0 m: Medium_0 m: Narrow_0 m: V.Light_845 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)
_____Bioresidation _____Spot Washing:____ Wands
_____Tarmat: ___Breakup _______Beach Cleaner
_____Removal ____Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 4/17/90
ADEC AEC
EXXON
NOAA
USCG

DATE: 4/22/90
WORK PLAN ADDENDUM

Segment: PV-015    Subdivision: B    Dated: 5/16/90

MODIFICATION

1. REASON FOR MODIFICATION
   - Admirals requirement.
   - Landowner recommendation.

2. ADJUSTMENT TO WORK PLAN
   - Customblen may be used in the area of pooled oil and broken cover as indicated on the sketch, after manual removal of mousse, pooled oil, etc.
   - A USFWS representative must be onsite for treatment.

SHPO APPROVAL NEEDED: YES ______ NO ______
SHPO SIGNATURE: __________________________

TAG APPROVAL DATE: 5/18/90
ADEC: Art Weiner  Nato Weiner
EXxon: Andy TSM Arch
NOAA: Capt. Kelcie  Capt. Felton
USCG: Capt. Wefier  Capt. Lajda

FOSC: _______ DATE: 5-18-90
1991 MAYSAP EVALUATION

SEGMENT: PY 015  SUB: B  REGION: KEN  SURVEY DATE: 5/15/91

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 L. Smith  Date: 6/3/91

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: MAY 31 1991  FOSC APPROVAL DATE: 6/6/91
ADEC
EXXON
USCG
NOAA

E. E. PAGE, CDR, USCG
CHIEF OF STAFF, FOSC
Remarks:

- **MAYSAP FIELD SHORELINE COMMENT SHEET**

**Date:** 4/15/91

**TEAM NO.:** 4

**SEGMENT:** BY. 015

**SUBDIVISION:** B

- **NAME:** Clara S. Crosby
  - **SIGNATURE:** Clara S. Crosby
  - **NTR**
  - Treatment recommended.

  Clara Veco workers were scheduled to return to this site. High tide prevented cleanup. This area would take < 2 hours to complete. If a crew is in the area, suggest spending the time to remove HSR.

- **NAME:** George R. Stiles
  - **SIGNATURE:** George R. Stiles
  - **NTR**

  The HSR area was partially worked while surveying the beach but due to time constraints on PY-6 (Bird Colony), the Veco crew was unable to return to the location prior to high tide.

- **NAME:** John R. Hardee
  - **SIGNATURE:** John R. Hardee
  - **NTR**

  No treatment recommended.

- **NAME:** Carl E. Littlefard
  - **SIGNATURE:** Carl E. Littlefard
  - **NTR**

  Aquatic AP/FB. Veco crew picked up several flags. This area does not warrant fuel cleanup. Coord. would cause more environmental damage.

- **NAME:** [Signature]
  - **NTR**

  [Additional remarks]
TEAM NO. 4

MAYSAP SHORELINE OILING SUMMARY

SEGMENT D1-015 S

SUBDIVISION 16

DATE MAY 15, 1991

TIME 10:53 to 11:01

TIDE LEVEL +0.5 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: 239 m

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

EST. OIL CATEGORY LENGTH: W___m M___m N___m Vl____m US____m

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

PHOTO ROLL # MAYSAP-

DISTRIBUTION: C = 91-100%; B = 51-80%; P = 11-50%; S = 1-10%; T = <1%

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

OG COMMENTS:

Grazelines consist of sloping bedrock to the south and a pocket of cobble/pebble boulder among bedrock outcrops to the north. Southern area has very few scattered cltv all <10cm dia on bedrock or on boulder surfaces. On land of ASAR/pavement present in the northern part. This band was worked on but high tide prevented completing manual work.
Legend

- Sloping bedrock
- Angular Boulders
- Bedrock over bedrock
- Cobble/Pebble/Boulders
- Ph 1c

Py. 015. 13
May 15/91
1023. 1101

Notes:

Skirt Map

1. Worked on A1 but not terminated due to high tide.
2. Picked up 2m³ of CV < 20%
3. Very few CV on bedrock in unit 72
4. Very small vs. behind boulder

Reviewed 5.20 91
Location Map

Surveyed by foot

PY015 B

Subdivision Field Map
Map Key: XEMPY015B
Name: [Signature]
Date: May 15/9

Reviewed 5.20.99
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4  DATE/TIME  May 15, 1991  1023 - 1101
SEGMENT # PY015  TIDAL HEIGHT (Range)  -1.9 => -0.1
SUBDIVISION B  BIOLOGIST  JIM BARRY
SEA STATE Calm  WIND SPEED/DIRECTION  Variable 0-10 kt, rain

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

General Features of PY015-B

This short subdivision is located along MacArthur Pass, a site with very low wave exposure. The shore varies from high angle talus boulders to a medium angle cobble and pebble beach. Greater cover of biota is found on the talus and boulder shores than the cobble beach. The highest densities of biota on the beach are found on the largest cobble, boulders, and occasional bedrock outcrop. The biota appear generally healthy, with normal abundances of flora and fauna throughout the cobble beach and adjacent bedrock outcrops. Several species are present as juveniles, indicating recent recruitment.

The zonation pattern along this subdivision is similar to the entire segment, with black lichen along the upper edge of the intertidal and a transition to Fucus, barnacles, limpets, and littorines in the highest intertidal, grading to denser cover of Fucus, green and red algae in the lower shore. Mussels form a band in the mid-shore as a narrow bed amongst the beach cobble. Barnacles are patchy, but generally quite abundant throughout the shore from the high to the low zones. The subtidal is nearly completely covered by large brown algae.

A1,A2 The oiled area is located in the upper zone of the cobble/pebble beach. At this location there are sparsely distributed barnacles, and moderate densities of limpets and littorine snails. A thin film of filamentous green algae (Urospora?) is also located in the vicinity of the oil. A moderately dense mussel bed is present approximately 6 m from A1/A2. The lower shore below the mussel bed is mostly red and brown algae.

(continued)

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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<tbody>
<tr>
<td>Eagles</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
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<tr>
<td>Other Birds</td>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS</th>
<th>SPECIES</th>
<th># OBSERVED</th>
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<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
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<tr>
<td>Pinnipeds (specify)</td>
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<tr>
<td>Whales (specify)</td>
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</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
PY015-B Biology Report, continued

Manual cleanup was performed during the survey. Additional manual cleanup, if recommended, would not harm the biota along this segment. Care must be taken, however, to restrict activities to the oiled area in the upper zone and prevent disturbance to the nearby mussel bed.

A3 This oil is somewhat higher in the intertidal zone and extends through much of the segment as a patchy cover or coat of SOR. The oil is confined to the upper zone amongst the transitional flora and fauna between the zone of black lichen (Verrucaria) and the upper intertidal assemblage of Fucus, barnacles, green algae, limpets, and littorine snails. The shores are quite diverse and healthy and show no evidence of recent oil-related damage. Below the oiled area, Fucus, limpets, barnacles, littorine snails, and other lower zone flora and fauna cover the shore very densely, except the mid-zone cobble/pebble beach habitat where cover is somewhat sparser. The extreme low zone and subtidal habitat is dominated by large brown algae.

Manual cleanup was performed during the survey. Additional manual cleanup, if recommended, would not harm the biota along this segment.

General Zonation of PY015-B

<table>
<thead>
<tr>
<th>Biota: Tide Level</th>
<th>SupraTidal</th>
<th>Upper</th>
<th>Middle</th>
<th>Low</th>
<th>Subtidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Spatters</td>
<td>-- -- ++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td>-- -- ++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Bare Rock</td>
<td>-- -- --</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td>-- -- ++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Barnacles (Balanus)</td>
<td>-- -- ++---</td>
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<tr>
<td>Odonthalia (Red Alga)</td>
<td>-- -- ++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Red Algae</td>
<td>-- -- ++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
<td>-- -- ++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td>-- -- ++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustose Brown Algae (Hildenbrandia)</td>
<td>-- -- ++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td>-- -- ++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whelks (Nucella sp., Searlesia sp.)</td>
<td>-- -- ++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (#) Abundant

List of Common Species from PY015-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Costaria costata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp.,
   Laminaria groenlandica, L. saccharina, Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Endocladia muricata, Halosaccion glandiforme, Lithothamnion sp., Membranoptera
dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp.,
Ptilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)
II. Marine Animals

1. Sponges - Porifera - Halichondria sp.
2. Anemones - Anthopleura artemesia, Epiactis ritteri, Epizoanthus scotinus, Metridium senile, Urticina crassicornis,
3. Hydroids - Sertulariidae - Sertulararella?
4. Flatworms - Platyhelminthes - Polyclads
5. Nemertean Worms - Ribbon Worms - Emplectonema gracile
6. Polychaete Worms
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp.
   Spionidae - Spioneris sp.
7. Peanut worms - Sipunculids - Phascolosoma agassizii
8. Crustaceans
   a. Amphipods - Orchestia sp.?, Traskorchestia traskiana
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
      Haplogaster sp., Paguridae (hermit crabs)
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
9. Mollusca
   a. Chitons - Mopalia mucosa, Katharina tunicata, Tonicella lineata,
   b. Snails - Gastropods
      Littorina sitkana, L. keenae, Natica clausa, Nucella lamellosa, N. lima, Fearlessia dira
   c. Limpets - Acmaea mitra, Lottia persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
   d. Nudibranches - Lamellidoris fusca, Onchidoris sp.?.
   e. Bivalves - Mytilus edulis, Pododesmus cepio
10. Echinoderms
    a. Brittle Stars - Ophiolus sp., ?
    b. Sea stars - Dermoasterias inbricata, Leptasterias hexactis, Orthasterias keohleri, Pycnoida helianthoides, Solaster sp.
    c. Sea Cucumbers - Holothurians - Eupentacta sp.
    d. Urchins - Strongylocentrotus droebachiensis
12. Fishes
    Cottidae
    Stichaeidae - Xiphister atropurpureus, X. mucosus

III. Birds

Marbled Murrelet (2), Red-faced Cormorant (1), Glaucous-winged Gull (2), Black-legged Kittiwake (2), Western Sandpiper (3)
**BIO SKETCH MAP**

**Legend**

- Sloping bedrock
- Angular boulders over bedrock
- Pebbles/pebbles/boulders
- Pb/Cb

**A1, A2**


**A3**

Sparse black lichen. Sparse focus, barnacles, littorline snails, and slightly below.

Mussel Bed

---

**Notes:**

- [Review by P.B. Smith]
- [Date: 15 May 1991]
- [Surveyors: P.B. Smith]

---

**Map Details:**

- Units: Meters
- Orientation: North (N)
- Scale: 1:2500

---

**Key Features:**

- A1, A2, A3
- Sparse barnacles
- Moderate limpets
- Littorline snails
- Green algae on cobble
- Mussel bed
- Red & brown algae
- Black lichen
- Grit away
- Low shore
1991 MAYSAP EVALUATION

SEGMENT: PY 015  SUB: A  REGION: KEN  SURVEY DATE: 5/15/91

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 Smith Date: 5/30/91

RECOMMENDATIONS:

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

TAG:

FOSC:

TAG APPROVAL DATE: 6/29/91  FOSC APPROVAL DATE: 6/15/91

ADEC  FOSC  E. E. PAGE, CDR, USCG
EXXON  CHIEF OF STAFF, FOSC
USCG  NOAA
<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Comment</th>
</tr>
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<tbody>
<tr>
<td>March 15, 1991</td>
<td>Clara S. Crosby</td>
<td>The previous oiling date indicated no oil.</td>
</tr>
<tr>
<td>May 17, 1991</td>
<td>George P. Stiles</td>
<td>No recoverable oil found.</td>
</tr>
<tr>
<td>May 24, 1991</td>
<td>John P. Hardister</td>
<td>No treatment recommended.</td>
</tr>
<tr>
<td></td>
<td>Andrew S. McElroy</td>
<td>No recoverable oil located.</td>
</tr>
</tbody>
</table>
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO.** 41  
**OOG** E. Sempels  
**BIO** J. Burty  
**EXXON** George L. Styles  
**LANDMANAGER** Headster  
**USCG/NOAA** McMahon/McDonald  
**DATE** May 15, 1991

**TIME** 10:51 to 11:05  
**TIDE LEVEL** -0.1 ft. to 0.1 ft.  
**ENERGY LEVEL**: X H □ M □ L  
**SURVEYED FROM**: □ FOOT □ BOAT □ HELO  
**WEATHER**: □ SUN □ CLOUDS □ FOG □ RAIN □ SNOW

**TOTAL LENGTH SHORELINE SURVEYED:** 845 m  
**NEAR SHORE SHEEN**: □ BR □ RB □ SL □ NONE  
**EST. OIL CATEGORY LENGTH**: W _ m M _ m N _ m V _ m NO _ m US _ m

<table>
<thead>
<tr>
<th>LO</th>
<th>C</th>
<th>AP</th>
<th>MS</th>
<th>TB</th>
<th>BOR</th>
<th>CV</th>
<th>CT</th>
<th>ST</th>
<th>FL</th>
<th>DB</th>
<th>NO</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>AREA WIDTH</th>
<th>LENGTH</th>
<th>ZONE S</th>
<th>UI</th>
<th>MI</th>
<th>LI</th>
<th>NOTES</th>
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<td></td>
<td></td>
<td>Surveyed by Zodiac, no oil found</td>
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**DISTRIBUTION**: C = 91-100%; B = 51-60%; 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 NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN BEHIND</th>
<th>H2O LEVEL</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE-SUBSURFACE SEDIMENTS</th>
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<tr>
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<td>B R N</td>
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</tbody>
</table>

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

**OG COMMENTS**: Segment was surveyed by Zodiac because no oil was found.
General Features of PY015-A

This subdivision was not closely surveyed and was seen only from boats cruising along the shore. Little or no oil was reported previously for the subdivision.

The shore is largely high angle bedrock cliffs or outcrops, with some talus boulder and cobble shores. The biota of the shore are typical of a low exposure beach with steep bedrock cliffs. Black lichen is abundant in the supratidal and marine species increase from the high intertidal to the subtidal. The adjacent subdivisions in this segment appear to have similar distribution of species. Overall, the subdivision appears healthy. Cover of algae is high, particularly in the low zone, and I suspect that recruitment has occurred recently for many of the common species, as is true for nearby shores.

WILDLIFE OBSERVATIONS - Completed on all subdivisions

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<td></td>
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<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
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</tr>
</tbody>
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<table>
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<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
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</tr>
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<tr>
<td>Pinnipeds (specify)</td>
<td></td>
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</tr>
<tr>
<td>Whales (specify)</td>
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</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
General Zonation of PY015-A

<table>
<thead>
<tr>
<th>Biota:</th>
<th>Tide Level</th>
<th>Supratidal</th>
<th>Upper</th>
<th>Middle</th>
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</tr>
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<tbody>
<tr>
<td>Oil Spatters</td>
<td>???</td>
<td></td>
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<tr>
<td>Black Lichen</td>
<td>++</td>
<td></td>
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<tr>
<td>Bare Rock</td>
<td>++</td>
<td></td>
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<tr>
<td>Rockweed (Fucus)</td>
<td>++</td>
<td>++ ++ ++ ++</td>
<td>++ ++</td>
<td>++ ++</td>
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<tr>
<td>Barnacles (Balanus)</td>
<td>++ ++ ++</td>
<td>++ ++</td>
<td>++ ++</td>
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<tr>
<td>Odonthalia (Red Alga)</td>
<td>++ ++ ++</td>
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<tr>
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<td>++ ++ ++ ++</td>
<td>++ ++</td>
<td>++ ++</td>
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<td></td>
</tr>
<tr>
<td>Other Red Algae</td>
<td>++ ++ ++ ++</td>
<td>++ ++ ++ ++</td>
<td>++ ++</td>
<td>++ ++</td>
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</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
<td>+ + + + + +</td>
<td>+ ++ + + +</td>
<td>+ + + +</td>
<td>+ + + +</td>
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<tr>
<td>Mussels (Mytilus)</td>
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<tr>
<td>Crustose Brown Algae (Hildenbrandia)</td>
<td>- - - - - -</td>
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<tr>
<td>Upright Brown Algae (not Fucus)</td>
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</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (++) Abundant

List of Species Expected at PY015-A

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   - Cladophora sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   - Alaria marginata, Agarum fimbriatum, Costaria costata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Laminaria saccharina, Ralfsia sp., Syctosophon lomentaria
4. Red Algae - Rhodophyta
   - Bossiella sp., Calliarthron sp., Corallina sp., Cryptosiphonia woodii, Cumagloia andersonii, Endocladiadum mucicata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera
   - Halichondria sp., Halichondria panicea, Tethys sp.
2. Anemones - Anthopleura artemesia, A. elegantissama, A. xanthogrammica, Epiactis ritteri, Epizoanthus scotinus, Metridium senile, Urticina crassicornis
3. Hydroids - Sertulariidae - Sertularella?
5. Flatworms - Platyhelminthes - Polyclads
6. Nemertean Worms - Ribbon Worms - Emplectonema gracile, Tubulanus polymorphus
8. Polychaete Worms
   - Glyceridae
   - Nereidae - Nereis spp.
   - Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   - Spirorbidae - Spirorbis sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii

Reviewed by: J.B. Dugan
10. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
      Haplogaster sp., Paguridae (hermit crabs), Oregnaria gracilis,
   d. Isopods - Cridana harfordi, Idotea wosnesenskii, 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, Tachyrhynchus sp.
   c. Limpets - Acmaea mitra, Lottia persona, Tectura fenestrata, T.
      persona, T. scutum, Siphonaria thersites
   d. Nudibranchs - Lamellidoris fusca, Melibe leonina
   e. Bivalves - Chlamys hastata, Clinocardium sp., C. nuttalli, Hiattella
      arctica, Macoma nasuta, Modiolus modiolus, Mytilus edulis,
      Pododesmus cepio, Prototheca staminea, Saxidomus giganteus
   f. Cephalopods - Octopus dofleini
12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars - Dermasterias imbricata, Evasterias truscheli, Henricia
      leviuscula, Leptasterias hexactis, Mediaster aequalis,
      Orthasterias keohleri, Pycnoida helianthoides, Solaster
      sp., Crossaster papposus
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis
15. Fishes
   Cottidae
   Stichaeidae - Xiphister atropurpureus, X. mucosus
1991 MAYSAP EVALUATION

SEGMENT: PY 015  SUB: A  REGION: KEN  SURVEY DATE: 5/15/91

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  _______________________

COMMENTS:
INITIAL: _____________________________________

TAG: _________________________________________

FOSC: _________________________

TAG APPROVAL DATE: ____________  FOSC APPROVAL DATE: ____________

ADEC  _________________________  FOSC  _________________________

EXXON  _________________________

USCG  _________________________

NOAA  _________________________
The previous oiling data available indicated no oil.

