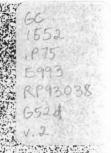
1993 SHORELINE ASSESSMENT DATA REPORT: VOLUME 2 (Ground Surveys EV037A through KN136A)



Prepared by the

Alaska Department of Environmental Conservation (ADEC)
Exxon Valdez Oil Spill Restoration
410 Willoughby Avenue
Juneau, Alaska 99801

for the

Exxon Valdez Oil Spill Trustee Council 645 "G" Street Anchorage, Alaska 99501

Project #930380

Project Manager
Ernest Piper, ADEC

Principal Surveyors
Dianne Munson, ADEC
Joni Matthews, ADEC
Marianne Profita, ADEC
Clara Crosby, ADEC

Compilation and Analysis by James C. Gibeaut, Ph.D., Consulting Geologist



January, 1994

ARLIS

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ANCHORAGE, ALASKA 90 503



SEGMENT: EV 037 A

LOCATION: Chenega Area Group, northeastern Evans Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Beach 'A' is the northern area surveyed and includes two irregularly shaped pocket beaches separated by a mostly intertidal promontory. Sediments are very poorly sorted, angular, compact cobbles to large boulders with pebbles and subsurface granular matrix. Bedrock outcrops are also present. Location 'B' as designated on the sketch map is a small beach with relatively sorted, rounded, cobble gravel, and high-tide berms in the mid to upper intertidal and boulders in the mid to low intertidal. Peat underlies portions of location 'B'.

Beach 'B' is to the south of beach 'A' and is a broad pocket beach with very poorly sorted sediments similar to beach 'A'. Very large boulders and bedrock dominate on the southern limb of this beach.

Environmental Sensitivity Index (ESI)

Type 1; exposed rocky.

Type 7; gravel beach.

Fetches and Directions (kilometers)

NE= 37

Energy Level

Moderate.

GENERAL BIOLOGICAL SETTING

Eagle nest.

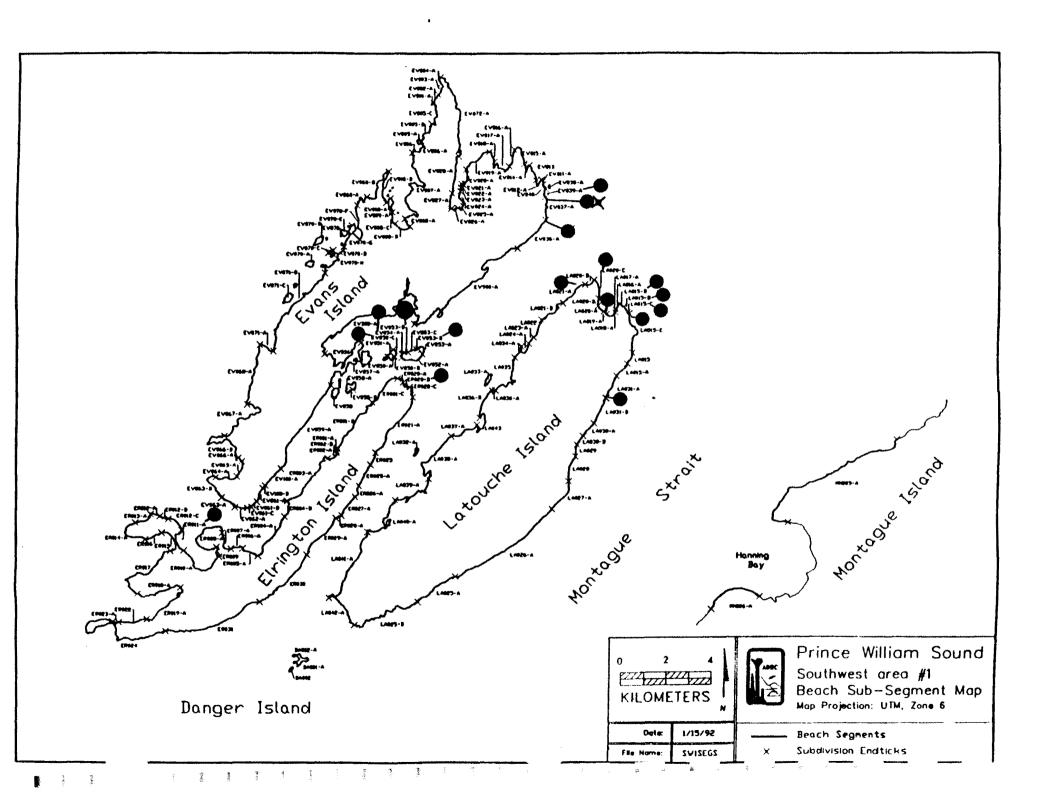
Fish harvesting.