No recoverable oil found.

No treatment recommended.

No recoverable oil located.
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO.**

**OG** (in Samples)

**BIO**

**ADEC**

**XON**

**LANDMANAGER** Head Lester for USFWS

**USCG/NOAA** McMaher/McDonald

**TIME**

**TIDE LEVEL**

**ENERGY LEVEL**

**SURVEYED FROM**

**WEATHER**

**TOTAL LENGTH SHORELINE SURVEYED**

**NEAR SHORE SHEEN**

**EST. OIL CATEGORY LENGTH**

**DISTRIBUTION**

**SLOPE**

**PIT PIT DEPTH**

**SUBSURFACE OIL CHARACTER**

**OILED ZONE**

**CLEAN BELOW**

**H20 LEVEL**

**SHEEN COLOR**

**PIT ZONE**

**SURFACE-SUBSURFACE SEDIMENTS**

**NOTES**

---

**OG COMMENTS:**

Segment was surveyed by goat because no boat

---

**SEGMENT**

**P4: 015**

**SUBDIVISION**

**DATE**

**USCG/NOAA**

**Reviewed 5-20-94 5/20 F.D.
General Features of PY015-A

This subdivision was not closely surveyed and was seen only from boats cruising along the shore. Little or no oil was reported previously for the subdivision.

The shore is largely high angle bedrock cliffs or outcrops, with some talus boulder and cobble shores. The biota of the shore are typical of a low exposure beach with steep bedrock cliffs. Black lichen is abundant in the supratidal and marine species increase from the high intertidal to the subtidal. The adjacent subdivisions in this segment appear to have similar distribution of species. Overall, the subdivision appears healthy. Cover of algae is high, particularly in the low zone, and I suspect that recruitment has occurred recently for many of the common species, as is true for nearby shores.

(continued)

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Shoreline subdivision map showing important biological features attached.
PY015-A Biology Report, continued

General Zonation of PY015-A

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<tr>
<td>Barnacles (Balanus)</td>
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<td>Other Red Algae</td>
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<td>Green Algae (Ulva/other)</td>
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3. Hydroids - Sertularidae - Sertularella?
4. Flatworms - Platyhelminthes - Polyclads
5. Nematodes - Nematoda
6. Nemerteans - Ribbon Worms - Emplectonema gracile, Tubulanus polymorphus
7. Polychaete Worms
   Glyceridae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spriorbidae - Spirorbis sp.
8. Peanut worms - Spiunculids - Phascolosoma agassizii

...
PY015-A  Biology Report, continued

10. Crustaceans
   a. Amphipods - Orchestia sp.
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
      Haplogaster sp., Paguridae (hermit crabs), Oregonia gracilis,
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis

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      Amphissa columbiana, Littorina sitkana, L. keenae, Natica clausa,
      Nucella lamellosa, N. lima, Tachyrhynchus sp.
   c. Limpets - Acmaea mitra, Lottia persona, Tectura fenestrata, T.
      persona, T. scutum, Siphonaria thersites
   d. Nudibranches - Chlamydidors fusca, Melibe leonina
   e. Bivalves - Chlamys hastata, Clinocardium sp., C. nuttalli, Hiatella
      arctica. Macoma nasuta, Modiolus modiolus, Mytilus edulis,
      Pododesmus cepio, Prototheca staminea, Saxidomus giganteus
   f. Cephalopods - Octopus dofleini

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   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars - Dermasterias imbricata, Evasterias truscheli, Henricia
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      sp., Crossaster papposus
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis


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

SEGMENT: PY 015   SUB: C   REGION: KEN   SURVEY DATE: 5/15/91

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: 6/04/91

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>
<td>N</td>
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<tr>
<td>Manual Pickup (Check as Req.)</td>
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COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: June 4 1991  FOSC APPROVAL DATE: 6/16/91

ADEC  [Signature]

EXXON  [Signature]

USCG  [Signature]

NOAA  [Signature]
Please refer to OGI's comments - survey crew manually removed oil that was accessible.

Survey crew manually removed all recoverable oil.

Light traces 1/18/91 - VECO crew successfully recovered majority.
TEAM NO. LI  SEGMENT PY. 0/5  SUBDIVISION C  DATE 01/15/91

ADEC
NAME:  ____________________________________________  SIGNATURE: ____________________________

EXXON
NAME:  ____________________________________________  SIGNATURE: ____________________________

LANDMANAGER
NAME:  John T. Hardister  OF USGS  SIGNATURE: ____________________________

most of the oil located on this subsection was removed during the survey, further cleanup is not necessary.

USCG/NOAA
NAME:  ____________________________________________  SIGNATURE: ____________________________

NTR
**OG Comments:** The segment consisted of steep bedrock locally with steep talus of angular boulders. Exact and detailed mapping of the oil is most possible because of 1: difficult shoreline access allowing spot checking only; 2: degree lessens 2:1 ratio observation of oil, and 3: very scattered distribution of patches. All local comment is related to small oil except one animal impacted by oil. This oil is present and viewed but some stained. Good remaining because it is not compacted and the oiled area varied at relatively close intervals were examined for category specifics.
Legend

- Steeply sloping
- Bedrock, occasional
- Step by step across
- Angular boulders.

Note: Spot elevation of zodice
over eastern area.

Small cave on floor 10 cm thick.

Few ch. c. 1 x 50.

Boulder "thin" on level surface.

Few ch. c. c. 1 x 50.

Steep slope over uneven bedrock. No outcrops.

Small area of large
Bedrock to "steep
cliffs." Few ch. c. c. 1 x 50.

Few ch. c. c. 1 x 50.

Small cave on line
5 cm thick, angular ch.

Few ch. c. c. 1 x 50.

Few ch. c. c. 1 x 50.

Small cave on line
5 cm thick, angular ch.

Few ch. c. c. 1 x 50.

Few ch. c. c. 1 x 50.

Few ch. c. c. 1 x 50.

Few ch. c. c. 1 x 50.
General Features of PY015-C
This long subdivision encompasses the larger of 2 coves on segment PY015 and is very similar to PY015-D. The cove faces the north and is protected from large waves. Most of the shore is high angle bedrock or talus, with occasional pocket beaches of cobble and pebbles. The shores nearly all exhibit similar zonation patterns and are dominated by Fucus in the mid-shore and several species of red and green algae in the low shore. The subtidal is nearly completely covered by large brown algae. The nudibranch, Melibe leonina, was particularly abundant on the kelps in the subtidal zone along this subdivision.

A1 This extended area all shows similar oiling in the upper intertidal zone, with scattered patches of SOR. The oil is mainly confined to the upper zone amongst the transitional flora and fauna between the zone of black lichen (Verrucaria) and the upper intertidal assemblage of Fucus, barnacles, green algae, limpets, and littorine snails. The shores are quite diverse and healthy and show no evidence of recent oil-related damage. Below the oiled area, Fucus, as well as limpets, barnacles, littorine snails, and the lower zone flora and fauna cover the shore very densely, and grade into a subtidal habitat dominated by large brown algae. At a couple locations where the shore is somewhat more shallow in slope, the subtidal has a sparse eel grass and clam bed.

Manual cleanup was performed during the survey. Additional manual cleanup, if recommended, would not harm the biota along this segment.

(continued)

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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</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>3</td>
<td>26</td>
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<tr>
<td>Seabirds</td>
<td>2</td>
<td>6</td>
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<tr>
<td>Waterfowl</td>
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<td>30</td>
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<tr>
<td>Gulls/Kittiwakes</td>
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<td>5</td>
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<td>Shorebirds</td>
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<td></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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<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS</th>
<th>SPECIES</th>
<th># OBSERVED</th>
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<tr>
<td>Sea Otters</td>
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<td>River Otter</td>
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<tr>
<td>Pinnipeds</td>
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<td>Black Bear</td>
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<tr>
<td>Sea Lion</td>
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<tr>
<td>Whales</td>
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</table>

Shoreline subdivision map showing important biological features attached.
PY01S-C Biology Report, continued

General Zonation of PY01S-C

<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>
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<tbody>
<tr>
<td>Oil Spatters</td>
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<td>Black Lichen</td>
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<tr>
<td>Bare Rock</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Rockweed (Fucus)</td>
<td>-</td>
<td>+++++-</td>
<td>+++++-</td>
<td>-</td>
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</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td>-</td>
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<td>+++++-</td>
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<tr>
<td>Odonthalia (Red Alga)</td>
<td>-</td>
<td>-</td>
<td>++++-</td>
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<tr>
<td>Palmaria (Red Alga)</td>
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<tr>
<td>Other Red Algae</td>
<td>-</td>
<td>-</td>
<td>+++++-</td>
<td>-</td>
<td></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>
<td>-</td>
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<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td>-</td>
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<td>+++++</td>
<td>-</td>
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<tr>
<td>Eel Grass</td>
<td>-</td>
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<tr>
<td>Clams</td>
<td>-</td>
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<td>-</td>
</tr>
</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

List of Common Species from PY01S-C

A. Marine Plants
1. Diatoms, Blue Greens
   Cladophora sp., Prasiola meridionalis, Ulva sp., Urospora sp.
2. Green Algae - Chlorophyta
   Cladophora sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Agarum mimbritum, Costaria costata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Laminaria saccharina, Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Bossiella sp., Calliartethron sp., Corallina sp., Cryptosphinopia woodii, Cumaqloia andersonii, Endocladiim muricata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dinorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

B. Marine Animals
1. Sponges - Porifera
   Halichondria sp., Halichondria panicea, Tethys sp.
2. Anemones - Anthopleura artemesia, A. elegantissama, A. xanthogrammica, Epiactis riffteri, Epizoanthus scotinus, Metridium senile, Urticin. crassicornis,
3. Hydroids - Sertularidae - Sertularella?
4. Flatworms - Platyhelmintes - Polyclads
5. Nemertean Worms - Ribbon Worms - Emplectonema gracile, Tubulanus polymorphus
6. Polychaete Worms
   Glyceridae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigera sp., Eudistyia polymorpha
   Spirobidae - Spirorbis sp.
7. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans  
   a. Amphipods - Orchestia sp.?  
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus  
   c. Crabs - Haplogaster sp., Paguridae (hermit crabs), Oregonia gracilis,  
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimosphaeroma 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, Tachyrhynchus sp.  
   c. Limpets - Acmaea mitra, Lottia persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites  
   d. Nudibranches - Lamellidoris fusca, Melibe leonina  
   e. Bivalves - Chlamys hastata, Clinocardium sp., C. nuttalli, Hiatella arctica, Mya arenaria, Modiolus modiolus, Mytilus edulis,  
      Pododesmus cepio, Prototheca staminea, Saxidomus giganteus  
   f. Cephalopods - Octopus dofleini  

12. Echinoderms  
   a. Brittle Stars - Ophiolus sp., ?  
   b. Sea stars - Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula, Leptasterias hexactis, Mediaster aequalis,  
      Orthasterias keohleri, Pycnopodia helianthoides, Solaster sp., Crossaster papposus  
   c. Sea Cucumbers - Holothurians - Eupentacta sp.  
   d. Urchins - Strongylocentrotus droebachiensis  


15. Fishes  
   Cottidae - Xiphister atropurpureus, X. mucosus  
   Stichaeidae - Xiphister atropurpureus, X. mucosus  

III. Birds  
   Marbled Murrelet (6), Red-faced Cormorant (10), Pigeon Guillemot (10),  
   Barrow's Goldeneye (2), Glaucous-winged Gull (10), Black-legged Kittiwake (20), Western Sandpiper (5), common merganser (4)
**Legend**

- Steeply Sloping
  - bedrock, occasional
  - steep talus of
  - large angular boulders.

**Surveyed by ship**

A1-A3 - Similar distribution of oil and biota at each location. Oil confined to upper zone. Black lichen and upper edge of marine species (barnacles, green algae, Fucus, limpets, limininesnails). Below oiled area, biota increase in cover and density. Fucus is dense in the mid-zone, with red algae & brown algae most abundant in the low zone. A few locations with fairly shallow sloped subtidal zones have eel grass & sparse clam beds.
1991 MAYSAF EVALUATION

SEGMENT: FY 015  SUB: D  REGION: KEN  SURVEY DATE: 5/15/91

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: 5/30/91

RECOMMENDATIONS:

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

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

COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: MAY 29 1991  FOSC APPROVAL DATE: 6/13/91

ADEC  
EXXON  
USCG  
NOAA  

E. E. PAGE, CDR, USCG
CHIEF OF STAFF, FOSC
Survey crew recovered oiling observed - & accessible. LT CV / CT remains in splatter distribution.

No appreciable oil remaining. Survey crew picked up 1/2 bag. while surveying.

Concern with ADEC and Exxon representatives.

Concern with Exxon rep.
MAYSAP SHORELINE OILING SUMMARY

DATE: MAY 15 1991
SEGMENT: PY 015
TEAM NO: 4

OG: Jim Sams
BIO: L. Barry

EXXON: Crosby
USCG/NOAA: McMichael McNamara

TIME: 06:33 to 07:58
TIDE LEVEL: +2.7 ft. to -2.7 ft.
ENERGY LEVEL: H M L

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

TOTAL LENGTH SHORELINE SURVEYED: 1600 m
NEAR SHORE SHEEN: BR RB SL NONE

EST. OIL CATEGORY LENGTH: W m M m N m VI L US 1607 m

---

<table>
<thead>
<tr>
<th>L</th>
<th>OIL CHARACTER</th>
<th>SEDIMENT</th>
<th>AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>AP MS TB SCV CT ST FL DB NO</td>
<td>TYPE</td>
<td>W HM L</td>
</tr>
<tr>
<td></td>
<td>See map</td>
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<td></td>
</tr>
</tbody>
</table>

---

DISTRIBUTION: C = 91-100%; B = 51-60%; P = 0-10%; S = 1-10%; T = <1%
SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE

---

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>OILED ZONE</th>
<th>OILED ZONE CLEAN</th>
<th>H2O LEVEL</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE - SUBSURFACE SEDIMENTS</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

---

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

---

OG COMMENTS: Segment consists of long stretch of steep ledge, sometimes with a talus of large angular boulders. Much is too steep to walk so we spot checked as many places as we could. All landing pits had a bit of oil (see map) thus the entire part of the subdivision surveyed wasn't mapped as very little ever turned most of it was not walked. It is not feasible to map and report observed. No oil was reported during previous surveys on the long western unsurveyed section.

---

REVIEWS: S 18.91
Location map

PY

Line indicates zodiac survey

PY015 D

Subdivision Field Map
Map Key: KEMPY015D
Name: J. L. Kemp
Date: May 15, 1991

Reviewed 5/18/91 QA
REVIEWED CO 18 MAY
Long reach of steep bedrock sometime with steep talus of angular boulders on floodplains particularly in smaller areas. Mud is too steep to be accessible and many covered by vegetation as many spot checks as possible.

Legend:
- Steep bedrock
- Bd/pb
- Bd/pb accumulation
- Small MS splatter <10 cm dia
- Few small MS, cv splatter <10 cm dia
- Few small cv, ms

Typical Profile:
- Large boulder fall in front of slide area. Include small, natural slope. Few small cv, ms <20 cm <5%.
- Small cv, ms
General Features of PY015-D

This long subdivision encompasses the smaller of 2 coves on segment PY015. The cove faces the north and is protected from waves, except for the headlands bordering the cove, which experience moderate swell. Most of the shore is high angle bedrock or talus, with occasional pocket beaches of cobble and pebbles. The shores nearly all exhibit similar zonation patterns and are dominated by Fucus in the mid-shore and several species of red and green algae in the low shore. The subtidal is nearly completely covered by large brown algae. The nudibranch Melibe leonina was particularly abundant on the kelps in the subtidal zone along this subdivision.

A1 This extended area all shows similar oiling in the upper intertidal zone, with scattered patches of SOR. The oil is mainly confined to the upper zone amongst the transitional flora and fauna between the zone of black lichen (Verrucaria) and the upper intertidal assemblage of Fucus, barnacles, green algae, limpets, and litorine snails. The shores are quite diverse and healthy and show no evidence of recent oil-related damage. Below the oiled area, Fucus, as well as limpets, barnacles, litorine snails, and the lower zone flora and fauna cover the shore very densely, and grade into a subtidal habitat dominated by large brown algae. At a couple locations where the shore is somewhat more shallow in slope, the subtidal has a sparse eel grass and clam bed. Some manual pickup performed on shore. Additional manual pickup, if performed, will do no harm to the intertidal biota.

Shoreline subdivision map showing important biological features attached.
**General Zonation of PY015-D**

<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>
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<tbody>
<tr>
<td>Oil Spatters</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Black Lichen</td>
<td>-</td>
<td>++</td>
<td>-</td>
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</tr>
<tr>
<td>Bare Rock</td>
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</tr>
<tr>
<td>Rockweed (Fucus)</td>
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<td>-+++</td>
<td>-+++</td>
<td>-+++</td>
<td>-+++</td>
<td>-+++</td>
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<tr>
<td>Barnacles (Balanus)</td>
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<tr>
<td>Odonthalia (Red Alga)</td>
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<tr>
<td>Palmaria (Red Alga)</td>
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<tr>
<td>Other Red Algae</td>
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<tr>
<td>Green Algae (Ulva/other)</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Mussels (Mytilus)</td>
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<td>-</td>
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<tr>
<td>Crustose Brown Algae (Hildenbrandia)</td>
<td>-</td>
<td>-+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Eel Grass</td>
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<td>Clams</td>
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<td>-</td>
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<td>-</td>
</tr>
</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

**List of Common Species from PY015-D**

**A. Marine Plants**

1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   - Cladophora sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   - Alaria marina, Agarum fimbriatum, Costaria costata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Laminaria saccharina, Ralfsia sp., Sycosiphon lomentaria
4. Red Algae - Rhodophyta
   - Bossiella sp., Calliarthron sp., Corallina sp., Cryptosiphonia woodii, Cumagloia andersonii, Endocladia muricata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Pilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

**B. Marine Animals**

1. Sponges - Porifera
   - Halichondria sp., Halichondria panicea, Tethys sp.
2. Anemones - Anthopleura artemesia, A. elegantissima, A. xanthogrammica, Epialtis roteri, Epizoanthus scotinus, Metridium senile, Urticina crassicornis,
3. Hydroids - Sertulariidae - Sertulaella?
4. Flatworms - Platyhelminthes - Polyclads
5. Nemerteans - Ribbon Worms - Emplectonema gracile, Tubulanus polymorphus
6. Polychaete Worms
   - Glyceridae
   - Nereidae - Nereis spp.
   - Serpulidae - Serpula sp., Cruciger sp., Eudistylia polymorpha
   - Spirorbididae - Spirorbis sp.
7. Peanut worms - Sipulocidae - Phascolosoma agassizii
PY015-D Biology Report, continued

10. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
      Haplogaster sp., Paguridae (hermit crabs), Oregonia gracilis,
   d. Isopods - Cirrアナ harfordi, Idotea wosnesenskii, 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, Tachyrhynchus sp.
   c. Limpets - Acmaea mitra, Lottia persona, Tectura fenestrata, T.
      persona, T. scutum, Siphonaria thersites
   d. Nudibranches - Lamellidoris fusca, Melibe leonina
   e. Bivalves - Chlamys hastata, Clinocardium sp., C. nuttalli, Hiatella arctica,
      Macoma nasuta, Modiolus modiolus, Mytilus edulis,
      Pododesmus cepio, Protobranchia staminea, Saxidomus giganteus
   f. Cephalopods - Octopus dofleini

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars - Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula,
      Leptasterias hexactis, Mediaster aequalis, Orthasterias keohleri, Pycnopodia helianthoides,
      Solaster sp., Crossaster papposus
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
    Cottidae
    Stichaeidae - Xiphister atropurpureus, X. mucosus

III. Birds

Marbled Murrelet (2), Red-faced Cormorant (2), Pigeon Guillemot (2), Barrow's Goldeneye (8), Sparrow (1), Glaucous-winged Gull (3), Black-legged Kittiwake (8), Western Sandpiper (2), crow (2)
Bio Sketch Map
PY015-D
JP Barry
May 15, 1991
0633-0758

Legend
- Steep Bedrock
- Boulder/cobble/pebble
- all angula

Typical Profile

Oiling throughout located in upper zone where biota are somewhat scarce. Black Idenus, Fucus, Green Algae, Impeta, Lithoreno, and barnacles all are near the upper or lower extent of their range. Rich biota below Oil spot areas. Red, Green & brown algae are abundant.
1991 MAYSAP EVALUATION

SEGMENT: PY 015  SUB: B  REGION: KEN  SURVEY DATE: 5/15/91

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________________________
MERGAR WORKERS were scheduled to return to this site - High tide prevented clean-up - This area would take < 2 hours to complete - if a crew is in the area suggest spending the time to remove HSOR

The HSOR area was partially worked while surveying the beach but due to time constraints on PY-6 (Bird Colony) the Vero crew was unable to return to the location prior to high tide.

No treatment recommended.

Aquatic P/A TB 1990 crew picked up several large felt areas does not warrant fuel clean-up crew would cause more environmental damage from removal process.
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO.** 4

**Og** J. Sample

**Bio** J. Buiny

**Dec** C. Crosby

**Adm** G. L. Amsler

**Lm** M. Maysap

**Mc** M. A. M. Daniels

**Uscg/noaa** M. Matlock/ M. Donnelly

**Date** May 15, 1991

**Segment** RF 0.05 B

**Subdivision** 18

**Time** 10:23 to 11:31

**Tide Level** +0.5 ft. to +3.7 ft.

**Energy Level** X H M L

**Surveyed From** X Foot □ Boat □ Helo

**Weather** □ Sun □ Clouds □ Fog □ Rain □ Snow

**Total Length Shoreline Surveyed** 23.9 m

**Near Shore Sheen** □ BR □ RB □ SL □ None

**Est. Oil Category Length** W m M m N m V 23.9 m

### Surface Oil Character

<table>
<thead>
<tr>
<th>LO</th>
<th>Surface Sediment</th>
<th>Shore Slope</th>
<th>Area</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type</td>
<td>VHM L</td>
<td>Width</td>
<td>Length</td>
</tr>
<tr>
<td></td>
<td></td>
<td>m</td>
<td>m</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>S T T T</td>
<td>6/6/6/6</td>
<td>L</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>T T T T</td>
<td>6/6/6/6</td>
<td>L</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>Very few scattered</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Oil Category**

- W: Water
- M: Medium Angle
- N: Nearshore

**Surface Subsurface Sediments**

- Oiled Zone
- Clean Below
- H20 Level
- Sheen Color
- Pit Zone
- Subsurface Sediments

**Sheen Color**
- B: Brown
- R: Rainbow
- S: Silver
- N: None

**Pit Notes**

- See Map
- See Map 4/5/91

**OG Comments**

*Stonehouse consists of sloping bedrock to the south with a possible cobble/pitted formation. An area of bedrock outcrops to the north. The area has very few scattered CV all < 10 cm on bedrock or on boulder surfaces. A narrow band of low vegetation present in the north.*

*This band was worked on but high tide prevented completing manual work.*

**Revise Date** May 15, 1991

**Revised** 5/20/91
Py. 615 B 17 Samples
May 15/91 023 1101

Legend

- Sloping bedrock
- Angular Boulders on bedrock
- Pebbles/small Boulders
- P1h

Works on A1

- 3 x 1.5 m trenched due to high tide.
- Picked up

A2

- Very few ch. cu on 2nd rock in unit very small
- Picked up all could be picked up
MAYSAP BIOLOGICAL SUMMARY FORM

DATE/TIME  May 15, 1991  1023 - 1101
TIDAL HEIGHT (Range)  -1.9 => -0.1
BIOLeIST  JIM BARRY
WIND SPEED/DIRECTION  Variable 0-10 kt, rain

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

General Features of PY015-B

This short subdivision is located along MacArthur Pass, a site with very low wave exposure. The shore varies from high angle talus boulders to a medium angle cobble and pebble beach. Greater cover of biota is found on the talus and boulder shores than the cobble beach. The highest densities of biota on the beach are found on the largest cobble, boulders, and occasional bedrock outcrop. The biota appear generally healthy, with normal abundances of flora and fauna throughout the cobble beach and adjacent bedrock outcrops. Several species are present as juveniles, indicating recent recruitment.

The zonation pattern along this subdivision is similar to the entire segment, with black lichen along the upper edge of the intertidal and a transition to Fucus, barnacles, limpets, and littorines in the highest intertidal, grading to denser cover of Fucus, green and red algae in the lower shore. Mussels form a band in the mid-shore as a narrow bed amongst the beach cobble. Barnacles are patchy, but generally quite abundant throughout the shore from the high to the low zones. The subtidal is nearly completely covered by large brown algae.

A1,A2 The oiled area is located in the upper zone of the cobble/pebble beach. At this location there are sparsely distributed barnacles, and moderate densities of limpets and littorine snails. A thin film of filamentous green algae (Urospora?) is also located in the vicinity of the oil. A moderately dense mussel bed is present approximately 6 m from A1/A2. The lower shore below the mussel bed is mostly red and brown algae.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th>N OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Shoreline subdivision map showing important biological features attached.
Manual cleanup was performed during the survey. Additional manual cleanup, if recommended, would not harm the biota along this segment. Care must be taken, however, to restrict activities to the oiled area in the upper zone and prevent disturbance to the nearby mussel bed.

A3 This oil is somewhat higher in the intertidal zone and extends through much of the segment as a patchy cover or coat of SOR. The oil is confined to the upper zone amongst the transitional flora and fauna between the zone of black lichen (Verrucaria) and the upper intertidal assemblage of Fucus, barnacles, green algae, limpets, and littorine snails. The shores are quite diverse and healthy and show no evidence of recent oil-related damage. Below the oiled area, Fucus, limpets, barnacles, littorine snails, and other lower zone flora and fauna cover the shore very densely, except the mid-zone cobble/pebble beach habitat where cover is somewhat sparser. The extreme low zone and subtidal habitat is dominated by large brown algae.

Manual cleanup was performed during the survey. Additional manual cleanup, if recommended, would not harm the biota along this segment.

General Zonation of PY015-B

<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>
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<tbody>
<tr>
<td>Oil Spatters</td>
<td>--</td>
<td>++---------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td>---+++-----</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bare Rock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td>---+++-----</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td>---+ ++++++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odonthalia (Red Alga)</td>
<td>---+++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Red Algae</td>
<td>---+++</td>
<td>---+++</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
<td>---+++</td>
<td>---+++</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td>---+++</td>
<td>---+++</td>
<td></td>
<td></td>
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<tr>
<td>Crustose Brown Algae (Hildenbrandia)</td>
<td>---+++</td>
<td>---+++</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td>---+++</td>
<td>---+++</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whelks (Nucella sp., Searlesia sp.)</td>
<td>---+++</td>
<td>---+++</td>
<td></td>
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</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

List of Common Species from PY015-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Costaria costata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp.,
   Laminaria groenlandica, L. saccharina, Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Endocladia muricata, Halosaccion glandiforme, Lithothamnion sp., Membranoptera
dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp.,
   Ptilotea filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)
II. Marine Animals
1. Sponges - Porifera - Halichondria sp.
2. Anemones - Anthopleura artemesia, Epiactis ritteri, Epizoanthus scotinus, Metridium senile, Urticina crassicornis,
3. Hydroids - Sertulariidae - Sertularella?
5. Flatworms - Platyhelminthes - Polyclads
6. Nemertean Worms - Ribbon Worms - Emplectonema gracile
8. Polychaete Worms
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp.
   Spirobranchidae - Spirorbis sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
   a. Amphipods - Orchestia sp., Traskorchestia traskiana
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
   Haplogaster sp., Paguridae (hermit crabs)
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
11. Mollusca
   a. Chitons - Mopalia mucosa, Katharina tunicata, Tonicella lineata,
   b. Snails - Gastropods
   Littorina sitkana, L. keenae, Natica clausa, Nucella lamellosa, N. lima, Seasinella dira
   c. Limpets - Acmaea mitra, Lottia persona, Tectura fenestrata, T. persona, T. cutum, Siphonaria thersites
   d. Nudibranches - Lamellidorsus fusca, Onchidoris sp?
   e. Bivalves - Mytilus edulis, Pododesmus cepio
12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars - Dermasterias imbricata, Leptasterias hexactis, Orthasterias keohleri, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis
15. Fishes
   Cottidae
   Stichaeidae - Xiphister atropurpureus, X. mucosus

III. Birds
Marbled Murrelet (2), Red-faced Cormorant (1), Glaucous-winged Gull (2), Black-legged Kittiwake (2), Western Sandpiper (3)
**Bio Sketch Map**

**J F Barry**  
P 4015-B  
15 May 1991  
1023-1101

**Legend**

- Sloping bedrock
- Angular boulders over bedrock
- Cobble/pebbles/boulders
- Pb/C6

**Diagram Notes:**

- **A1, A2:** Sparse barnacles, moderate limpets and littorine snails. Thin film of filamentous green algae on cobble. Moderately dense mussel bed present in beach cobble 5–6 mm away. Dense Red & Brown algae in the low shore.

- **A3:** Sparse black lichen. Sparse fogus, barnacles, littorine snails, and slightly below.

- **Dead trees:**

**Reviewed by B. 5/2**
1991 EAYSAP EVALUATION

SEGMENT: PY 015  SUB: C  REGION: KEN  SURVEY DATE: 5/15/91

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:

INITIAL  TAG  FOSC

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

Please refer to OG's Comments - Survey crew manually removed oil this accessible.

EXXON
NAME: George T. Stiles  SIGNATURE: George T. Stiles 5/15/91

Survey crew manually removed all recoverable oil.

LANDMANAGER
NAME: John Hardisty  OF USFWS  SIGNATURE:

Light traces 7/3/91 - VEC crew successfully
retained integrity.

USCG/NOAA
NAME: W. V. McMillon  SIGNATURE:

[Signature]

[Signature]
<table>
<thead>
<tr>
<th>Team No.</th>
<th>Segment Py. 0/5</th>
<th>Subdivision</th>
<th>Date 8/15/91</th>
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<table>
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<tr>
<th>LANDMANAGER</th>
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<tbody>
<tr>
<td>NAME</td>
<td>John P. Hardister</td>
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<tr>
<td>USCG/NOAA</td>
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</tr>
<tr>
<td>SIGNATURE</td>
<td>John P. Hardister</td>
<td>Not necessary</td>
</tr>
</tbody>
</table>

Most of the oil has left as this subsection was removed during the survey. Further cleanup is not necessary.
**MASSCAP SHORELINE OILING SUMMARY**

**TEAM NO.** 2
**OG** Simpson
**BIO** March
**ADEC** Crosby
**LPM** Hardister
**EXXON** George P. Stiles
**USCG/NOAA** McMedical/McDonald

**SEGMENT** P.I. O15
**SUBDIVISION** C
**DATE** MAY 15, 1991

**TIME** 02:15 to 12:32
**TIDE LEVEL** 2.7 ft to 3.5 ft
**ENERGY LEVEL** [ ] H [ ] M [ ] L

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

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

**TOTAL LENGTH SHORELINE SURVEYED:** 2260 m
**NEAR SHORE SHEEN:** [ ] BR [ ] RB [ ] SL [ ] NONE

**EST. OIL CATEGORY LENGTH:**
- W ___ m
- M ___ m
- N ___ m
- V ___ m
- US 3193 m

### SURFACE OIL CHARACTER

<table>
<thead>
<tr>
<th>LOC</th>
<th>AP</th>
<th>MS</th>
<th>TB</th>
<th>SOR</th>
<th>CV</th>
<th>CT</th>
<th>ST</th>
<th>FL</th>
<th>DB</th>
<th>NO</th>
<th>TYPE</th>
<th>SLOPE</th>
<th>WIDTH</th>
<th>LENGTH</th>
<th>ZONE</th>
</tr>
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<tbody>
<tr>
<td>A1</td>
<td>T</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B.C.R</td>
<td>M</td>
<td>&lt;3</td>
<td>200</td>
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<tr>
<td>A2</td>
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<td></td>
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<td></td>
<td></td>
<td>B.C.R</td>
<td>M</td>
<td>&lt;3</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>T</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>B.C.R</td>
<td>M</td>
<td>&lt;3</td>
<td>2500</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**
- remains after pickup
- remains after pickup
- remains after pickup

**SURFACE OIL CHARACTER**
- B.C.R: B=Black; C=Clear; R=Red

**SURFACE SEDIMENT**
- B.C.R: B=Brown; C=Clear; R=Red

**SHORE AREA**
- Width: m
- Length: m

**ZONE**
- S: Surface
- H: Horizon
- M: Medium
- L: Low

**NOTES**
- remains after pickup

### DISTRIBUTION:
- C: 51-100%
- B: 11-50%
- A: 51-100%
- T: <1%

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

**PHOTO ROLL #: MAYSAP_**

### PIT

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>DEPTH (cm)</th>
<th>OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN HORIZON</th>
<th>OILED LEVEL</th>
<th>SHEEN COLOR</th>
<th>ZONE</th>
<th>SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

**OG COMMENTS:** This segment consists of steep ledges locally with steep talus of angular boulders. Exact and detailed mapping of the oil is not possible because: 1. difficult shoreline access allowing spot checking only; 2. large areas of visible overlying oil; and 3. very scattered distribution.

**NOTES:**

**REVISED:** P.W. 5/24/91
General Features of PY015-C
This long subdivision encompasses the larger of 2 coves on segment PY015 and is very similar to PY015-D. The cove faces the north and is protected from large waves. Most of the shore is high angle bedrock or talus, with occasional pocket beaches of cobble and pebbles. The shores nearly all exhibit similar zonation patterns and are dominated by Fucus in the mid-shore and several species of red and green algae in the low shore. The subtidal is nearly completely covered by large brown algae. The nudibranch, Melibe leonina, was particularly abundant on the kelps in the subtidal zone along this subdivision.

AI This extended area all shows similar oiling in the upper intertidal zone, with scattered patches of SOR. The oil is mainly confined to the upper zone amongst the transitional flora and fauna between the zone of black lichen (Verrucaria) and the upper intertidal assemblage of Fucus, barnacles, green algae, limpets, and littorin snails. The shores are quite diverse and healthy and show no evidence of recent oil-related damage. Below the oiled area, Fucus, as well as limpets, barnacles, littorine snails, and the lower zone flora and fauna cover the shore very densely, and grade into a subtidal habitat dominated by large brown algae. At a couple locations where the shore is somewhat more shallow in slope, the subtidal has a sparse eel grass and clam bed.

Manual cleanup was performed during the survey. Additional manual cleanup, if recommended, would not harm the biota along this segment.

(continued)

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>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>3</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>-2</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>5</td>
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<tr>
<td>Corvids</td>
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</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS SPECIES</th>
<th># OBSERVED</th>
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<tr>
<td>Sea Otters</td>
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<td>River Otter</td>
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<td>Pinnipeds (specify)</td>
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<td>Whales (specify)</td>
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</table>

Shoreline subdivision map showing important biological features attached.
PY015-C Biology Report, continued

General Zonation of PY015-C

<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>
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</thead>
<tbody>
<tr>
<td>Oil Spatters</td>
<td>- -</td>
<td></td>
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</tr>
<tr>
<td>Black Lichen</td>
<td>-+++---</td>
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<tr>
<td>Bare Rock</td>
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<tr>
<td>Rockweed (Fucus)</td>
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<td>Barnacles (Balanus)</td>
<td>- ++++++++---</td>
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<td>Odonthalia (Red Alga)</td>
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<tr>
<td>Palmaria (Red Alga)</td>
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<td>Other Red Algae</td>
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<td>Green Algae (Ulva/other)</td>
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<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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<td></td>
<td></td>
</tr>
<tr>
<td>Eel Grass</td>
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<tr>
<td>Clams</td>
<td>- - - -</td>
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</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (#) Abundant

List of Common Species from PY015-C

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Agarum fimbriatum, Costaria costata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Laminaria saccharina, Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Bossiella sp., Calliarthron sp., Corallina sp., Cryptosiphonia woodii, Cunagloia andersonii, Endocladia muricata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera disorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera
   Halichondria sp., Halichondria panicea, Tethys sp.
2. Anemones - Anthopleura artemesia, A. elegantissama, A. xanthogrammica, Epiaclis ritteri, Epizoanthus scotinus, Metridium senile, Urticina crassicornis,
3. Hydroids - Sertularidae - Sertularella?
4. Flatworms - Platyhelminthes - Polyclads
5. Nemertean Worms - Ribbon Worms - Emplectonema gracile, Tubulanus polymorphus
6. Polychaete Worms
   Glyceridae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spirobranchiidae - Spioorbis sp.
7. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
   a. Amphipods - Orchestia sp.? 
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
      Haplogaster sp., Paguridae (hermit crabs), Oregonia gracilis,
   d. Isopods - Cirdana harfordi, Idotea wosnesenski, Onirina paucifera, 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, Tachyrhynchus sp.
   c. Limpets - Acmiaa mitra, Lottia persona, Tectura fenestrata, T. person, T. scutum, Siphonaria thersites
   d. Nudibranches - Lamellidoris fusca, Melibe leonina
   e. Bivalves - Chlamys hastata, Clinocardium sp., C. nuttalli, Hiatella arctica, Macoma nasuta, Modiolus modiolus, Mytilus edulis, 
      Pododesmus cepio, Protophore astra, Saxidomus giganteus
   f. Cephalopods - Octopus doleini

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars - Dermasterias imbricata, Evasterias truscheli, Henricia leviscula, Leptasterias hexactis, Mediaster aequalis, 
      Orthasterias keohleri, Pycnopodia helianthoides, Solaster sp., Crossaster papposus
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Cottidae - Xiphister atropurpureus, X. mucosus

III. Birds
   Marbled Murrelet (6), Red-faced Cormorant (10), Pigeon Guillemot (10), 
   Barrow's Goldeneye (2), Glagous-winged Gull (10), Black-legged Kittiwake (20), Western Sandpiper (5), Common merganser (4)
Bio Sketch Map

Legend

- Steeply Sloping bedrock, occasional steep talus of large angular boulders.