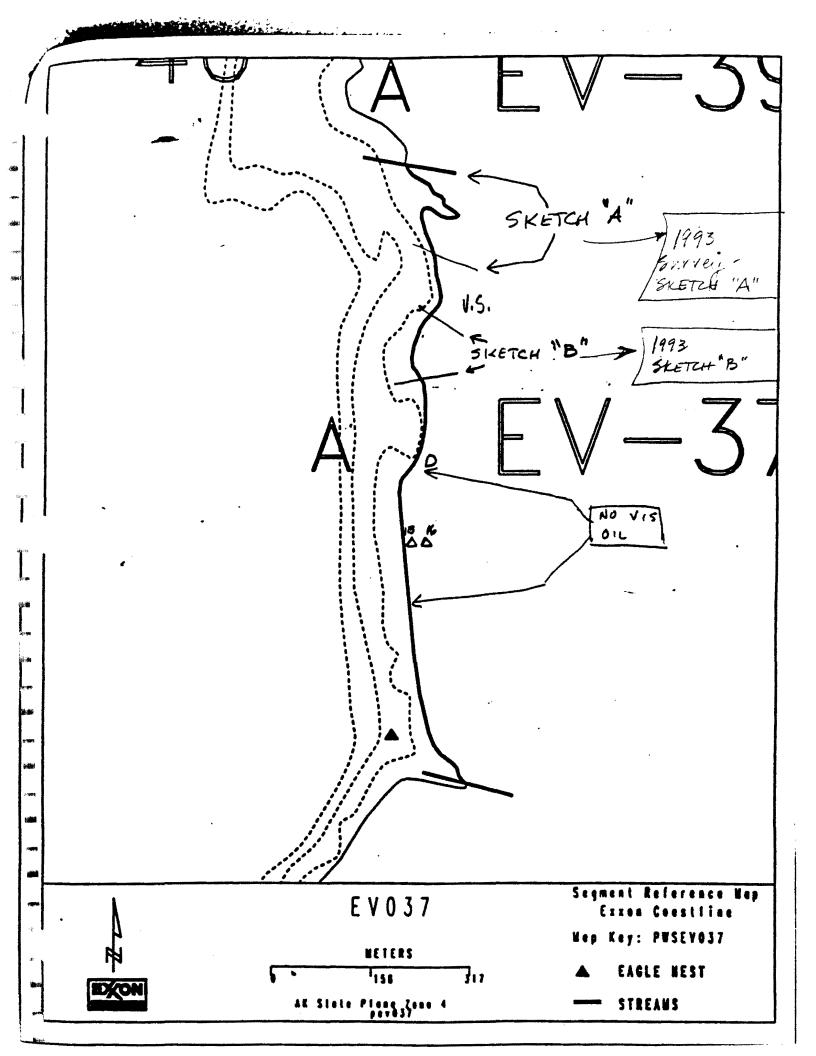
Deer harvesting.

OILING SUMMARY

In beach 'A' two large areas on each end of the site have relatively high concentration of AP between boulders. No measurable improvement has occurred since 1991. At beach 'B' two adjacent areas with relatively high concentrations of AP, SOR and MS under boulders are present, and no apparent improvement has occurred.

In beach 'A' one area with significant subsurface oiling remains. This area is associated with surface location 'A' on the 1993 survey. Here OP oil is associated with AP among boulders. Another area described by the pits 3 through 9, 11, and 12 showed great improvement since 1992 and 1991. Aggressive treatment in 1992, which included oiled-sediment removal, caused this improvement. In beach 'B' newly discovered subsurface oil, including OP, was found to occur discontinuously across the central part of the beach. Overall, the amount of subsurface oil surveyed greatly increased from 1991 to 1993. This is largely due to a more thorough 1993 survey in the area of surface location 'A' (see sketch map).





1993 ADEC RESTORATION PROJECT #930380 SHORELINE SURVEY COMMENT SHEET

	SHORELINE SURVEY	COMMENT SHEET	
OCATION EVANS 7	SISEGMENT EVOST	SUBDIVISION	DATE 8/ 1/93
AFFILIATION NAME Cail Eval	of Cheurge Corp. SIGNATURE	De	
of toioty - Ha Top Armor war	Provity area for Restoration of the beauty winter stone what heavy winter stone off - oiling persists.	n Forest. Cal not broshing prohibiting ms-this area even this area is a high s	eaking down- of colonization exposed - t elesistence use
AFFILIATION NAME Kate Hari	ch vana Force Serie SIGNATURE	Mater 1 Line	
HOR - HOROP	ourried a when - wan had	al Zones - ware Sheglow's	occurring in
AFFILIATION NAME KATIE FAR	CLEY DUR DIV OF LAND	SIGNATURE Xathlen 1	n. Farles
She following Site 37A. the reson further r @ Eagle durin @ FIA @ Substitute Substitute Substitute	The following comments are lunched to the following comments are needed to estoration is necessary. It nest - Eagle seen in vicinity in the fact distincting time in the second as the s	oted as "environmental", e based on the possi- ondition to determine by any rostoration activi	sensitivities" for and ble effects of whether the should occur
NAME	SIGNATURE SIGNATURE		our at
LEST OF BEAR LE	EACH. NO OIL IS CLIFF FACE. 164. COAT ON BOULDERS ON	PAA 172- POLKETS OF A/P TENES AND IN CREVILES IN TARMETS W/ 35 HOR/O LIONT; ISOLATED POLKETS	W/ HOR-MOR-OF UNDS BOULDBE FIELD O P UNDORNEATH OF MOR/LON/SOR
SPORMOIC ST.	AN/ com MONG U/SUP ITZ.	WENTRALLY LINCURR H	I CONDITIONS INDICATES

SUF	1993 ADEC RESTORATION SHORELINE OILING IL MEMBERS: DEC! D. MUMON, C. CROBY, R. KUNIBE. ADNR: KFARLEY, ES; KHARLEH, NMPS; SID KORN VECG: B. TRAYIC, CVC; GAIL EVAND EXXN; S. SYPKER, T. YELLEY TIDE LEVEL BURVEYED FROM: FOOT BOAT HELD WEAT LANGE TO LICATEGORY LENGTH: H								DRN YANDF EVEL _	SEGMENT EVO37 SUBDIVISION A DATE 8 1 01 1 93 -1.0 ft. to 7.0 ft. ENERGY LEVEL: H HER: SUN CLOUDS FOG RAIN SNO NEAR SHORE SHEEN: BR RB SL NONE						OATE 8 1 01 1 93 (LEVEL: H M L COG RAIN SNOW RB SL NONE		
0				ACE (SURFACE SEDIMENT	SHORE	Al	REA LENGTH			NE	-	
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į									6 - 9	N						BCP/GEPC	Cardio America
	9					,			2 - 0	V	5-9	R	1			BCPIPG	WALLEY OF

RESTORATION SHORELINE OILING SUMMARY (cont.)

PAGE 2 OF 4

TEAM NO. . SEGMENT EVO37

SUBDIVISION

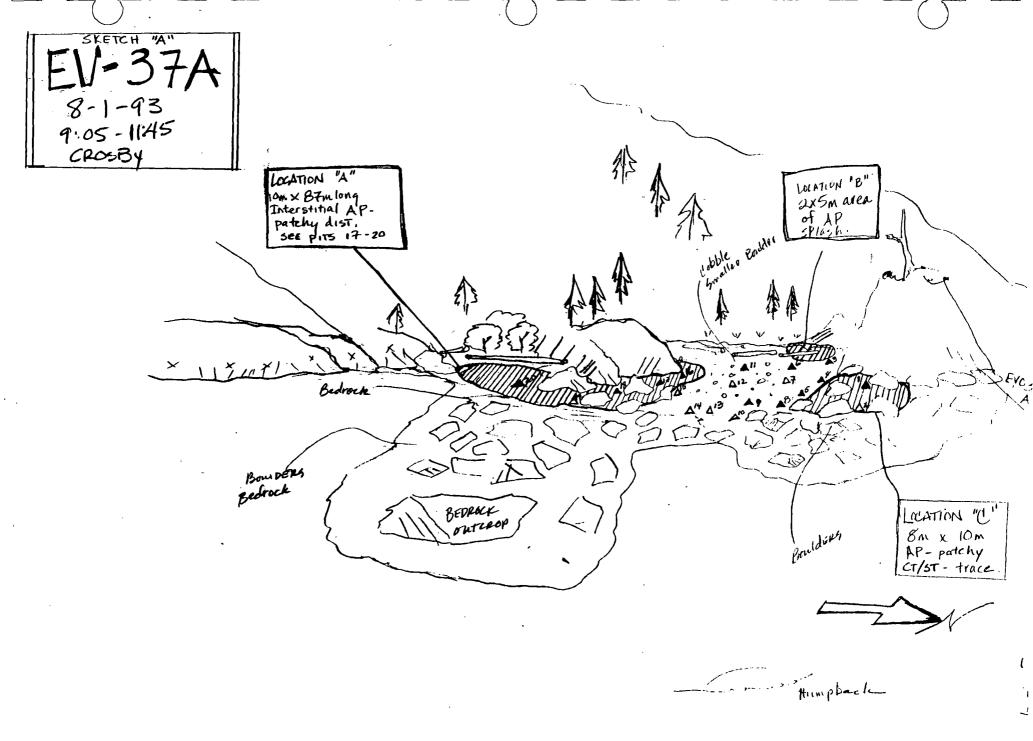
DATE 8 101 198

PIT	PIT DEPTH		OII	JBSUI CHAF	RACTI	ER			OILED ZONE	CLEAN BELOW		SHEEN COLOR		Z	TK SNE		SURFACE- SUBSURFACE	
	(cm)	OP	HOR	MOR	LOR	OF	TR	NO	cm-cm	Y/N	(cm)	BRSN	S	UI	MI	u		NOTES
23	5								9-15	N							BC/P6	
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25	13								-							/ -	84166	
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SHEEN COLOR: 8 - BROWN; R - RAINBOW; S - SILVER; N - NONE

OG COMMENTS:

BOLLING IN SKETCH "A"... at southern end of Beach, oil persists as patchy AP in BOLLING IN SKETCH "A"... at southern end of Beach, oil persists as patchy AP in BOLLING FIELD " 8 THE IOM WIDE - inling appears to HAVE permeated surface secundary to underlying peat in area of purs #3-5- viling then reappears at worthern end as prisisting AP interstially located under Boulders.