A1-A3 - Similar distribution of oil and biota at each location. Oil confined to upper zone. Black line is upper edge of marine species (mussels, green algae, Fucus, limpets, littorines, snails). Below oiled area, biota increase in cover and density. Fucus is dense in the mid-zone, with red algae & brown algae most abundant in the low zone. A few locations with fairly shallow sloped substrates have eel grass & sparse clam beds.
1991 MAYSAP EVALUATION

SEGMENT:  PY 015  SUB:  D  REGION:  KEN  SURVEY DATE:  5/15/91

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  ________________________  FOSC  _______________________
EXXON  ________________________
USCG  ________________________
NOAA  ________________________
Survey crew recovered oiling observed is accessible. Lit CV/CP remains in splatter distribution.

No appreciable oil remaining. Survey crew picked up 1/2 bags while surveying.

Concur with ADEC and Exxon representation.

Concur with Exxon rep.
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 4

OCEAN ENERGY

DATE: MAY 15, 1991

TIME: 06:33 to 07:58

TIDE LEVEL: +2.7 ft. to -2.7 ft.

ENERGY LEVEL:

WEATHER:

SURVEYED FROM:

TOTAL LENGTH SHORELINE SURVEYED: 1600 m

NEAR SHORE SHEEN:

EST. OIL CATEGORY LENGTH:

SURFACE OIL CHARACTER

SHORELINE

AREA

ZONE

NOTES

DISTRIBUTION:

SLOPE:

PHOTO ROLL:

FRAMES

PIT

PIT NO.

DEPTH (cm)

SUBSURFACE OIL CHARACTER

OILED ZONE

CLEAN BELOW

H20 LEVEL

SHEEN COLOR

ZONE

NOTES

SHEEN COLOR:

OG COMMENTS:

Segment consists of long stretch of steep beach sometimes with a tolerable break angle. Some places we could not get to due to roughness. Made it up the Cape and walked as much, as we could. 300 landing sites had a bit of oil (see map). We used the entire new survey zone.

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

OG COMMENTS:

Segment consists of long stretch of steep beach sometimes with a tolerable break angle. Some places we could not get to due to roughness. Made it up the Cape and walked as much as we could. 300 landing sites had a bit of oil (see map). We used the entire new survey zone.
Long sequence of steep bedrock sometimes with steep talus of angular boulders with few fines, particularly in juncture areas. Mud in flanks to be acceptable and many connected to sea as many as possible.

Legend:

- Steep Bedrock
- Bd/1o/pb
- all angular

Typical Profile:

- 1 m sp. Palte
- <5cm dia

- Few small Ms, Cv sp. Palte
- <10cm dia

- cb/Bd/pb accumulation
- few small Ms, Cv sp. Palte
- <10cm dia

- cb/Bd/pb accumulation
- few small Ms, Cv sp. Palte
- <10cm dia

- Leave 0758

- Raw rounded bedrock
- few ch. Cv, 1/30a where Ms
- Resistant sediments

- Few small cv, Ms

- P.U.

- Few small cv, Ms

- P.U.

- Few small cv, Ms

- P.U.

- Few small cv, Ms

- P.U.

- Few small cv, Ms

- P.U.

- Few small cv, Ms

- P.U.

- Few small cv, Ms

- P.U.

- Few small cv, Ms

- P.U.

- Few small cv, Ms

- P.U.

- Few small cv, Ms

- P.U.

- Few small cv, Ms

- P.U.
General Features of PY015-D
This long subdivision encompasses the smaller of 2 coves on segment PY015. The cove faces the north and is protected from waves, except for the headlands bordering the cove, which experience moderate swell. Most of the shore is high angle bedrock or talus, with occasional pocket beaches of cobble and pebbles. The shores nearly all exhibit similar zonation patterns and are dominated by Fucus in the mid-shore and several species of red and green algae in the low shore. The subtidal is nearly completely covered by large brown algae. The nudibranch Melibe leonina was particularly abundant on the kelps in the subtidal zone along this subdivision.

A1 This extended area all shows similar oiling in the upper intertidal zone, with scattered patches of SOR. The oil is mainly confined to the upper zone amongst the transitional flora and fauna between the zone of black lichen (Verrucaria) and the upper intertidal assemblage of Fucus, barnacles, green algae, limpets, and littorine snails. The shores are quite diverse and healthy and show no evidence of recent oil-related damage. Below the oiled area, Fucus, as well as limpets, barnacles, littorine snails, and the lower zone flora and fauna cover the shore very densely, and grade into a subtidal habitat dominated by large brown algae. At a couple locations where the shore is somewhat more shallow in slope, the subtidal has a sparse eel grass and clam bed. Some manual pickup performed on shore. Additional manual pickup, if performed, will be noted here...

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>Eagles</td>
<td>3</td>
<td>6</td>
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<tr>
<td>Seabirds</td>
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<tr>
<td>Waterfowl</td>
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<tr>
<td>Gulls/Kittiwakes</td>
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<tr>
<td>Shorebirds</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Corvids</td>
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<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>SPECIES</th>
<th>LAND MAMMALS</th>
<th># OBSERVED</th>
</tr>
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<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
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<tr>
<td>Pinnipeds (specify)</td>
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</tr>
<tr>
<td>Whales (specify)</td>
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</table>

Shoreline subdivision map showing important biological features attached.
**PY015-D Biology Report, continued**

**General Zonation of PY015-D**

<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>
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<tbody>
<tr>
<td>Oil Spatters</td>
<td></td>
<td>- -</td>
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</tr>
<tr>
<td>Black Lichen</td>
<td>- -</td>
<td>---*---</td>
<td></td>
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<tr>
<td>Bare Rock</td>
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<tr>
<td>Rockweed (Fucus)</td>
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<td>- - - - - -</td>
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<tr>
<td>Barnacles (Balanus)</td>
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<tr>
<td>Odonthalia (Red Alga)</td>
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<td>Palmaria (Red Alga)</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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<td>Crustose Brown Algae (Hildenbrandia)</td>
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<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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</tbody>
</table>

**Legend:** (-) Sparse to rare, (+) Moderate, (*) Abundant

**List of Common Species from PY015-D**

**A. Marine Plants**
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   - Cladophora sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   - Alaria marginata, Agarum fimbriatum, Costaria costata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Laminaria saccharina, Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   - Bossiella sp., Calliarthron sp., Corallina sp., Cryptosiphonia woodii, Cumagloia andersonii, 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 - Leymus mollis (beach rye grass)

**II. Marine Animals**
1. Sponges - Porifera
   - Halichondria sp., Halichondria panicea, Tethys sp.
2. Anemones - Anthopleura artemesia, A. elegantissama, A. xanthogrammica, Epiactis ritteri, Epizoanthus scotinus, Metridium senile, Urticina crassicornis
3. Hydroids - Sertulariidae - Sertularella?
5. Flatworms - Platynematodes - Polyclads
6. Nematode Worms - Ribbon Worms - Emplectonema gracile, Tubulanus polymorphus
8. Polychaete Worms
   - Glyceridae
   - Nereidae - Nereis spp.
   - Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   - Spiorbidae - Spiorbis sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
   a. Amphipods - Orchestia sp.?  
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus  
   c. Crabs - Haplogaster sp., Paguridae (hermit crabs), Oregonia gracilis,  
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, 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, Tachyrhynchus sp.  
   c. Limpets - Acmaea mitra, Lottia persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites  
   d. Nudibranches - Lamellidoris fusca, Melibe leonina  
   e. Bivalves - Chlamys hastata, Clinocardium sp., C. nuttalli, Hiatella arctica, Macoma nasuta, Modiolus modiolus, Mytilus edulis,  
      Pododesmus cepio, Prototheca staminea, Saxidomus giganteus  
   f. Cephalopods - Octopus dofleini  

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?  
   b. Sea stars - Dermasterias imbricata, Evasterias truscheli, Henricia leviiscula, Leptasterias hexactis, Mediaster aequalis,  
      Orthasterias keohleri, Pycnopodia helianthoides, Solaster sp., Crossaster papposus  
   c. Sea Cucumbers - Holothurians - Eupentacta sp.  
   d. Urchins - Strongylocentrotus droebachiensis  


15. Fishes
   Cottidae  
   Stichaeidae - Xiphister atropurpureus, X. mucosus  

III. Birds
   Marbled Murrelet (2), Red-faced Cormorant (2), Pigeon Guillemot (2), Barrow’s Goldeneye (8), Sparrow (1), Glaucous-winged Gull (3), Black-legged Kittiwake (8), Western Sandpiper (2), crow (2)
Oiling throughout located in upper zone where biofilm are somewhat scarce. Black heliot, fusus, green algae, limpets, litorinidae, and barnacles all are near the upper or lower extent of their range. Rich biota below oiled areas. Red, green, brown algae are abundant.
REGION: KENAI

SEGMENT: ST/ PY-016

SUBDIVISIONS: A (1 OF 2)
SHORELINE EVALUATION

SEGMENT ST/PY-016 SUBDIVISION A (1 OF 2) DATE 4/4/90

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

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid unnecessary disturbance to unoiiled 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_59_m; V.Light_0_m; No Oil_77_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 ____________________________________ FOSC: __________ DATE: __________
EXXON __________________________________
NOAA __________________________________
USCG __________________________________


FIELD SHORELINE COMMENT SHEET

SEGMENT ST/ PY 16  SUBDIVISION: A  DATE APRIL 1, 1990

NAME  JACQUI MICHEL  SIGNATURE  [Signature]

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

The band of oil on the rock wall on the north side of the beach is very high (upper and superf) and not amenable to bioremediation. There is nothing else present suitable for manual removal.

ADEG  NAME  JOAN R. REED  SIGNATURE  [Signature]

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Due to the state and location of the oil I am recommending no treatment. I agree with all info on SSAT forms.

LAND MANAGER - US FWS

NAME  MARY PETERSON  SIGNATURE  [Signature]

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

The coat to cover present on the north wall and on the boulders on the new part of the beach is dry and firm and not suitable for the new part of the beach. If sheening does occur biodemediation or manual removal. It should be re-evaluated for treatment from this beach.
SHORELINE OILING SUMMARY

OG: MANN
USCG/NOAA
MICHEL
SEGMENT ST/ PY 16

BIO: GATR
LAND REP: PORTER - FWS
SUBDIVISION: A

EXXON BOYER
ADEG
REED
TIME: 09:00 to 09:45

TEAM NO.: 18

TIDE LEVEL: +6.5 to +3.5
DATE: 4/1/90

EST. SUBDIVISION LENGTH: 100 m

SURVEYED FROM: Foot

SURFACE SEDIMENTS: R 5% B 95% C 10% P 0% Q 0% S 0% M 0% V 0% S

SLOPE: Lang 95% Hang 0% Vert 5%

OIL CATEGORY LENGTH: W 0 m M 0 m N 70 m V 80 m NO 60 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>PATTIES</td>
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<td>TARBALLS</td>
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<td>FILM</td>
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<tr>
<td>NO OIL</td>
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PAVEMENT: H F S N/A sq. m by N/A cm

PATTIES/TARBALLS: 0 BAGS

NEAR-SHORE SHEEN? NO BR RW SL TL

OILED DEBRIS YES v NO

AMOUNT SM MD LG

DEBRIS COLLECTED YES NO

TYPE: FISHING DEBRIS

BAGS: 2

Photographs:
Roll No. 18-2
Frames (16-22)

SUBSURFACE OIL

NO DIGGING POSSIBLE - BOULDERS ARE VERY LARGE AND INTERLOCKED.

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<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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Page 1 of 1

REVIEWED: B A T DATE: 4/Am 90
**SHORELINE ECOLOGICAL SUMMARY**

**Segment ST. PY 16**  
**Subdivision A**  
**Date (mo/day/yr) 4/1/80**

**Biologist** M. CARR

(A) Substrate type and % of segment:

1. Bedrock (5)
2. Boulder (2)
3. Cobble (4)
4. Pebble (5)
5. Sand (8)
6. Sm__

(B) Overall % cover of biota (% of segment): Dense Moderate Low 100%

(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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**Gastropods**

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**Fucus**

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Wildlife Observations/General Comments:
- Sea otter w/pup (2)
- Common murre (5)
- Glaucous-winged gull (60)

Ecological Considerations:
- Site is exposed to extremely strong wave action.
- Organisms appear to have been scoured from both substrate types.

Sensitivity codes: 4-QA (Nat. Wildlife Refs), 5-R (Seabird colony),
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 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)

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 (5/7 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 unciled 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
Seabird/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 boat 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)
Anchorage (6/1 to 9/15)

6V
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 (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.
REGION: KENAI

SEGMENT: PY-16

SUBDIVISIONS: B (2 OF 2)
SEGMENT ST/ PY-016  SUBDIVISION B (2 OF 2)  DATE  4/4/90

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

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid unnecessary disturbance 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 81 ___ 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  ___ Removal  ___ Beach Cleaner
___ Snare/Absorbent Booms  ___ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: __________
ADEC  _________________________  FOSC: __________  DATE: __________
EXXON  _________________________
NOAA  _________________________
USCG  _________________________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1  PY 16  SUBDIVISION: B  DATE APRIL 1, 1990

USCG  NOAA
NAME JACQUI MICHEL  SIGNATURE J. Michel

☑ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

All the agencies agreed that further treatment was not warranted.

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

This is a very small area of splash that does not warrant further treatment. I agree with all info on SSAT forms.

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

There is a small oiled area approx 5 x 7m remaining on the south end of the boulder beach. The oil is present primarily in the form of coat and stain on and between boulders. There are scattered splashes throughout the rest of the beach. The amount and character of the oil may not warrant treatment at this time.
## SHORELINE OILING SUMMARY

**CO MAN** __USCG Michel__
**BIO MAN** __EnSCO__

**SEGMENT** __ST/ DY/06__
**SUBDIVISION** __B__

**TEAM NO.** __19__
**TIDE LEVEL:** __+5.5 ft to +4 ft__
**DATE:** __APRIL 11, 1990__

**EST. SUBDIVISION LENGTH:** __10 m__

**UPLANDS DESCRIPTION:**
- __Grass__
- __Forest__
- __Rock__

**SURVEYED FROM:**
- __Foot__
- __Boat__
- __Helo__

**WORKING DIRECTION:** __all to direction__

**SLOPE:**
- __100% Hang__
- __100% Vert__

**OIL CATEGORY LENGTH:**
- __W 0 m__
- __M 0 m__
- __N 0 m__
- __V 7 m__
- __O 7.3 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>COAT STAIN MOUSSE</td>
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<tr>
<td>PATTIES TARBALLS FILM</td>
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<td>NO OIL</td>
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**PAVEMENT:** __HF S NO sq. m by N/A cm__
**PATTIES / TARBALLS:** 0 BAGS
**NEAR SHORE SHEEN?** __No__

**OILED DEBRIS NO AMOUNT OILED DEBRIS NO AMOUNT**
- Logs
- Vegetation
- Trash
- Debris

**DEBRIS COLLECTED**
- __Yes__
- __No__

**Photographs:**
- Roll No. __18-2__
- Frames __23-25__

### SUBSURFACE OIL

<table>
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<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
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**COMMENTS**

On south end of breeder beach, there is a 5x7m zone of spatters of CT & ST complex between the buildings. These were an A-OWN AREAS OF GREAT CONCERN to spatters of oil, some of which looked like tracks from workers on last year’s cleanup.

---

**REVIEWED** __4/28/90__
SEGMENT ST PYFC

SUBDIVISION _B_

DATE _1/02/90_

CHECKLIST

- N Arrow
- Approx. Scale
- Seg/Sub Eddy
- Oil Dist.
- Width
- Length
- % Cover
- Substrate Character
- Est. HWL/LWL
- SSL
- Profile Location(s)
- Profile(s)
- Pit Location(s)
- Photo Location(s)

LEGEND

1

Pit - No Subsurface Oil

2

Pit - Subsurface Oil

Continuous Distribution

Broken Distribution

Patchy Distribution

Splashed Distribution

Oiled Vegetation

Oil Character Length (m): AP CI PO 0 CV 0 CT 7 ST 7 MS 0 PT 0 TB 0 FL 0 NO 73
SHORELINE ECOLOGICAL SUMMARY

Segment ST: PY 16 Subdivision: B (west) (of A-B) Date (mo/day/yr): 4/1/90

Biologist: M. CARR

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

(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 (O)

BARNACLES

   Subdivision

|     | Dense | Moderate | Sparse | Rare
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MYTILUS

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GASTROPODS

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FUCUS

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Wildlife Observations/General Comments:

Bald eagle (immature) (1) Bald eagle (1 = immature, 2 unident)
Sparrow (Fox?) (1)

Ecological Considerations:

Many drift logs w/no epifauna or epibionts.

Sensitivity code: same as Appendix A. Sensitive sites are not in immediate vicinity of contaminated area.
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 8/1)
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.

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  Anchorages (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 (8/15 to 2/28)
7JJ  Invertebrates harvesting

For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
REGION: KENAI
SEGMENT: ST/PY-17
SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ PY-17 SUBDIVISION A (1 OF 1) DATE 4/6/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4Q0).