EV-37A SKETCH "B" 8/1/93

2

3 4 7 75

1993 Surface Oil Summary Segment EV037 Subdivision A

Location	Area (of Oiling MS	SOR	Square CV	CT
A	261.	0.	0.	0.	0.
В	0.6		0.	0.	0.
С	24.	0.	0.	0.	0.4
D	5.4	0.	5.4		5.4
E	33.				6.6
F	2.16	0.	0.	0.	0.
TOTALS=	326.16	0.	12.	0.	12.4

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows: continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT EV037A

								TPEAT	מפא	1993	::LE	150	. V::	. n3)	1992	CILED	SEC.	102	m.31	1491	STIES	522.	10.7	c# (1)	16", "	€ 5 -111	Veri	1 Calle	3 W	d Vil
100.	1.7	** : *:	7 0	Gr. Sr.	24.	kr.	14.7 A	1992	1995	OF	HOR	14.5	ins	SEZTE	08	нов	95.F	:68	OF/TP	OF.	858	MOP	LOF	SEZTE	1991	1992	1991	32 55 25	91,50	31, 52
ZA	17	7,18,2	20	BCP-GSPC	SUM	М		МО	Rs, MR	51.8	0.0	0.0	0.0	0.0	?	?	?	?	3	1.8	1.8	0.4	0.0	0.0	258.	2	17.5	7	?	1382.7
ZB	3-	-9,11,		CPB- MSPGPt	UM	н		Rb,MT	Rs, Rb,	0.7	0.3	1.1	0.3	0.0	4.0	0.0	0.0	0.0	0.0	5.6	3.8	0.0	0.0	0.0	8.6	20.0	43.1	-57.1	-53.6	-80.
ZC	T		1	BCP-SPGC	U	М		МО	Rs	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	Inf	0.0	In
		1-24,2 9,31,3		BC-PG	UH	М		NO	NO	4.0	1.2	0.0	0.6	1.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	26.0	0.2	0.0	16142.	Inf	Int
	•••							•••••	TOTALS=	56.7	1.5	1.1	0.9	1.2	4.0	0.0	0.0	0.1	0.0	7.4	5.6	0.4	0.0	0.0	294.	20.2	60.6	1361.3	-66.7	386.

Loc.= location name of specific oiling area (subsite).

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berna relocation, SR= sediment relocation, Rb= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.

OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments: an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2

% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of negative values indicate decreases, "Inf" (infinite percent increase) indicate increase) indicate decreases, "Inf" (infinite percent increase) indicate decreases, "Inf" (infinite percent increase) indicate increase) indicate decreases, "Inf" (infinite percent increase) indicate increase) indicate increases in the negative values indicate decreases, "Inf" (infinite percent increase) indicate increase) indicate increases in the negative values indicate increases in the negative val



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20th Century Plastics 1-800-767-0777 STOCK≠ PPV840-000

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 09:05

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW SERIES STARTING TO THE NORTH AND MOVEING TO THE SOUTH. GOES WITH PHOTOS

93RTK001 #26-#29.

TAKEN BY: RUSSELL KUNIBE

INITIALS:

ROLL #: 93RTK001 FRAME #: 27 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93

TIME: 09:05

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW SERIES STARTING TO THE NORTH AND MOVEING TO THE SOUTH. GOES WITH PHOTOS

93RTK001 #26-#29.

TAKEN BY: RUSSELL KUNIBE INITIALS: PTX
ROLL #: 93RTK001 FRAME #: 29 EVIDENCE ID#:____

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 09:05

SEGMENT#: EV037

STATION#: -0-LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW SERIES STARTING TO THE

NORTH AND MOVEING TO THE SOUTH. GOES WITH PHOTOS

93RTK001 #26-#29.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK001 FRAME #: 26 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 09:05

SEGMENT#: EV037

STATION#: -0-LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW SERIES STARTING TO THE NORTH AND MOVEING TO THE SOUTH. GOES WITH PHOTOS

93RTK001 #26-#29.

TAKEN BY: RUSSELL KUNIBE INITIALS: ATIL ROLL #: 93RTK001 FRAME #: 28 EVIDENCE ID#:_____



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OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 09:10

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW LOOKING BACK AT THE BACK AT THE BEACH FROM NORTH TO SOUTH. GOES WITH

PHOTOS 93RTK001 #30-#33. PITS WERE DUG ALONG 8 IN

FORGROUND.

TAKEN BY: RUSSELL KUNIBE INITIALS: ROLL #: 93RTK001 FRAME #: 31 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 09:10

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW LOOKING BACK AT THE BACK AT THE BEACH FROM NORTH TO SOUTH. GOES WITH

PHOTOS 93RTK001 #30-#33. LOC. A ENDED JUST TO LEFT

OF LOG IN HITZ

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK001 FRAME #: 33 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 09:10

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW LOOKING BACK AT THE

BACK AT THE BEACH FROM NORTH TO SOUTH, GOES WITH PHOTOS 93RTK001 #30-#33. C.CROSBY, D.MUNSON AND

G.EVANOFF IN LOC.B

TAKEN BY: RUSSELL KUNIBE

INITIALS:

ROLL #: 93RTK001 FRAME #: 30 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALUEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 09:10

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW LOOKING BACK AT THE

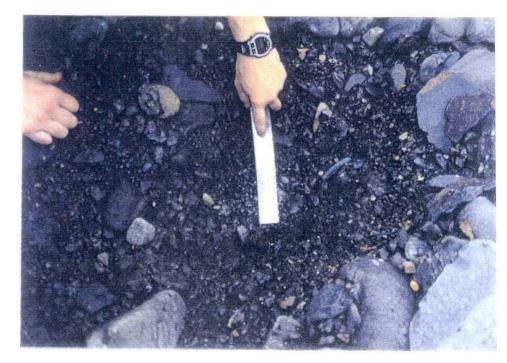
BACK AT THE BEACH FROM NORTH TO SOUTH. GOES WITH PHOTOS 93RTK001 #30-#33. LOC. A WAS ALONG THE HITZ

IN31-33

TAKEN BY: RUSSELL KUNIBE ROLL #: 93RTK001 FRAME #: 32 EVIDENCE ID#:__

INITIALS: KTK









こうしょしょ ししょ ししょうしょう 1-800-767-0777 STOCK ≠ PPV840-000

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 09:15

SEGMENT#: EV037 STATION#: -0-LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV KEYWORDS: SHORELINE EVALUATION-SRVY REASON FOR TAKING PHOTO: PHOTO OF PIT #3 WITH HOR OILING FROM 17 TO 23 CM. BELOW THE SURFACE. OVERVIEW IN PHOTO 93RTK001 # 36.

TAKEN BY: RUSSELL KUNIBE INITIALS: KT KINITIALS: KT KINITI

EXXON VALDEZ OIL SPILL OFFICIAL PHOTOGRAPH ADEC

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:30

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO LOOKING TO THE W.

C.CROSBY AND D.MUNSON ARE WORKING ON PIT #8. CLOSE UP OF PIT #8 IS IN PHOTO 93RTK002 #02. B.TRAVIS &

G. EVANOFF

TAKEN BY: RUSSELL KUNIBE

INITIALS: KIK

ROLL #: 93RTKOO2 FRAME #: 1 EVIDENCE ID#:_

EXXON VALDEZ OIL SPILL OFFICIAL PHOTOGRAPH ADEC TIME: 09:10

OFFICE: ANCHORAGE

DATE: 08/01/93

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV REASON FOR TAKING PHOTO: PHOTO OVERVIEW LOOKING BACK AT THE BACK AT THE BEACH TO SOUTH. GOES WITH PHOTOS

93RTK001 #30-#33. SHOWS LITZ AND BEDROCK OUTCROP. INITIALS: RTK.

ROLL #: 93RTK001 FRAME #: 34 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 09:15

SEGMENT#: EV037

STATION#: -0-LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO LOOKING TO THE N.

C.CROSBY AND D.MUNSON ARE WORKING ON PIT #4. PIT #3

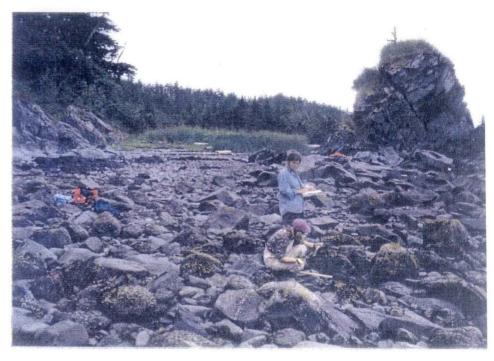
IS NEXT TO THE SHOVEL TO THE LEFT.

TAKEN BY: RUSSELL KUNIBE

INITIALS: K/Z

ROLL #: 93RTK001 FRAME #: 36 EVIDENCE ID#:









JOth Century Plastics 1-800-787-0777 3TOCK# PPV840-000

OFFICIAL	PHOTOGRAPH	ADEC	EXXON	VALDEZ	OIL	SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 09:40

SEGMENT#: EV037 STATION#: -0-LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO C. CROSBY AND D.MUNSON ARE AT PIT #14 WHICH HAD NO OIL. PIT #13 IS BETWEEN THE MUSTANG COAT AND BLUE BACK PACK ALSO HAD NO OIL.

TAKEN BY: RUSSELL KUNIBE INITIALS: ROLL #: 93RTK002 FRAME #: 3 EVIDENCE ID#:

> EXXON VALDEZ OIL SPILL OFFICIAL PHOTOGRAPH ADEC

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 09:40

STATION#: -0-SEGMENT#: EV037 LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO SHOWING AP ON THE SURFACE. SOME BOULDERS HAVE BEEN ROLLED BACK. THIS IS A CLOSE UP OF AREA SHOWN IN PHOTO 93RTK002 #04.

INITIALS: LTK TAKEN BY: RUSSELL KUNIBE ROLL #: 93RTK002 FRAME #: 5 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

PHOTO 93RTK002 #01.