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 2039m: No Oil 3129 m
Subsurface Oil Observed: Yes  No X Maximum Depth

RECOMMENDATIONS:

X No Treatment Recommended
___ Treatment Recommended
___ Manual Pickup
___ Bioremediation
___ Tarmat: Breakup
___ 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: __________
ADEC  EXXON  NOAA  USCG

FOSC: __________ DATE: ________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST / PY 17  SUBDIVISION: A  DATE 4/6/90

VSCG / INOTA
NAME: JACQUIN MICHELE  SIGNATURE: [Signature]

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS
The very light oil contamination does not warrant further treatment. This segment is ready exposed to wave activity.

ADEC
NAME: JOHN R. REED  SIGNATURE: [Signature]

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS
Very steep shoreline of bed rock and boulders with high wave energy. Very scattered splotches does not warrant treatment. I have read and agree with all data on S.S.A.T. Forms.

LAND MANAGER - USFWS
NAME: Mary Austin  SIGNATURE: [Signature]

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS
Oil contamination in this segment is very light. I feel this was a good survey and agree with the S.S.A.T. forms.
**SHORELINE OILING SUMMARY**

**SEGMENT START: PY-17**

<table>
<thead>
<tr>
<th>TEAM NO.: 118</th>
<th>TIDE LEVEL: -1.5 to 0.7</th>
<th>DATE: 1/6/90</th>
</tr>
</thead>
</table>

**EST. SUBDIVISION LENGTH:** 6354 m

**FILM COLOR:**
- I
- II
- III

**OIL CATEGORY LENGTH:** W 0 m M 0 m N 0 m V 1930 m NO 4379 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>Tarballs</td>
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</tr>
<tr>
<td>No Oil</td>
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</table>

**PAVEMENT:** HF S NA sq. m by 0 cm

**PATTIES / TARBALLS:** No BAGS

**NEAR SHORE SHEEN?** No BR RW SL TL

**OILED DEBRIS:** No

**AMOUNT:**
- Logs
- Vegetation
- Trash
- Debris

**DEBRIS COLLECTED:**
- Yes
- No

**TYPE:** NA

**#BAGS:** 0

**PHOTOGRAPHS:**
- Roll No.: ST 18-4
- Frames: (4-7)

**SUBSURFACE OIL** No pits dug because of inaccessibility and bedrock/boulders

**PIT NO.**

<table>
<thead>
<tr>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL (cm)</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE ANA</th>
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**COMMENTS**

This is a steep and inaccessible shoreline with a wide fringe of kelp. Vegetation is sparse and takes the form of widely-separated clusters of

splashes - usually on the sides of boulders and outcrops.
The oil character length is estimated by assuming 10% occurrence in OIL UC category.

Oil Character Length (m): AP_0 PO_0 CV_0 CT 200 ST 200 MS_0 PT_0 TB_0 FL_0 NO_6154
SHORELINE ECOLOGICAL SUMMARY

Segment ST: PY-17 Subdivision A (of A) Date (mo / day / yr) 4/6/80

B (24 hr) 1655 Biologist: M. CARR

(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 (g)

BARNACLES

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FUCUS

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Wildlife Observations / General Comments:

Photographs: Roll No. Frames

Ecological Considerations:

Sensitivity codes: 4-QQ (National Wildlife Refuge)
SHORELINE EVALUATION

SEGMENT ST/ PY-016 SUBDIVISION A (1 OF 2) DATE 4/4/90

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

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

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

SHPO SIGNATURE: Charles F. Heim DATE: April 14, 1990

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 59 m: V.Light 0 m: No Oil 77 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: 4/14/90
ADEC EXXON NOAA USCG

FOSC: DATE: 5/1/90

Signature:
SHORELINE EVALUATION

SEGMENT ST/ PY-016 SUBDIVISION B (2 OF 2) DATE 4/4/90

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

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

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 _104_ m: No Oil _81_ 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: 4/14/90
ADEC [Signature] DATE: 5/1-90
EXXON [Signature] DATE: [Signature]
NOAA [Signature] DATE: [Signature]
USCG [Signature] DATE: [Signature]
SHORELINE EVALUATION

SEGMENT ST/PY-17 SUBDIVISION A (1 OF 1) DATE 4/6/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ).

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: 4/17/90

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 2039 m: No Oil 3129 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: 4/17/90
ADEC ART WEINER Date
EXXON ANDY TAYLOR
NOAA BUD WESCOTT Date
USCG VERNE KNAPP Date
REGION: KENAI

SEGMENT: ST/QB-01

SUBDIVISIONS: A (1 OF 1)
SEGMENT ST/ QB-01  SUBDIVISION A (1 OF 1)  DATE  4/28/90

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)
2M  Herring spawning (4/1 to 6/15)
4LL National Parks
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:

W1de_0 m: Medium_0 m: Narrow_0 m: V.Light_26_m: No Oil_934_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 ______________________
EXXON ______________________ FOSC: ______________________ DATE: ____________
NOAA ______________________
USCG ______________________
Salmon stream mouth - fry outmigration (4/1 to 6/15)
No disturbance of stream bed or banks unless authorized by ADF&G. No beech flushing into stream drainage. No bio remediation 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 July 1 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. In any case, contact ADF&G prior to treatment for consultation and/or permit application.

AGENCY CONTACT PERSON: ADF&G Jim Fall 267-2359

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

AGENCY CONTACT PERSON: ADF&G John Monson 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 1 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

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

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

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

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

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

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

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

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

Remote release site

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

Gill net area (6/7 to 9/30)

AGENCY CONTACT PERSON: USFWS Jill Parker 786-7235

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

AGENCY CONTACT PERSON: USFWS Jill Parker 786-7235

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

AGENCY CONTACT PERSON: USFWS Jill Parker 786-7235

Set net sites (6/11 to 7/25)

AGENCY CONTACT PERSON: ADF&G John McMillan or Bruce Suzomoto 424-7511

Contact ADF&G for specific dates, locations and constraints. Restrict boat and air traffic to essential minimum. When set net sites are present (1U) 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 James Brady 424-3212

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 unoiled 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 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)

AGENCY CONTACT PERSON: US National Marine Fisheries Service Steve Zimmerman 586-7235

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

AGENCY CONTACT PERSON: ADF&G John McMillan or Bruce Suzomoto 424-7511

Contact ADF&G prior to treatment. 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: ADF&G Larry Peltz 424-3214

Sea bird colony (5/1 to 9/1)

AGENCY CONTACT PERSON: ADF&G Don Calkins 267-2403

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)

AGENCY CONTACT PERSON: ADF&G Tom Rothby 267-2206

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

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

AgENCY CONTACT PERSON: USFWS Jill Parker 786-3377

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

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

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)

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

Anchorage (6/1 to 9/15)

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

Forest Service cabins (6/11 to 9/15)

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

Lodge (6/1 to 9/15)

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

Special use destination

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

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

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

Finfish harvesting

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

Door harvesting (6/15 to 2/2)

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

Invertebrate harvesting

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

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.
FIELD SHORELINE COMMENT SHEET

SEGMENT ST: QB001  SUBDIVISION: A  (SEGMENT)  DATE: 4/26/9

USCG  NAME: Jerry Schultz  SIGNATURE: Jerry Schultz

NO TREATMENT RECOMMENDED  TREATMENT SUGGESTED

COMMENTS

ADEC  NAME: Mike Ebel  SIGNATURE: Mike Ebel

NO TREATMENT RECOMMENDED  TREATMENT SUGGESTED

COMMENTS

QB-001-A: Two areas (one on each end of segment) were found to have very small splashes of coal. This was of no substantive amount (very very light). No further impact recommended.

LAND MANAGER  NAME: Mike Tetreau  NPS  SIGNATURE: Mike Tetreau

NO TREATMENT RECOMMENDED  TREATMENT SUGGESTED

COMMENTS

Good survey. Very light splashes of coal observed at each end of the segment. No oil observed where noted last year. Removal of remaining oil is not necessary.

13/03
## SHORELINE OILING SUMMARY

**OG:** Randy Siegel  **USCG:** Jerry Schultz  **SEGMENT:** AB  **TIME:** 10:40  11/30

**BIO:** Lewis Sherman  **LAND REP:** Peter Zolmsen  **DATE:** 1/26/90

**EXXON:** Leonard Herbst  **ADEC:** Mike Ebel  **TEAM NO.:** 10

**TIDE LEVEL:** +1.5 ft  **DATE:** 1/26/90  **EST. SUBDIVISION LENGTH:** 1016 m

**UPLANDS DESCRIPTION:**  
- ☑ Grass
- ☑ Forest
- ☑ Rock
- ☐ Sun
- ☑ Clouds
- ☑ Fog
- ☑ Rain
- ☑ Snow

**SURVEYED FROM:**  
- ☑ Foot
- ☑ Boat
- ☑ Helo

**WORKING DIRECTION:**  
- N to S

**SURFACE SEDIMENTS:**  
- ☑ Sand
- ☑ Clay
- ☑ Mud
- ☑ Silt
- ☑ Rock
- ☑ Pebble
- ☑ Gravel
- ☑ Cobble
- ☑ Boulders

**SLOPE:**  
- ☑ Low
- ☑ Med
- ☑ High

**WAVE EXPOSURE:**  
- ☑ Low
- ☑ Med
- ☑ High

**OIL CATEGORY LENGTH:**  
- ☑ W
- ☑ M
- ☑ U

### SURFACE OIL

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<tr>
<td>Tarballs</td>
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| Film | | | X
| No Oil | | | X

### SURFACE OIL

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**DID YOU COLLECT DEBRIS?**  
- ☑ YES
- ☑ NO

**TYPE OF BAGS**  
- ☑

**PHOTOGRAPHS:**  
- None

### SUBSURFACE OIL

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<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
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<th>OILED INTERVAL</th>
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**COMMENTS**

Short segment consisting of pebble-gravel beach at head of Quotz Bay. An anadromous stream cut through the beach. Two splashes of oil were observed along the beach. No oiling observed in pits.

**REVIEWED:**  
- Date: 2/3/90
## Subsurface Oil (Continued)

<table>
<thead>
<tr>
<th>Pit No.</th>
<th>Pit Depth (cm)</th>
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### Comments

3/63

Reviewed by [Signature]

Date 4/23/90
SHORELINE ECOLOGICAL SUMMARY

Segment ST1 QB-1  Subdivision A  Date (mo/day/yr) 4/26/90

Time (24 hr) 1045-1130  Biologist SHARMAN

(A) Substrate type and % of segment
(1) Bedrock 5 (2) Boulder 5 (3) Cobble 10 (4) Pebble 35 (5) Sand 45 (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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GASTROPODS (Alocasia, Littorina, Lumaeus)

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Wildlife Observations/General Comments: 12 pairs Barnacles (golden), 10 pairs (5cm), 12 pairs Common mussels, 60 Steller's gulls, 11 crow, several Yellow-billed Loons, 1 Belted Kingfisher. This area excluded during the 14-point checks of evidence for intertidal shorebirds. A 2m high bagmate in the area. There are discontinuous sparse edges. Ecological Considerations:

We received no information regarding resource sensitivity for this segment. See attached ECQ map for location of possible oil and refuse stream. The benthos of this segment is not benefited from further human intrusion/disturbance.

9/63
General Comments (cont.):

... nearshore subtidally in shallow water, gritty sandy fine-sand... debris. Intertidal comments are very similar for the segment... for BB-101. Sediment, Plantlife, Chironomid, shells, many... drilled, on sandy beaches. Also an unusually great abundance... shells. Primary bivalve predators appear to be Natic... observed several Natici shells & egg cases. Plankt... pounds are pricklybacks, metamorphosing limpets, littorines, Tellin... Pagurids, resides. Abundant LTZ Entomostraca on fine-sand... beaches. As elsewhere in the general area over the past few... days, barnacle cyprids dune these settled in great numbers... but are only, beginning to metamorphose into adults. Force... recruits are recruiting well where adults are established. Newly... recruited littorines & limpets are common. Biologically, this... segment appears quite normal & healthy - exactly what would... be expected on the different substrate types (both diversity and... abundance).
SHORELINE EVALUATION

SEGMENT ST/ QB-01 SUBDIVISION A (1 OF 1) DATE 4/28/90

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)
2M Herring spawning (4/1 to 6/15)
4LL National Parks
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: [Signature] DATE: 5/5/90

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 26 m: No Oil 934 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: [Signature] DATE: 5-9-90

ADEC [Signature] DATE: 5-9-90

EXXON [Signature] DATE: 5-9-90

NOAA [Signature] DATE: 5-9-90

USCG [Signature] DATE: 5-9-90
SHORELINE EVALUATION

SEGMENT ST/ OB-01  SUBDIVISION A (1 OF 1) DATE 4/28/90

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)
2M  Herring spawning (4/1 to 6/15)
4LL  National Parks
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: [Signature]  DATE: 5/5/90

OILING CATEGORIZATION:
Wide _0_ m: Medium _0_ m: Narrow _0_ m: V.Light _26_ m: No Oil _934_ m
Subsurface Oil Observed: Yes____  No X  Maximum Depth_____

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

COMMENTS: ________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

TAG COMMENTS: ____________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

TAG APPROVAL DATE: May 5, 1990
ADEC  [Signature]  DATE: 5-9-90
EXXON  [Signature]
NOAA  [Signature]
USCG  [Signature]
REGION: KENAI

SEGMENT: ST/RB-01

SUBDIVISIONS: A (1 OF 2)
SHORELINE EVALUATION

SEGMENT ST/ RB-01 SUBDIVISION A (1 OF 2) DATE 4/19/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Possible 3N,30 Harbor seal and sea lion pupping (5/15 to 7/1)
4GG Alaska State Wilderness Park
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 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 87 m: Narrow 0 m: V.Light 300_m: No Oil 268 m
Subsurface Oil Observed: Yes X No Maximum Depth 12 cm

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

COMMENTS: Recommend manual pickup of oiled trash and mousse and bioremediate subsurface oil in areas shown on sketch map. Bioremediation should be conducted between 7/1 and 8/1 due to pinniped concerns. No time constraints for manual pickup.

TAG COMMENTS:_____________________________________________________

TAG APPROVAL DATE:_________
ADEC _______________ FOSC:_________ DATE:_________
EXXON _______________ NOAA ___________
NOAA _______________ USCG __________
PWS, SEWARD AND HOMER 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  Estuar Hatchery releases (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 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 unoiled 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 500m 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 from haulouts.

5S  Shorebird/waterbird 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  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)
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.
FIELD SHORELINE COMMENT SHEET

SEGMENT ST  RB-1  SUBDIVISION:  A  DATE  4/19/90

SCG/NOAA
NAME  Miles Hayes  SIGNATURE  [Signature]

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED
COMMENTS

I agree with comments in both reports (geology and biology). The only treatment that I would strongly recommend is bioremediation, particularly in the UTT (east central portion) where the application should be accompanied by over-turning cobble, mixing fine sediments, etc. The edge of the upland site (UTT) is a possible site for bioremediation.

Oil occurrence is controlled by seepation process, with maximum occurrences: (a) in lee of large crested outcrop in (site of area of torrent); and (b) in the sheltered eastern corner.

ADEC
NAME  Russell Kenite  SIGNATURE  [Signature]

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED
COMMENTS  RB-1  A

The heaviest oiling occurred in the northeast corner of the cove, and a large deposit of surfacing oil is the UTT. The oil was a thin emulsion of water below and between the cobble and pebbles. There was no visible oil on the eroded ADEC transect 30T-1. There was also a small patch of oil on the detached barge 6 x 30m in the lower UTT. The oil was not found in the pond under the mudplug, a small patch of oil was also spotted on the edge under the mudplug. A small patch of oil can be seen when possible. Bioremediation

Manual pick-up of the surface against a similar area was performed. Bioremediation

Manual pick-up of the surface against a similar area was performed. Bioremediation

Possible remediation of the area 6 x 30m long of oil in the lower

LAND MANAGER
NAME  Roger L. MacCubbin  SIGNATURE  [Signature]

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED
COMMENTS

In general the contents of this report. This area is in
Kachemak Bay State Wilderness Park, it is a high human use criterion.
There is some oil on the water that can be picked up.
Otherwise I agree with Miles Hayes Comments (WMT). UTT is rich
in wildlife, the small beach area in UTT between it is
should be avoided. Manual removal of oil may be called for
by overturning cobbles, small rocks and turning saturated
sediment, mouse, swastikas.
### SHORELINE OILING SUMMARY

**OG**: NW, **SEGMENT**: RB-001, **HDO**: TA, **REP**: RS, **ADEC**: RS, **KMC**: RS.

**TEAM NO.**: 14, **TIDE LEVEL**: +3.5 ft SL, **DATE**: 4/19/90

**EST SUBDIVISION LENGTH**: 940 m, **UPLANDS DESCRIPTION**: Sun, Clouds, Rain, Snow

**SURVEYED FROM**: Foot, Boat, Helo, **WORKING DIRECTION**: SE to NW

**SURFACE SEDIMENTS**: R 25%, B 50%, C 10%, P 15%, G 5%, S = %, M = %, V = %

**SLOPE**: Lang 80%, Hang 10%, Vert 10%

**WAVE EXPOSURE**: Low, Med & High

**OIL CATEGORY LENGTH**: W = m, M = m, N = m, VL = m

---

### SURFACE OIL

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**OILED DEBRIS**: Logs, Vegetation, Trash

**AMOUNT**: SM, MD, LG

**DID YOU COLLECT DEBRIS?**: Yes ☐, No ☒

**TYPE**: 

**NEAR SHORE SHEEN?**: ☐

**PAVEMENT**: HS 0 sq. m by 0 cm

**PATTIES/TARBALLS**: 0 BAGS

**OILED DEBRIS**: Logs, Vegetation, Trash

**AMOUNT**: SM, MD, LG

**DID YOU COLLECT DEBRIS?**: Yes ☐, No ☒

**TYPE**: 

**Photographs**: "Trash = 1 buoy (orange)

**Roll No.**: ST-17-1

**Frames**: 1-9

**ST-17-2**: 1-5

---

### SUBSURFACE OIL

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</table>

**SUBSURFACE OIL CHARACTER**: 

**OILED DEBRIS**: Logs, Vegetation, Trash

**OILED SUBSURFACE**: SM, MD, LG

**OILED OIL COLOR**: SM, MD, LG

**IMPACTED SUBSURFACE**: SM, MD, LG

**COMMENTS**: Pit 3- believe to be VC, not completely sure due to water @ 8 cm.

Subdivision consists generally of boulder-cobble beach w/ metamorphic rock outcrops. Surface oiling occurs as dull black coat (can be scraped of fingernail), one area of surface mouse in bedrock crevasses ~1/m x 1 m. (See next page.)