DATE: 08/01/93

TIME: 09:30

SEGMENT#: EV037 STATION#: -0-LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV KEYWORDS: SHORELINE EVALUATION-SRVY REASON FOR TAKING PHOTO: CLOSE UP OF PIT #8 SHOWING BROWN SHEEN ON THE WATER IN THE PIT. OVERVIEW OF PIT #8 IS IN

TAKEN BY: RUSSELL KUNIBE INITIALS: 1 K

		EVVON	VALDEZ	OIL SPILL
OFFICIAL PHOTOGRAPH	ADEL	EVVO	*****	
OFFICIAL PROTOGRAM				

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 09:40

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

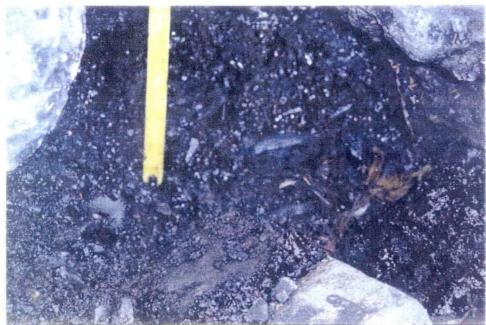
KEYWORDS: SHORELINE EVALUATION-SRVY REASON FOR TAKING PHOTO: PHOT SHOWING AP ON THE SURFACE. SOME BOULDERS HAVE BEEN ROLLED BACK. PHOTO 93RTK002 #05

IS A CLOSE UP OF THE SAME AP.

TAKEN BY: RUSSELL	KUNIBE FRAME #:	4	INITIALS: O
DUIL #: 3341400-	•		









:Oth Century Plastics 1-800-767-0777 3TOCK# PPV840-000

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 10:00

SEGMENT#: EV037

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV STATION#: -0-

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO CLOSE UP OF PIT #20. THERE IS

OP OILING FROM THE SURFACE AP DOWN TO 24 CM.

TAKEN BY: RUSSELL KUNIBE ROLL #: 93RTK002 FRAME #: 7 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 10:45

SEGMENT#: EV037 STATION#: -0-

LOCATION: NE CORNER OF EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF THE SURVEYED AREA

FROM THE SKIFF LOOKING BACK TO THE BEACH.

INITIALS: KTK TAKEN BY: RUSSELL KUNIBE ROLL #: 93RTK002 FRAME #: 9 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93

TIME: 09:40

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO CLOSE UP OF PIT #18. THERE IS

OP OILING FROM THE SURFACE AP DOWN TO THE WATER

LEVEL. THERE IS A BROWN SHEEN ON THE WATER.

TAKEN BY: RUSSELL KUNIBE

INITIALS:

ROLL #: 93RTK002 FRAME #: 6 EVIDENCE ID#:_

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 10:00

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO CLOSE UP OF SURFACE AP BETWEEN THE BOULDERS AND COBBLES IN LOC. A.

TAKEN BY: RUSSELL KUNIBE INITIALS: ROLL #: 93RTK002 FRAME #:

8 EVIDENCE ID#:









OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 10:45

SEGMENT#: EV037

STATION#: -O-

LOCATION: NE CORNER OF EVANS IS. BEACH B KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW LOOKING TO THE SOUTH AT

THE BOULDER AREA WHERE THERE IS AP/SOR/CT.

TAKEN BY: RUSSELL KUNIBE INITIALS: RT//
ROLL #: 93RTK002 FRAME #: 11 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 10:45

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE CORNER OF EVANS IS. BEACH B

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: CLOSE UP PHOTO OF PIT #21 OP FROM 1 TO 6 CM. AND OF FROM 6 TO 8CM. PHOTO 93RTK002 #12 IS A

WIDER VIEW OF THIS PIT.

TAKEN BY: RUSSELL KUNIBE INITIALS: KTKROLL #: 93RTK002 FRAME #: 13 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 10:45

SEGMENT#: EV037

STATION#: -0-LOCATION: NE CORNER OF EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF THE SURVEYED AREA

FROM THE SKIFF LOOKING BACK TO THE BEACH. THIS PHOTO IS FURTHER AWAY FROM THE BEACH THEN 93RTK002

#02

TAKEN BY: RUSSELL KUNIBE INITIALS: *TK ROLL #: 93RTK002 FRAME #: 10 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 10:45

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE CORNER OF EVANS IS. BEACH B

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF PIT #21 OP FROM 1 TO 6 CM. AND OF FROM 6 TO 8CM. PHOTO 93RTK002 #13 IS A CLOSE

UP OF THIS PIT.

TAKEN BY: RUSSELL KUNIBE INITIALS:









OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 11:15

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE CORNER OF EVANS IS. BEACH B

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF PIT #28 IN THE HITZ. THIS

PIT HAD LOR FROM 8 TO 11 CM BELOW THE SURFACE.

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK002 FRAME #: 15 EVIDENCE ID#:

EXXON VALDEZ OIL SPILL OFFICIAL PHOTOGRAPH ADEC

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 11:15

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE CORNER OF EVANS IS. BEACH B

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF SURFACE AP AND AND SOR OILING IN LOC D BEACH B. PHOTO 93RTK002 #16 IS A CLOSE UP

OF THIS AREA. TOM KELLEY, EXXON IS IN PHOTO

TAKEN BY: RUSSELL KUNIBE

INITIALS: ATK

ROLL #: 93RTK002 FRAME #: 17 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 11:00

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE CORNER OF EVANS IS. BEACH B

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF SURFACE AP IN THE BOULDER/COBBLE/BEDROCK AREA.

INITIALS: FTX

TAKEN BY: RUSSELL KUNIBE ROLL #: 93RTK002 FRAME #: 14 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 11:15

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE CORNER OF EVANS IS. BEACH B

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF SURFACE AP AND AND SOR OILING IN LOC D BEACH B. PHOTO 93RTK002 #17 IS AN OVERVIEW OF THIS AREA.

TAKEN BY: RUSSELL KUNIBE INITIALS: ROLL #: 93RTK002 FRAME #: 16 EVIDENCE ID#:





OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

E DATE: 08/01/93

TIME: 11:15

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE CORNER OF EVANS IS. BEACH B

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO:PHOTO OF SURFACE AP AND AND SOR OILING
IN LOC D BEACH B. ANOTHER VIEW OF THE SAME AREA IN

PHOTO #16 & 17. NOTICE THE MS COATING THE ROLLED

BOULDERS

TAKEN BY: RUSSELL KUNIBE

INITIALS: A TO

ROLL #: 93RTK002 FRAME #: 18 EVIDENCE ID#:



Read Service Service

Pro-Sec

SEGMENT: EV 039 A

LOCATION: Chenega Island Area Group, northeastern Evans Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Broad irregularly shaped pocket beach bound by low-lying promontories. Sediments are poorly sorted, subangular to rounded pebbles to boulders with much bedrock outcrop. Freshwater flows across the central part of the beach and is noted as a stream in the 1993 field sketch. The northern part of this site consists of rounded large pebble gravel and high-tide berms in the upper intertidal which grades to cobbles and small boulders in the lower intertidal. The area south of the stream, which is designated in the field sketch, consists of boulders and much bedrock outcrop.

Environmental Sensitivity Index (ESI)

Type 1; exposed rocky.

Type 7; gravel beach.

Fetches and Directions (kilometers)

NE=37

Energy Level

Overall high with some moderate areas.

GENERAL BIOLOGICAL SETTING

Eagle nest.

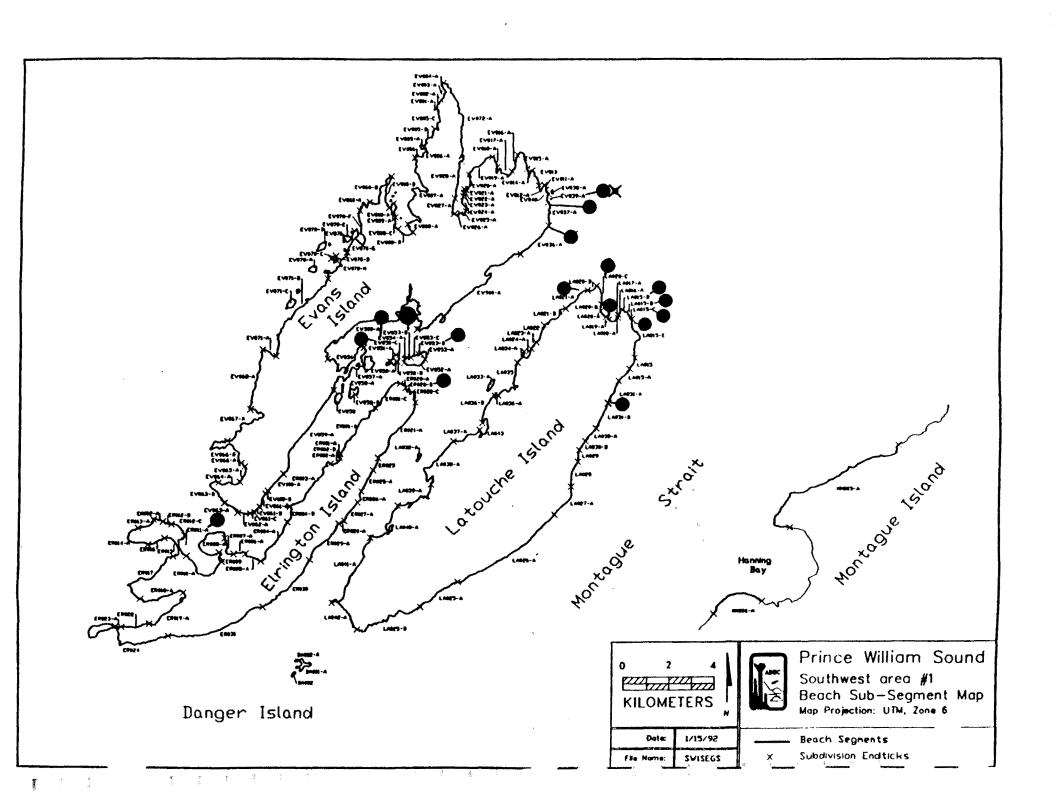
Fish harvesting.