**REVIEWED**: BAT, **DATE**: 2/12/90.
### Subsurface Oil (Continued)

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL (cm)</th>
<th>BELOW OIL / FILM COLOR</th>
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</table>

**Comments:**

Subsurface oiling in area of CT/P occurs as thin layer of mousse like oil beneath boulders & cobbles. Subsurface oil appears to have a broken to patchy distribution. Bottoms of boulders (cobble) frequently have dark brown film when over turned (in area of CT/P only). Oil is generally confined to gravel/pellet/sand mixture which fills the interstices beneath top layer of boulders & cobbles. Surface mousse in Pit 15/16 area occurs generally as rim around boulder bases & extends into gravel/pellet/cobble mixture beneath surface.

Pits 9, 10, 11, 12 dug in gravel bar down to paleosol: green-brown, poorly sorted clay, sand & pebbles. Pit 9 has 0.2 cm thick OP mousse at layer atop paleosol, above 1 below mousse is clean.

---

**Reviewed Day:** Date 20 Aug 90.
SHORELINE ECLOGICAL SUMMARY

Segment ST/2 B001 Subdivision A Date (mo/day/yr) 4/9/77

Time (24 hr) 13:20 Biologist DANIEL "RAICOE"

(A) Substrate type and % of segments:
(1) Bedrock 25 (2) Boulder 50 (3) Cobble 10 (4) Pebble 5 (5) Sand 5 (6) Silt

(B) Overall % cover of biota (% of segment): Dense 40 Moderate 35 Low 25

(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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FUCUS

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Wildlife Observations/General Comments:

Glauous Gulls (Larus hyperboreus) - roughly 20; Two Eagles sighted; I believe they are mates and are nesting in the general area of the most eastern section of the segment, but was not able to actually spot the nests; in addition; one juvenile female spotted;

Ecological Considerations:

3N - Harbor Seal pupping

17GA
REVISION TO R8001A  
Biology Section  

- Text under "Wildlife Observation" has been altered to indicate that while two nesting eagles were sighted, no actual nest was found/seen. No "ST" is listed.

- Text in map indicated a site for the Bald Eagle nest (indicated by a triangle ▲) in the eastern portion of the segment has been revised to say "Bald Eagle Nesting Pair" and indicated that general area in which they were sighted.
R-1 = Roll #1
R-2 = Roll #2

Map Key: KEN-101
Name:
Date:
Data Entered:

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

ADEC Segment Length: 1587m

100 200 300 METERS
<table>
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<tr>
<th>SPECIES</th>
<th>UITZ</th>
<th>MITZ</th>
<th>LITZ</th>
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<td>CLADOPHORA SPP</td>
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<td>(SEM) BALUNUS CARIOSUS</td>
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<td>Localized dense oral</td>
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**DATE:** 4/19/90  **TIME:** 13:20  **TIDE HEIGHT:** +3.5 -1.2

1 = BEDROCK  2 = BOULDER  3 = COBBLE  5 = SAND  6 = SILT
BIOLOGICAL COMMENTS RB1A

[See enclosed map for location of areas]

[Worked from + 3.5 to +2 tidal + could not enter LTZ]

- AREA: RB1A

- Dense Littorina sitkana on bedrock and boulders in the MTZ and UTZ; this is the most dense example of L. sitkana, and Littorina in general, that I have witnessed up until now. Some areas were literally blanched with Littorina muc. that you could not see the rock. Many of them were feeding off the relatively abundant brown kelp that died and had washed up shore.

- Dense Littorina eggs; on the bottom surface of many boulders in the MTZ and UTZ; again, the most prolific example I have seen up until now.

- Rare limpet -> sparse -> moderate -> uneven, sparse

- Sparse to moderate focus on bedrock and boulders in the UTZ and MTZ.

- Much brown kelp washed up in upper MTZ.

- Dense barnacles (semi-Bullwus (various) + B. glandula) in UTZ on bedrock and boulders.

- Profuse amount of tidal pools with an abundant amount of flora and fauna; this is an extremely productive area and filled w/ green filamentous algae, Enteromorpha, Rhodeniaria palmata, brown algae (kelp), Enteromorpha, Porphyra sp., chitons (Katharina tunicata, Tonicella sp.), limpets, Littorina sitkana (w/ eggs present also), Nucella lamarckii, Pagurus larvatus, Leptasterias hexactis,
Gnorimosphaeraea oregonensis (parent), Ulva spp.  
- Dense barnacle spat (Cani Balanus) on isolated boulders in upper MTZ 
- G. oregonensis dense in tidal pools in MTZ/UTZ underneath rocks 
- Adult Mytilus edulis, dense on bedrock in MTZ 
- Moderate focus in UTZ + MTZ, adult, dense adult focus on boulders/bedrock in MTZ 
- Mytilus edulis beds dense - juvenile + new m. on 
- Profuse green + red algae in the pools

This moderately high energy beach has almost a plateau of bedrock which extends for several hundred meters out from the beach area/headlands and is filled with tidal pools. These pools have a great abundance of flora & fauna and do not appear to have had any direct damage (or, immediate damage) from the small amount of oil present, relatively speaking. This area is quite ecologically sensitive and thus should be treated with great care if treated. Increased traffic flow could be devastating, especially for the dense littorina in the tops of many protruding boulders and on bedrock. These areas which demand clean-up and are most accessible for foot traffic. There is a wide variety of fairly dense fauna & flora (Littorina, Mytilus + algae) which can be easily abused. Treatment of any kind (except localized and scout manual removal) may create more destruction than good that is gained.
REGION: KENAI

SEGMENT: ST/RB-01

SUBDIVISIONS: B (2 OF 2)
SHORELINE EVALUATION

SEGMENT ST/ RB-01 SUBDIVISION B (2 OF 2) DATE 4/19/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Possible 3N, 30 Harbor seal and sea lion pupping (5/15 to 7/1)
4GG Alaska State Wilderness Park
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 unoiled biota and substrate. If treatment is planned, special consideration should be given to the biological health and sensitivity of the area especially with regards to bioremediation.

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 16 m: No Oil 716 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 __________________________
EXXON __________________________
NOAA __________________________
USCG __________________________
FOSC: ____________ DATE: _______
PWS, SEWARD AND HOMER 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 (4/15 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 6/15)
Restrict boat traffic to essential minimum. Avoid damage to uncoiled intertidal and subtidal algae and seagrasses. 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 (9/15 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 from haulouts.

Seabird/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 6/1)
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)
Anchorages (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 ST  \( RB-1 \)  SUBDIVISION:  \( B \)  DATE  \( 4/13/90 \)

\( \square \) NO TREATMENT RECOMMENDED  \( \square \) TREATMENT SUGGESTED

COMMENTS:
I agree with NOAA and bio reports. We found very little oil in this section and do not recommend any type of cleanup.
There were some large (30 mapping) clumps of wet crude
beams in eastern half of section. Loose gravel in place. We
could not trench to bottom of these beams, thus there is a possible
oil in buried trees. However, the trees appear to be intensely
sorbed by weather.

ADEC
NAME  Russell Kunibe  SIGNATURE  Russell Kunibe

\( \square \) NO TREATMENT RECOMMENDED  \( \square \) TREATMENT SUGGESTED

COMMENTS:
The oily debris was picked up by the SSAT team.

LDNR/DOOR LAND MANAGER
NAME  Roger L. McCampbell  SIGNATURE  Roger L. McCampbell

\( \square \) NO TREATMENT RECOMMENDED  \( \square \) TREATMENT SUGGESTED

COMMENTS:
I concur with SSAT team observations and recommendations for subdivsion B. Oiled debris (tracks) picked up by team.
Thick oiled layer observed but insignificant at this location.
Several other tracks and black bean tracks observed.
SHORELINE OILING SUMMARY

SEGMENT ST1 RR-003

DATE 16:00/17:30

DATE 4/19/90

OIL CATEGORY LENGTH: W (m) M (m) N (m) V (m) L (m) LH (m)

OIL DISTRIBUTION

OIL / FILM COLOR

IMPACTED ZONES

ASPHALT PAVEMENT POOLED COVER COAT STAIN MOUSE PATT TARB FILM NO OIL

PAVEMENT: H F S O sq. m by O or

PATTIES / TARBALLS O BAGS

NEAR SHORE SHEEN? NO BR RW SL TL

OILED DEBRIS AMOUNT SM MD LG

DID YOU COLLECT DEBRIS?

Logs YES NO

Vegetation

Trash YES NO

Debris

Photographs:

Roll No. ST-17-52

Frames 69

SUBSURFACE OIL

COMMENTS

"Oil in 2 areas only, 1) Not greater then 5m on rock face as 2T/8, and 2) on 3 drift trees in storm kern w/ very sporadic splatters on nearby cobbles and boulders. Remainder of subdivision B had no observed surface or subsurface oil."
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<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
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SHORELINE ECOLOGICAL SUMMARY

Segment ST, R800 | Subdivision: A | Date (mo/day/yr): 4/19/90

Time (24 hr): 17:00 | Biologist: DANIEL RAIDER

(A) Substrate type and % of segments:
1. Bedrock 30
2. Boulder 70
3. Cobble 10
4. Pebble 35
5. Sand 5
6. Silt 5

(B) Overall % cover of biota (% of segment):
- Dense: 7
- Moderate: 10
- Low to None: 83

(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 (X)

BARNACLES

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Wildlife Observations/General Comments:
- Horned Grebe (1)
- Oscine Dulca (5)

Ecological Considerations:
- Harbor Seal Pupping 5/1 - 7/1

HA
REVISIONS TO R2001-B
BIOLOGY SECTION

- Revision to "Shoreline Ecological Summary" sheet to indicate under "Ecological Constraints" section that ST (Bald Eagle Nests) should not be included.

- Revision to map altering the indicated Bald Eagle nest to read as Bald Eagle nesting pair - so as not to indicate that a nest was sited, but that a pair of eagles (male) were sited. The actual nest was never seen.

Daniel Raider
Biologist
**FLORA:**

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Bio-Comments For P131B

[see map for Area distinction 3]

- This beach was walked at a t2 to t3.5 tide and thus the Lower Intertidal Zone was not really visible but from the top and from a distance.

AREA 1

- Moderate adult Mytilus Edulis on bedrock in UT2, dense localized packets w/ adult and juvenile mts.1.
- Pockets (possibly 10 of roughly 1 meter x 3 cm i.e. a long strip) of new Mytilus edulis, on bedrock in UT2.
- Moderate focus on bedrock in UT2.
- A large portion of the beach, especially that of Area 1, is sandy/pebbly beach consisting of little living bivalve and some organic debris in Storm burn area.
- The bedrock outcrops on either side of the sandy/pebbly beach consist of sparse to moderate vegetation & turf.

AREA 2

- This area is similar to Area 1 and consists of a smaller sandy/pebbly beach with bedrock outcroppings on either side.
- Mytilus edulis is more abundant in new settlement stage - Sparse to moderate on Bedrock in UT1.
Bio comments

RB13

- Moderate adult barnacles on bedrock in localized patches and continuous along Southern face of bedrock in a band in the ULTZ for roughly 25 meters.

- Dense focus on boulders and bedrock in NATZ along Southern face of outcrop.

- Chitons, sparse

- Limpets, adults sparse; Calliostoma setkana & Nucella lamellosa sparse to rare on outcrop

Overall this sector of the beach (RB-13) has relatively much less boroa as compared to RB-1A; all boroa is found on the bedrock outcrops which frame the core.
SHORELINE EVALUATION

SEGMENT ST/ RB-01 SUBDIVISION A (1 OF 2) DATE 4/19/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Possible 3N,30 Harbor seal and sea lion pupping (5/15 to 7/1)
4GG Alaska State Wilderness Park
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 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: Charles Z. Holmes DATE: 5/5/90

OILING CATEGORIZATION:
Wide 0 m: Medium 87 m: Narrow 0 m: V. Light 300 m: No Oil 268 m
Subsurface Oil Observed: Yes X No Maximum Depth 12 cm

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

COMMENTS: Recommend manual pickup of oiled trash and mousse and bioremediate subsurface oil in areas shown on sketch map. Bioremediation should be conducted between 7/1 and 8/1 due to pinniped concerns. No time constraints for manual pickup.

TAG COMMENTS:______________________________

TAG APPROVAL DATE: 5/4/90
ADEC Art Wathen Art Wathen
EXXON Amy Wood Amy Wood
NOAA Gary Preston Gary Preston
USCG _______ _______ DATE: 5-9-90
CHL
**LEGEND**

1 △
   - No Subsurface Oil

2 △
   - Subsurface Oil

**CHECKLIST**
- N Amoe
- Approx. Scale
- Seg/Sab Crnry
- Oil Dam
- Volcan
- Width
- Length
- % Cover
- Substrate Character
- Est. HNLWL
- SSL
- Profile Location(s)
- Part(s)
- Pit Location(s)
- Photo Location(s)

**SUBDIVISION A**

**DATE 4/19/90**

**SKETCH MAP**

- Various symbols and annotations
- Map details:
  - Bedrock crevasses
  - MS in bedrock crevasses
  - Unsurveyed
  - Chunks of bedrock
  - Subsurface feature
  - Sediment features
  - Sheen on intertidal pools

**Note:**
- Estimated linearly, not along coastline
- Extensive corerock exposures

**Character Length (m)**
- AP _ PO _ CV _ CT _ 400 _ ST _ MS _ 30 _ PT _ TB _ FL

**No 250**
SHORELINE EVALUATION

SEGMENT ST/ RB-01 SUBDIVISION B (2 of 2) DATE 4/19/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Possible 3N,30 Harbor seal and sea lion pupping (5/15 to 7/1)
4GG Alaska State Wilderness Park
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. If treatment is planned, special consideration should be given to the biological health and sensitivity of the area especially with regards to bioremediation.

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 16 m: No Oil 716 m
Subsurface Oil Observed: Yes No 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: 5/4/90
ADEC Art Wieger Art Wieger
EXXON Andy Tem Jep
NOAA Gary Peterson
USCG C. A. Reiter
In lieu of sketch

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

Driftwood in supratidal zone w/ splash of CT

KULZ cusp & swale feature w/ period of ~20m

Map Key: KEH-101
Name: G. Heyer
Date: 4-19-90

ADEC Segment Length: 1387m
XXX Wide
/// Medium
--- Narrow
TTTT Very Light
0000 No Oil

RB-1A

R-2 = Roll 2

Map Key: KEN-101
Name: 
Date: 
Data Entered: 

ADEC Segment Length: 1387m

---

Area 2
Dense myrines (mww + adults)
Dense barnacles (adults)
Very many greens
Many crabs
Medium fauna

Area 1

Photo 9 (A2)

Photo 6 (A2)

Dense barnacles
Dense myrines...
1991 MAYSAP EVALUATION

SEGMENT: RB 001  SUB: A  REGION: KEN  SURVEY DATE: 5/30/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  RESTRICTED 3/1 - 9/1

Ecological/Constraints (see page two for details)  Eagle nest

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>
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</thead>
<tbody>
<tr>
<td>N</td>
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Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other
Other

COMMENTS:

INITIAL: __________________________

TAG: __________________________

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.
MAYSAP FIELD SHORELINE COMMENT SHEET

TEAM NO. 4 SEGMENT 2B01 A SUBDIVISION A DATE 5/30/91

ADEC
NAME STEVE FERINGAON SIGNATURE

X NTR ∆ TREATMENT RECOMMENDED
SILVER AND SOME COPPER COLORED SHEENS IN WATER RUNOFF COLLECTION
POINTS AND A COUPLE OF THE TIDAL POOLS. LIGHT OIL FILMS MIXED IN WITH
SILT-MUD OBSERVED DEPOSITED IN INTERSTITIAL AREAS ATOP BEDROCK. A M-150R
WAS FOUND DEPOSITED UNDER A MUSSEL COLONY. I DON'T RECOMMEND REMOVING
THIS DUE TO THE FACT IT'S A VERY SMALL AREA WITH A DIFFICULT APPROACH
NOT BECAUSE OF THE MUSSELS. ON 05-02-91 A LOT OF MOUSSE COVERED MUSSELS
WERE REMOVED IN 2B01 AND UPON SURVEYING IT THIS YEAR, EVERY AREA OILED COVERED
MUSSELS WERE REMOVED THEY ALL HAD RECOLONIZATION.

EXXON
NAME GEORGE L. SHIRES SIGNATURE GEORGE L. SHIRES 5/30/91

X NTR Some trace 5OR/l film was found mixed
with the interstitial sand grains on the
edges of cobble and around the mussel
shell. Some light silver and rainbow
sheens were observed. Very difficult
search to assess if any shore action occur.

LANDMANAGER
NAME OF SIGNATURE

X NTR

No land rep available
See attached ADEC letter
Designating ADEC Steve Feringaon as Rep.

USCG/NOAA
NAME J. MCMANUS SIGNATURE

X NTR

very light oil signature in shell
This is to designate Stuee Ferguson of ADEC as the “acting” land manager Rep for ADNR, for MARSAP survey '91, of RB-001. He will advise me of the survey team’s findings upon completion of the segment. The reason for this temporary designation is to reduce logistical problems of providing a CRE rep for a small segment in a remote area.

Jeffrey S. Johnson  
Park Ranger, ADNR
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO.** 4  
**U.S. COAST GUARD**  
**OFFICE**  
**地段**  
**SUBDIVISION** A  
**LANDMANAGER**  
**USCG/NOAA** MCMAHON/MCDONALD  
**DATE** MAY 30/91

**TIME** 12:06 to 11:21  
**TIDE LEVEL** -1.27 r. to 0.79 r.  
**ENERGY LEVEL** X H M L  
**SURVEYED FROM**: X FOOT □ BOAT □ HELO  
**WEATHER**: □ SUN □ CLOUDS □ FOG □ RAIN □ SNOW  
**TOTAL LENGTH SHORELINE SURVEYED:** 655 m  
**NEAR SHORE SHEEN:** □ BR □ RB □ SL □ NONE  
**EST. OIL CATEGORY LENGTH:** W 0 m M 5 m N 0 m VL 136 m NO 514 m US 0 m

<table>
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<tr>
<th>LOC</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SLOPE SLOPE Type</th>
<th>AREA WIDTH</th>
<th>LENGTH</th>
<th>ZONE S U M L</th>
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<td>4</td>
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**DISTRIBUTION:** C = 91-100%; B = 81-90%; P = 11-50%; S = 1-10%; T = <5%

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

**PHOTO ROLL:** MAYSAP-4(M) - 14  
**FRAMES:** 17-21

<table>
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<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN BELOW</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE-OIL SEDIMENTS</th>
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<td>GPS - G5 M</td>
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<td>Y</td>
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<td>x</td>
<td>GPS - G5 M</td>
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</table>

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

**OG COMMENTS:**
- Very high energy beach - OPEN WATER TO HAWAII
- Flat, wave cut platform has a thin veneer of boulders, pebbles & gravels.
- Muscle beds cover the medium & light SOR at location 'B'. The SOR is generally 2 to 3 cm thick. Light SOR under muscle bed at location 'A'.
- Silver & Rainbow sheens are occasionally found in small intertidal pools.

**ITP - INTERTIDAL POOL**

**REVIEWED:** 6/3/91

**REVISED:** 5/31/98
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4
SEGMENT # R8001
SUBDIVISION A
SEA STATE 6

DATE 30 MAY '91
TIDAL HEIGHT (Range) -1.34 TO +0.67
BIOLOGIST Jim Roth
WIND SPEED/DIRECTION

PHOTOGRAPHS: ROLL # FRAMES

COMMENTS/OBSERVATIONS: (to be completed in oiled subdivisions only):


B. Boulder/Pebble w/ Moderately dense Eendo clam, "very" dense mussels, dense littorines, barnacles, limpets; moderately dense dog-whelks (incl. eggs).

C. D. Moderately dense Fucus, eelgrass, Eendo clam (all in pools), dense to extremely dense littorines (incl. eggs); dense mussels, barnacles (incl. spat), moderately dense limpets, hermit crabs, isopods, dog-whelks.

E. Boulder w/ verrucaria

GENERAL COMMENTS: A HIGH-ENERGY BEACH PROTECTED FROM STORMS BY AN OFFSHORE BEDROCK PLATFORM. INTER-TIDAL BIOTA AT THIS SITE IS HEALTHY AND THRIVING, WITH NUMEROUS ORGANISMS SHOWING SIGNS OF RECRUITMENT: Fucus, mussels, barnacles, littorines, dog-whelks (Nucella). The Boulder/Cobble Area Adjacent to the Sandy Beach is Particularly Rich, With Littorines Abundance Extraordinarily High in Some Parts, Especially Small Pools Which Occur Throughout the Area. This Area is Incidently Also Where Most of the Oil Was Found. Occurrence of Oil Had No Obvious Effect on Inter-tidal Biota Abundance or...

WILDLIFE OBSERVATIONS: TO BE COMPLETED IN ALL SUBDIVISIONS

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<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>SPECIES OBSERVED</th>
<th>SPECIES PRESENT</th>
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<tr>
<td>Other birds</td>
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<td>Pinnipeds(speccy)</td>
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<td></td>
</tr>
<tr>
<td>Whales(speccy)</td>
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<td></td>
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</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
ITS ABILITY TO REPRODUCE.

• BIRD AND MAMMAL NOTES: AN ACTIVE EAGLE NEST WAS NOTED (SEE BIO MAP), WITH BIRD SITTING ON NEST. SHE DID NOT FLY WHEN TEAM APPROACHED, BUT CROUCHED DOWN IN NEST TEAM SKIRTED AROUND NEST, MAINTAINING CA. 100M AWAY. A SECOND ADULT BIRD APPROACHED WHEN TEAM WAS SURVEYING IN ZONES C+D. THIS BIRD APPEARED SLIGHTLY AGITATED, MADE A CHIRP/SQUAWK NOISE AND PERCHED IN A NEARBY TREE (SEE "EAGLE PERCH" ON MAP). A THIRD BIRD, WITH IMMATURE PLUMAGE, FLEW THROUGH THE SUBDIVISION.

• A SMALL BLACK BEAR WAS SEEN JUST NORTH OF THE SUBDIVISION AS THE HELICOPTER APPROACHED.
1991 MAYSAP EVALUATION

SEGMENT: RB 001  SUB: A  REGION: KEN  SURVEY DATE: 5/30/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  RESTRICTED 3/1 - 9/1

Ecological/Constraints (see page two for details)  Eagle nest

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

SHPO Signature:  Timothy  Date: 6/6/91

RECOMMENDATIONS:  INITIAL  TAG  FOSC

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

COMMENTS:
INITIAL: ________________________________

TAG: ____________________________________

FOSC: __________________________________

TAG APPROVAL DATE:  JUNE 7 1991  FOSC APPROVAL DATE: 6/11/91
ADEC  
EXXON  
USCG  
NOAA  

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

TEAM NO. 4  SEGMENT RBO1 A  SUBDIVISION A  DATE 5/30/91

<table>
<thead>
<tr>
<th>ADEC NAME</th>
<th>STEVE FERGUSON</th>
<th>SIGNATURE</th>
<th>STEVE FERGUSON</th>
</tr>
</thead>
</table>

- **NTR** TREATMENT RECOMMENDED

- Silver and some copper colored sheens in water run off collection points and a couple of the tidal pools. Light oil film, mixed in with silt-mud observed deposited in interstitial areas atop bedrock. A M-1 sor was found deposited under a mussel colony. I don't recommend removing this due to the fact it's a very small area with a difficult approach. Not because of the mussels. On WB-38 a lot of mussels covered with mussels were found in RBO and upon surveying it this year, every area. Oil covered mussels were removed they all had repopulation.

<table>
<thead>
<tr>
<th>EXXON NAME</th>
<th>George P. Shiers</th>
<th>SIGNATURE</th>
<th>George P. Shiers</th>
</tr>
</thead>
</table>

- **NTR** Some trace 50/50 film was found mixed with the interstitial sand grains on the edges of cobbles and around the mussel shell. Some light silver and rainbow sheens were observed. Very difficult to access if any were active occur.

<table>
<thead>
<tr>
<th>LANDMANAGER NAME</th>
<th>OF</th>
<th>SIGNATURE</th>
</tr>
</thead>
</table>

- No land rep. available

- See attached ADEA letter designating ADEA Steve Ferguson as rep.

<table>
<thead>
<tr>
<th>USCG/NOAA NAME</th>
<th>[2003] M. MCMANUS</th>
<th>SIGNATURE</th>
</tr>
</thead>
</table>

- **NTR**

- Very light oil deposit in shell
This is to designate Steve Ferguson of ADEC as the "acting" land manager rep for ADNR, for MAPSAP survey '91, of RB-001. He will advise me of the survey team's findings upon completion of the segment. The reason for this temporary designation is to reduce logistical problems of providing a one-up for one small segment in a remote area.

Jeffrey S. Johnson
Park Ranger, ADNR
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO.** 4  
**O&G** B. Trim  
**ADEC** S. Ferguson  
**EXXON** G. Stiles  
**BIO** J. Roth  
**LANDMANAGER**  
**USCG/NOAA** McMahon/McDonald  
**DATE** May 13, 1991  
**SEGMEN** 23001  
**SUBDIVISION** A  
**TIME** 12:00 to 11:21  
**TIDE LEVEL** 1.27 ft to 0.74 ft  
**ENERGY LEVEL** X H M L  
**SURVEYED FROM** X FOOT BOAT HELO  
**WEATHER** SUN CLOUDS FOG RAIN SNOW  
**TOTAL LENGTH SHORELINE SURVEYED** 655 m  
**NEAR SHORE SHEEN** BR RB SL NONE  
**EST. OIL CATEGORY LENGTH** W 0 m M 5 m N 0 m VL 136 m NO 514 m US 0 m  

<table>
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<tr>
<th>LOC</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
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<td>MED LT SOR, SLV SHEEN</td>
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<td>4</td>
<td>4</td>
<td>X</td>
<td>LT SOR, SLV SHEEN</td>
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</tbody>
</table>

**SURFACE OIL CHARACTER**  
B - BRONZE, P - PURPLE, M - MUSTARD, O - OILY, S - SILVER, N - NONE

**ZONE**  
S - SOR, T - TRASH, M - MUCKEL, L - LITHE, U - UMBRA, I - INTERCAL

**PHOTO ROLL # MAYSAP - 4(III) - 14**  
**FRAMES** 17-21

**SUBSURFACE OIL CHARACTER**  
P - PURPLE, G - GREEN, S - SILVER, B - BROWN, R - RAINBOW, N - NONE

**SUBSURFACE OILED ZONE**  
OP - OPAL, HO - HORIZON, OR - ORANGE, TR - TRASH

**H2O LEVEL**  
Y/N - YES/NO

**SHEEN COLOR**  
B - BROWN, R - RAINBOW, S - SILVER, N - NONE

**OG COMMENTS:**  
* Very high energy beach - open water to Hawaii  
* Flat, wave cut platform has a thin veneer of boulders, pebbles and granules.  
* Muckel beds cover the medium to light sor at location 'B'. The sor is generally 2 to 3 cm thick. Light sor under muckel bed at location 'A'.  
* Silver and rainbow sheen are occasionally found in small intertial pools.

**ITP - INERTIAL POOL**
TEAM # 4
SEGMENT # 28001
SUBDIVISION A
STATE 6"
DATE 30 MAY '91
TIDAL HEIGHT (Range) -1.34 to +0.67
BIOLGIST Jim Roth
WIND SPEED/DIRECTION

COMMENTS/ OBSERVATIONS (to be completed in oiled subdivisions only):

A. Boulder/pebble area: sparse Endocladia; very dense Mussels, Littorines (incl. eggs); dense Barnacles, Limpets; Moderately dense Dogwinkles (Nucella) (incl. eggs).
B. Boulder/pebble area: Moderately dense Endocladia; very dense Mussels; dense Littorines, Barnacles, Limpets; Moderately dense Dogwinkles (incl. eggs)
C. Boulder/pebble area: Moderately dense Fucus, Ecklairs, Endocladia (all in pools): dense to extremely dense Littorines (incl. eggs); dense Mussels, Barnacles (incl. spat), Moderately dense Limpets; Hermit Crabs, Isopods, Dogwinkles.
D. Boulder/pebble area: Moderately dense Fucus, Ecklairs, Endocladia (all in pools): dense to extremely dense Littorines (incl. eggs); dense Mussels, Barnacles (incl. spat), Moderately dense Limpets; Hermit Crabs, Isopods, Dogwinkles.
E. Boulder/pebble area: Moderately dense Fucus, Ecklairs, Endocladia (all in pools): dense to extremely dense Littorines (incl. eggs); dense Mussels, Barnacles (incl. spat), Moderately dense Limpets; Hermit Crabs, Isopods, Dogwinkles.

GENERAL COMMENTS: A high-energy beach protected from storms by an offshore bedrock platform. Intertidal biota at this site is healthy and thriving, with numerous organisms showing signs of recruitment: Fucus, Mussels, Barnacles, Littorines, Dogwinkles (Nucella). The Boulder/pebble area adjacent to the sandy beach is particularly rich, with Littorine abundance extraordinarily high in some parts, especially small pools which occurs throughout the area. This area is coincidentally also where most of the oil was found. Occurrence of oil had no obvious effect on intertidal biota abundance or

WILDLIFE OBSERVATIONS

TO BE COMPLETED IN ALL SUBDIVISIONS

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<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
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<th>MARINE MAMMALS</th>
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<td>Sea Otters</td>
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<td>Pinnipeds (specify)</td>
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<td>Whales (specify)</td>
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<tr>
<td>Black Bear</td>
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Shoreline subdivision map showing important biological features attached.
Moderately Dense Endocladia; Very Dense Mussels; Dense Littorines, Barnacles, Limpets; Moderately Dense Dogwinkles (Incl. Eggs)

Rocky Bay
Sparse Endocladia; Very Dense Mussels, Littorines (Incl. Eggs); Dense Barnacles, Limpets; Moderately Dense Dogwinkles (Incl. Eggs)

Moderately Dense Focus; Eelgras, Endocladia (All in Pools); Dense to Extremely Dense Littorines (Incl. Eggs); Dense Mussels, Barnacles (Incl. Spat); Moderately Dense Limpets, Hermit Crabs, Isopods, Dogwinkles (Incl. Eggs)

Boulder Rock - Pebble - Gravel
WAVE CUT PLATFORM

Boulder Talus

North
Bird and Mammal Notes: An active eagle nest was noted (see Bio Map), with bird sitting on nest. She did not fly when team approached, but crouched down in nest. Team skirted around nest, maintaining ca. 100m away. A second adult bird approached when team was surveying in zones C+D. This bird appeared slightly agitated, made a chirp/squawk noise and perched in a nearby tree (see "eagle perch" on Map). A third bird, with immature plumage, flew through the subdivision.

A small black bear was seen just north of the subdivision as the helicopter approached.
ADDENDUM: SUBDIVISION CONSTRAINTS

SEGMENT RB-1 SUBDIVISION A (1 of 2)

WORK WINDOW

<table>
<thead>
<tr>
<th>Manual Pickup</th>
<th>WORK 7/1 - 8/15</th>
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</thead>
<tbody>
<tr>
<td>Bioremediation</td>
<td>WORK 7/1 - 7/31</td>
</tr>
</tbody>
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ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

3N,O,P,O Harbor Seal & Sea Lion
Pupping and Molting

Closed to bioremediation before 7/1 and after 7/31.
Closed to all activities before 7/1 and after 8/15.

5T Bald Eagle Nest

NO CONSTRAINT. USFWS 6/1/90 map indicates
no active nest within 400m of Segment BC-2 work site.

OTHER ECOLOGICAL CONSIDERATIONS

Do not apply bioremediation to specific areas where seals are observed to haulout. Do not chase
or harass seals or sea lions, and do not approach pups under any circumstances. When working
on or near haulouts, complete the job as quickly as possible with minimum personnel, equipment,
noise and disturbance. Keep boats and personnel as far from actual haulouts as is practical to do
the work specified. Minimize air traffic near haulouts, maintain elevation as is practical, and avoid
repeated overflights of the same haulout areas. Avoid any unnecessary disturbance or damage to
uncollected biota and substrate.

FOSC: [Signature]
Prepared by: [Signature] Date 6/12/90
ECOLOGY MAP
SEGMENT RB-1
SUBDIVISION A (1 of 2)

WORK AREAS

Seabird Colony
Eagle Nest

METERS

1 inch = 1457 feet

Exxon Company, USA
Map Key KEH-RB-1
May 17, 1990
SHORELINE EVALUATION

SEGMENT ST/ RB-01  SUBDIVISION A (1 OF 2) DATE  4/19/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Possible 3N, 30 Harbor seal and sea lion pupping (5/15 to 7/1)
4GG  Alaska State Wilderness Park
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 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: Charles F. Homer DATE: 5/5/90

OILING CATEGORIZATION:
Wide 0 m: Medium 87 m: Narrow 0 m: V. Light 300 m: No Oil 268 m
Subsurface Oil Observed: Yes X No Maximum Depth 12 cm

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

COMMENTS: Recommend manual pickup of oiled trash and mousse and bioremediate subsurface oil in areas shown on sketch map. Bioremediation should be conducted between 7/1 and 8/1 due to pinniped concerns. No time constraints for manual pickup.

TAG COMMENTS:

TAG APPROVAL DATE: 5/4/90
ADEC  DATE: 5-9-90
EXXON  DATE: 5-9-90
NOAA  DATE: 5-9-90
USCG  DATE: 5-9-90
REGION: KENAI

SEGMENT: ST/RB-03

SUBDIVISIONS: A (1 OF 1)
SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
1A Salmon stream mouth - fry outmigration (4/15 to 7/31)
1B Salmon stream mouth - spawning (7/15 to 9/10)
8AA Sensitive Estuary
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 258 m: No Oil 402 m
Subsurface Oil Observed: Yes X No Maximum Depth 15 cm

(See note on OG Form, Comments section)

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

COMMENTS: Recommend tarmat removal as indicated on sketch map. Treatment should be conducted with consent of ADF&G Habitat Division due to Salmon stream constraints.

TAG COMMENTS:_____________________________________________________
_____________________________________________________
_____________________________________________________

TAG APPROVAL DATE:___________
ADEC
EXXON FOSC:____________ DATE:___________
NOAA
USCG
USCG
NAME: R. Bryan Hittle
SIGNATURE: R. Bryan Hittle

☐ NO TREATMENT RECOMMENDED
☐ TREATMENT SUGGESTED

COMMENTS: I agree with the Shoreline Oiling Summary Report for RB-03A subdivision A.

ADEC
NAME: Russell Kunbe
SIGNATURE: Russell Kunbe

☐ NO TREATMENT RECOMMENDED
☐ TREATMENT SUGGESTED

COMMENTS: Out of 8 holes dug on the West side of the creek, 3 produced light viscolna oil in the water. The other 5 in one of the holes could be traced to a puddle with droplets of moma oil.

LAND MANAGER
NAME: ___________________ SIGNATURE: ___________________

☐ NO TREATMENT RECOMMENDED
☐ TREATMENT SUGGESTED

COMMENTS: see next page
Land manager (Pat colleagues) left without signing the "Committee Form." He gave verbal for "No Treatment Recommended." Pat will be in Anchorage tomorrow (4/11/90) and I will have him sign off then.

Rudy Sigel
4/11/90
**SHORELINE OILING SUMMARY**

**DATE:** 9/10/90  **TEAM NO.:** 17  **TIDE LEVEL:** -50 to +00  **DATE:** 9/10/90

**EST. SUBDIVISION LENGTH:** 100 m  **TIME:** 09:00 to 09:15  **TEAM NO.:** 17

**UPLANDS DESCRIPTION:**  F Grass  F Forest  F Rock

**SURVEYED FROM:**  F Foot  F Boat  F Helo  **WORKING DIRECTION:**  W to E

**SURFACE SEDIMENTS:** R % B % C % D % P % Q % G % Q % S % 30 %  M % 15 % V % 0 %

**SLOPE:**  Lang % Hang % Vert %

**WAVE EXPOSURE:**  F Low  F Med  F High

**OIL CATEGORY LENGTH:** W: 20 m M: 1/2 m N: 1/2 m VL: 30 m NO: 450 m

## SURFACE OIL

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**PAVEMENT:** H ( P S 1 sq. m by 2 cm cm

**NEAR SHORE SHEEN:** NO

**OILED DEBRIS AMOUNT**
- Logs: ✗
- Vegetation: NO
- Trash: ✗
- Debris: ✗

**DEBRIS COLLECTED**
- YES ✗
- NO

**PHOTOGRAPHS:**
- Roll No. 37-17-6
- Frames 28-30, 35, 36

**SUBSURFACE OIL**

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<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
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**COMMENTS:**

The given listed length for Segment RB-3 is 8362 meters. No length is listed for Segment RP-3A, but I measured it at 3500 meters from ADEC's map. Of this, only 2 areas were oiled from ADEC's Section 1987 survey (were inaccessible), and these were the only areas surveyed for SSAT Surveyed length: 3500 meters. The surveyed area consisted of bedrock cliffs and large sand/gravel beaches. An unknown stream 10-20 meters across and low fl ow at time of survey, flows across the largest beach. Very light oiling in this area.

**REVIEWED:** [Signature]  **DATE:** 12/27/90
<table>
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<th>PIT NO.</th>
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**COMMENTS**

* Water filled pit to about 15 cm below grade and a silver sheen was observed on the collected water. No oiling of sediments was observed, so the oiled interval is not known.*
SEGMENT ST. D-36
SUBDIVISION
DATE 10/90

CHECKLIST
- N Arrow
- Approx. Scale
- Sev/Sub Entry
- Oil Dist.
- Vegeta
- Length
- % Cover
- Substrate Character
- Est. FMB/WL
- SSL
- Profile Location(s)
- Permit(s)
- Pit Location(s)
- Photo Location(s)

LEGEND
1 △ Pit - No Subsurface Oil
2 △ Pit - Subsurface Oil

CT/C
Conversion Distribution
CT/B
Broken Distribution
CT/P
Penny Distribution
CT/S
Spherical Distribution

Oil Vegetation
1 ► Photo location, direction, and number

Sketch Map

Oil Character Length (m): AP 10 PO VIA CV BA Ct 50St 50 MS HA PT VIA TB PD FL S NO 420 45cm
SHORELINE ECOLOGICAL SUMMARY

Segment ST1 RB3A Subdivision A Date (mo/day/yr) 4/10/80

Time (24 hr) 0810-0920 Biologist M. H. Fawcett

(A) Substrate type and % of segments:
(1) Bedrock 15% (2) Boulder 10% (3) Cobble 10% (4) Pebble 10% (5) Sand 40% (6) Sediment 15%

(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)

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Wildlife Observations/ General Comments:
1 set of river otter tracks beside stream, 1 mature eagle
See Attached sheet

Ecological Considerations:
1A
1B
8AA
KODIAK ECOLOGICAL CONSTRAINTS

Salmon stream mouth - fry outmigration (4/15 to 7/31)
Salmon stream mouth - spawning (7/15 to 9/10; PEAK 8/15)
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)

Kolot Bay Hatchery release
Pink salmon - late May, early June; Chum salmon - June; Sockeye salmon - early July.

Remote release site

Gill net area

Purse seine area
Mainland, West side Kodiak, Shuyak & Mosar/Olga Bay - 6/9 to 10/1.
East side Kodiak, East side Afognak - 7/4 to 10/1.

Purse seine hook-off

Set net sites
USFWS setnet uplands permit 5/15 to 9/15.

For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.

Herring spawning (4/15 to 6/30)
Restrict boat traffic to essential minimum. Avoid damage to unveiled intertidal and subtidal algae and seagrass.
Contact ADF&G for specific dates and locations.

Harbor seal and sea lion pupping (5/10 to 6/30)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.

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 8/31)
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)
Anchorages (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
Deer harvesting (8/1 to 1/7)
Invertebrate harvesting
Bear harvesting (4/1 to 5/15 and 10/25 to 11/30)

For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
A very small stream said to be used by anadromous fish is in this subsection. No fry or other fish were seen. The stream mouth is on a fine sand beach in a cove with large outcrops and cliffs on either side. The beach is exposed to moderate to high wave energy from the southwest and the biological community on the rocks is typical of fairly exposed shores. The starfish ophiacanthus is particularly abundant in the LTZ, 70-80 specimens occurring in one aggregation near the stream mouth. Juvenile barnacles (Balanus glandula and B. cariosus) and spat (mostly Chthamalus) demarcate the rock faces. Large, old B. cariosus are abundant in some areas but are being heavily preyed upon by the Pisaster. In general, the biota appears rich and healthy. Other starfish seen were Pteraster, Dermasterias and Leptasterias. Chitons and limpets are abundant, as are large anemones and 8 or 9 species of algae. On one area of UTZ bedrock, 60 percent or more of the juvenile (3-4 mm) B. glandula in dense patches are found...
but I also observed numerous nemertean worms feeding on barnacles in the same area.
SEGMENT ST/ RB-03 SUBDIVISION A (1 OF 1) DATE 4/10/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
1A Salmon stream mouth - fry outmigration (4/15 to 7/31)
1B Salmon stream mouth - spawning (7/15 to 9/10)
8AA Sensitive Estuary
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 258 m: No Oil 402 m
Subsurface Oil Observed: Yes X No Maximum Depth 15 cm

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 ___ Beach Cleaner
____ Removal ___ Other (see comments)

COMMENTS: Recommend tarmat removal as indicated on sketch map. Treatment should be conducted with consent of ADF&G Habitat Division due to Salmon stream constraints.

TAG COMMENTS:

TAG APPROVAL DATE: 4/20/90
ADEC Art Weimer Art Weimer
EXXON Andy Taylor [Signature]
NOAA Bullwinkle [Signature]
USCG [Signature]
1991 MAYSAP EVALUATION

SEGMENT: RB 003  SUB:  A  REGION:  KEN  SURVEY DATE: 5/15/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  RESTRICTED 3/1 - 9/15

Ecological/Constraints (see page two for details)  Eagle nest, 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>
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</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 ___________________________  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.

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: Doug Hill - ADTGE  SIGNATURE: Doug Hill

TEAM NO. 6 - HELA  SEGMENT: RB-003  SUBDIVISION: A  DATE: 5/15/91

- NTR Nice BEACH.

EXXON
NAME: Rex Coulter  SIGNATURE: Rex R. Coulter

- NTR Nothing at this BEACH to COMMENT about, OTHER than the SCENIC BEAUTY.

LANDMANAGER
NAME: Sarah Fournier of Port Graham  SIGNATURE: Sarah Fournier

- NTR Light oiling above the rock crevice - NO RECENT OIL or SIGNIFICANT CONCERNS. More like residual and spread. Half sq meters covering picked up and by the rock shelf near the nine 1x3 meter count.

USCG/NOAA
NAME: Chief Ken & Gary Shigemaki  SIGNATURE: Ken & Gary Shigemaki

- NTR shorelines, or places where it is likely to reach the water again.

Concur with ADTGE comments. A fine Sandy BEACH that seemed somewhat surreal after miles of ankle-staining Boulder COBBLE SHORELINES surveyed. A stream runs down the West Side of the Beach, and one isolated occurrence of 300 and SWEEN was noted just below a jumble of deadfalls and logs across the stream bed. Vero crew recovered same coat was observed on a rock face on the Southwest Corner of the BEACH. These were the only evidence of oiling observed. On the East Side of the Beach, heavy plank growth covered a Bedrock Outcrop with an extremely heavy Recruitment of Young Mussels (1-2 yrs), all consistently small. A PERILOCABIN was located in the Supratidal along the Northeast Shoreline.
## MAYSAP SHORELINE OILING SUMMARY

**TEAM NO.** 6-Helo  
**SEGMENT** RB-3  
**DATE** 15-1-91

**DEPOT**  
**EXXON** R. Coulter  
**USCG/NOAA** Chief Jenson / B. Shigenaka

**TIME** 10:50 to 11:20  
**TIDE LEVEL** 11 ft. to 0.5 ft.  
**ENERGY LEVEL**
- **FOOT**
- **BOAT**
- **HELO**
  - **FOOT**  
- **BOAT**  
- **HELO**

**WEATHER**
- **SUN**  
- **CLOUDS**  
- **FOG**  
- **RAIN**  
- **SNOW**

**SURVEYED FROM**
- **FOOT**  
- **BOAT**  
- **HELO**

**TOTAL LENGTH SHORELINE SURVEYED:** 407 m  
**NEAR SHORE SHEEN:**
- **BR**  
- **RB**  
- **SL**  
- **NONE**

**EST. OIL CATEGORY LENGTH:**
- **W** m  
- **M** m  
- **N** m  
- **V** m  
- **L** m  

<table>
<thead>
<tr>
<th>LOC</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>AREA</th>
<th>ZONE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ON Bedrock face</td>
</tr>
</tbody>
</table>

**DISTRIBUTION:**
- **C** = 91-100%;
- **B** = 51-60%;
- **P** = 11-50%;
- **S** = 1-10%;
- **T** = <1%

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

**PHOTO ROLL #:** MAYSAP - 6 - 15

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN ZONE</th>
<th>H2O LEVEL</th>
<th>SHEEN COLOR</th>
<th>PIT SUBSURFACE</th>
<th>SUBSURFACE SEDIMENTS</th>
<th>NOTES</th>
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<tbody>
<tr>
<td>1</td>
<td>30</td>
<td>X</td>
<td></td>
<td>20</td>
<td></td>
<td></td>
<td>SPHO</td>
<td></td>
</tr>
</tbody>
</table>

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

**OG COMMENTS:** Segment located on the west side of Rock Bay consisting of sandy, pecky beaches between bedrock headlands with an Annap Stream #242-31-10125 at the west end of the segment. The oil found here was a CT/st along a 3 m length of vertical bedrock face. A 0.1 m² area of sandy soil was found and completely removed in front of the log jam extent of the Annap Stream.
ANAD STREAM
# 242-31-10125

PHOTO SITES, RB-3A
ROLL 6-15, FRAMES 19 THRU 23

Photo Sites, RB-3A
Roll 6-15, Frames 19 Thru 23

Kenai Peninsula

Rocky Bay

0
50
METERS

Reviewed 5.17.91
A.J.

Bedrock
c/or slope

Evergreen

Logs

Photo Sites

Bedrock

CT/SST
167.3 m, <1%
ON Bedrock Face

½ m² of SLX
WAS REMOVED
FROM HERE

A. OR

MLW

Sandy Beach

Sandy Beach

Unsurveyed

1. A.
TEAM # 6
SEGMENT # RB-003
SUBDIVISION A
SEA STATE calm
PHOTOGRAPHS: ROLL # FRAME#

DATE 5/5/91
TIDAL HEIGHT (Range) +0.5± +2.6 ft.
BIOLeGIST T.R. Schoeder
WIND SPEED/DIRECTION SW = 5-10 mph

COMMENTS/ OBSERVATIONS (to be completed in oiled subdivisions only):

95% of beach is fine sand, some outpumping east of background stream and along the far eastern end of the beach. Bald eagle nests likely found and extended quantities of juvenile herring gulls present along with
invertebrates. Marine snails and gastropods were present along with
sea anemones.

Peaeh was basically low in plant and animal life. The problematic feathered sea gulls produced large
numbers of gulls and is negotiable in the contribution
to the commercial or recreational salmon harvest in the area.

For the lack of any notable quantities of oil a
separate bio map was created to be continued.

WILDLIFE OBSERVATIONS
TO BE COMPLETED IN ALL SUBDIVISIONS

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
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<td>Seabirds</td>
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<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/kittiwakes</td>
<td>1-2 gulls</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS</th>
<th># OBSERVED</th>
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<tbody>
<tr>
<td>Sea Otters</td>
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</tr>
<tr>
<td>Pinnipeds(specify)</td>
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</tr>
<tr>
<td>Sea Lions(specify)</td>
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<td></td>
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</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
1991 MAYSAP EVALUATION

SEGMENT: RB 003  SUB: A  REGION: KEN  SURVEY DATE: 5/15/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) RESTRICTED 3/1 - 9/15

Ecological/Constraints (see page two for details) Eagle nest, 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

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

COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: 6/1/91  FOSC APPROVAL DATE: 6/1/91

ADEC  [Signature]

EXXON  [Signature]

USCG  [Signature]

NOAA  [Signature]
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.

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 HELI  SEGMENT RB-003  SUBDIVISION A  DATE 5/15/91

ADEC  
NAME Doug Hill - ADF&G  SIGNATURE Doug Hill

NTR Nice BEACH.

EXXON  
NAME Rex Coulter  SIGNATURE Rex R Coulter

NTR NOTHING AT THIS BEACH TO COMMENT ABOUT, OTHER THAN THE SCENIC BEAUTY.

LANDMANAGER  
NAME Seraphim Magrenick of Port Graham  SIGNATURE

NTR LIGHT OILING above The one Crevice No Real Oil of Significance Considered More Like Residual and Sheen. Half Sq Metes Contained Picked Up and by The Rock Bank Near the mine 1 x 3 meter count.

USCG/NOAA  
NAME Chief Tender Gary Shigemaka  SIGNATURE

NTR There is no longer any detectable oil present on the seaward adjacentshorelines, or places where it is likely to reach the water again.

A consitu with ADF&G comments, a FINE SANDY BEACH that seemed somewhat surreal after miles of ankle-straining boulder-cobble shorelines surveyed. A stream runs down the west side of the beach, and one isolated occurrence of SOR and SHEEN was noted just below a jumble of deadfalls and logs across the streambed. VECO crew recovered same, coat was observed on a rock face on the southwest border of the beach. These were the only evidence of oildng observed. On the east side of the beach, heavy focus roughly covered a bedrock outcrop with an extemely heavy recruitment of young mussels (41-2765). All consistently small, a rubber cabin was located in the supratidal along the northeast shoreline.
**Maysap Shoreline Oiling Summary**

**Team No.** G-4 Helo  
**OG** J. Fitzgerald  
**ADEC** D. Hill of ADFG  
**Exxon** R. Coulter  
**Bio.** J. Schrader  
**Land Manager.** S. McManus for Graham  
**USCG/NOAA** Chief Jenson / G. Shigenaka

**Segment** RB-3  
**Subdivision** A  
**Date** 15 Jan 1991

**Time** 10:50 to 11:20  
**Tide Level** 1 ft. to 1.5 ft.  
**Energy Level**  
- H  
- X  
- M  

**Surveyed From**  
- Foot  
- Boat  
- Helo

**Weather**  
- Sun  
- Clouds  
- Fog  
- Rain  
- Snow

**Total Length Shoreline Surveyed:** 407 m  
**Near Shore Sheen:**  
- BR  
- RB  
- SL  
- X

**EST. OIL CATEGORY LENGTH:**  
- W m  
- M m  
- N m  
- V m  
- J m  
- N m  
- US 260 m

---

**Surface Oil Character**

<table>
<thead>
<tr>
<th>LOC</th>
<th>Surface Sediment Type</th>
<th>Shore Slope</th>
<th>Width</th>
<th>Length</th>
<th>Zone</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td>m</td>
<td>m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Slope:**  
- V = Vertical  
- H = High Angle  
- M = Medium Angle  
- L = Low Angle

**Pit No.**  
**Pit Depth** (cm)  
**Subsurface Oil Character**  
**Oiled Zone**  
**Clean Below** (Y/N)  
**H2O Level** (cm)  
**Sheen Color**  
**Pit Zone**  
**Subsurface Sediments**  
**Notes**

1. 30  
2. 0

**Sheen Color:**  
- B = Brown  
- R = Rainbow  
- S = Silver  
- N = None

---

**OG Comments:** Segment located on the west side of Rock Bay consisting of sandy pocket beaches between bedrock headlands with an Angra Stream #291-71-10125 on the west end of the segment. The oil found here was a CT/ST along a 3 m length of vertical bedrock face. A 0.1 m² area of sandy soil was found and completely removed in front of the log-jam deposit of the Angra Stream.
Sketch Map (100)
RB-3-A
D. Fitzgerald
15 May 1991
1050-1120

PHOTO SITES, RB-3A
ROLL 6-15, FRAMES 19 THRU 23

ANAD STREAM
# 242-31-10125

KENAI PENINSULA

SANDY BEACH
MLW

A. CT/ST
167 3m, <1%
ON BEDROCK FRAME

1/2 m² of SOK
WAS REMOVED
FROM HERE

0 50
METERS

Rocky Bay
TEAM # 6  DATE 5/15/91
SEGMENT # RB-003  TIDAL HEIGHT (Range) +0.76 to 2.6 ft.
SUBDIVISION A  BIOLOGIST T. B. Schroeder
SEA STATE calm  WIND SPEED/DIRECTION S.W. = 5-10 mph
PHOTOGRAPHS: ROLL #  FRAME #

COMMENTS/OBSERVATIONS (to be completed in oiled subdivisions only):

95% of beach is fine sand, rock outcroppings east of the breakwater. Stream gap along the far eastern end of the beach had good tussock growth and active gull roosts. Some seagulls and black-backed gulls were present along with the gulls.

Beach was basically bare in plant and animal life. The eastward view from this area produced large number of gulls. It is negligible in its contribution to the commercial or recreational salmon fisheries in the area.

Due to the lack of any sizable quantities of oil or separate bloom, mapping continued to be unnecessary.

WILDLIFE OBSERVATIONS
TO BE COMPLETED IN ALL SUBDIVISIONS

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

Shoreline subdivision map showing important biological features attached.

Shoreline subdivision map showing important biological features attached.
ECOLOGY MAP
SEGMENT RB-3A
SUBDIVISION ___ (___ of ___)
METERS
0  673  1346
1 Inch = 2209 feet

Exxon Company, USA
Map Key: KEN-RB-3
May 17, 1990

Bio. Observations
T. A. Schroeder
RB-003-A 5/15/91

Seabird Colony
Eagle Nest
ADDENDUM: SUBDIVISION CONSTRAINTS

SEGMENT RB-3 SUBDIVISION A (1 of 1)

WORK WINDOW

Tarmat Removal
Manual Pickup
OPEN

ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

1A, 1B Salmon Stream
ADFG catalogued anadromous streams (242-31-10125 and 242-31-10130) are in Subdivision A. No constraint to manual pickup and tarmat removal.

1J Purse Seine Area
No constraint to manual pickup and tarmat removal.

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

Sensitive estuary. Avoid any unnecessary disturbance or damage to unoiled biota and substrate.
SHORELINE EVALUATION

SEGMENT ST/ RB-03 SUBDIVISION A (1 OF 1) DATE 4/10/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
1A Salmon stream mouth - fry outmigration (4/15 to 7/31)
1B Salmon stream mouth - spawning (7/15 to 9/10)
2AA Sensitive Estuary

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiied 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: 4/20/90

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 258 m: No Oil 402 m
Subsurface Oil Observed: Yes X No Maximum Depth 15 cm

(See note on OG Form, Comments section)

RECOMMENDATIONS:

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

___ X Tarmat: Breakup ___ X Removal

___ + Tarball ___ Other (see comments)

COMMENTS: Recommend tarmat removal as indicated on sketch map. Treatment should be conducted with consent of ADF&G Habitat Division due to Salmon stream constraints.

TAG COMMENTS:

__________________________

TAG APPROVAL DATE: 9/20/90

ADEC Art Weimer Art Weimer
EXXON Andy Lynn
NOAA Buck Woodall Buck Woodall
USCG Ken Astin Ken Astin

FSC: ML DATE: 9-12-90