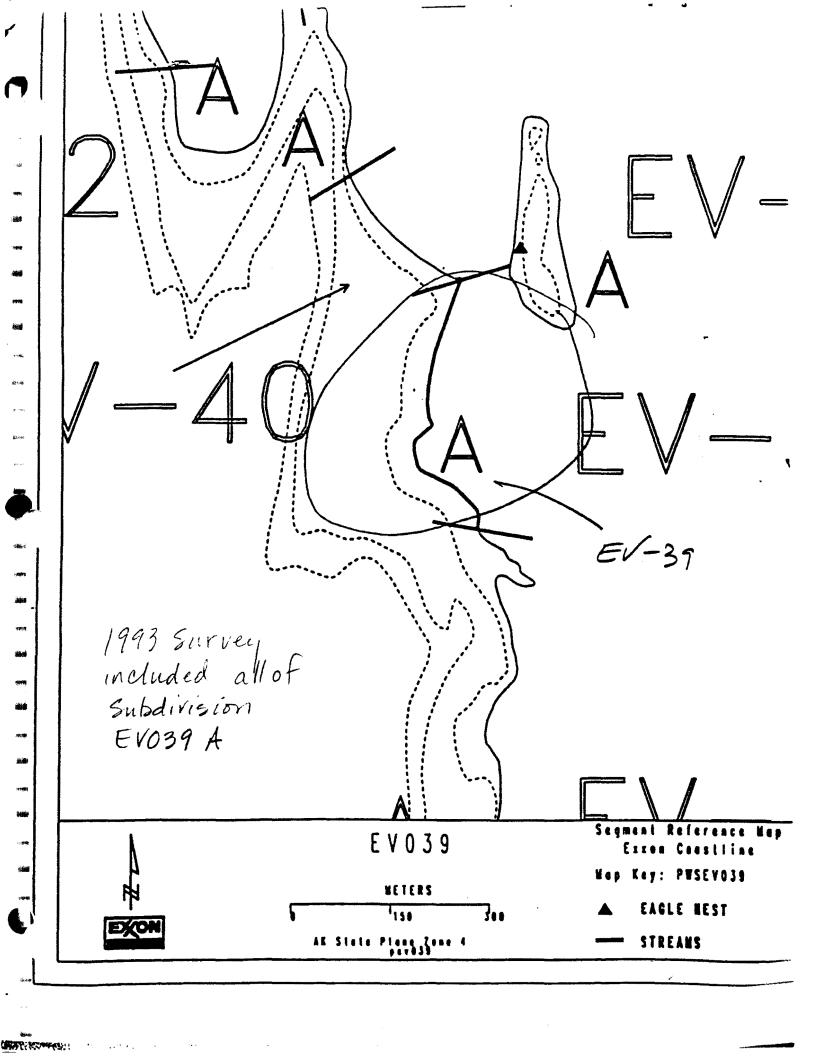
Deer harvesting.

OILING SUMMARY

A large area of soft and friable AP is present on the south part of this site (surface location 'A'). The AP is as much as 25 cm thick and thus, by definition, is associated with subsurface oil. The oil is among boulders and in bedrock fractures. Two other smaller and less concentrated areas of AP and SOR also are present in boulder and bedrock settings. There has been no measurable improvement in the amount of surface oil since 1991.

The only significant subsurface oil remaining at this site coincides with AP in surface location 'A' as described above. There have been significant decreases in subsurface oil at several locations at this site. Much of the decrease can be attributed to aggressive treatment in 1991 that included mechanical tilling and oiled-sediment removal.





1993 ADEC RESTORATION PROJECT #930380 SHORELINE SURVEY COMMENT SHEET

CATION EVANS IS SEGMENT EVO 39 SUBDIVISION A DATE 8 / 1 / 93
AFFILIATION
NAME Name Harch USOA Gover Service SIGNATURE 1600 /2
of the small section of beach Sampled, termet occurred as did would shadow to on a second bounder their oil shall apparent in Select tidal prois as we. Recommend to whem and intervention in the regard to dispersal
AFFILIATION DNR
NAME KATIE FARLEY DIV. OF LAND SIGNATURE Kathleen M. Failey
Il course uses are listed as leronomental Sensitivities".
Deagil sest: Eagle seen in vicinity. Any restoration activity
Dish Harvesting sea = This act. In probably not affected by site in its present condition unless nets and from are within
OP, HOR, MOR Zones identified within attached sketch. (3) Subsistence (Dell harvesting): Subsistence howevering is adversely effected
in the intentidal zone of this site. Deer harvesting and access to the chenega uplands would not be affected - except deer may jeed on oiled toota and be carried through the food web.
AFFILIATION NAME (Venera Coo) SIGNATURE SIGNATURE
Thisity Restaution area. Olif net breaking dron-dumpating. Surface arting H/OP + Sheering persists. High Subsisteme une
aven Chenera Boy resident consider whelf of of Bushings Rock area and 3 for prepared Seining sites.
NAME USCG BOD TRAVIS SIGNATURE Roles Shall
SMALL POCKETS OF HOR/OP DU BOULDERS ON LEST SIDE OF BEACH.
BONLOSES ON RIGHT - COST, AP OR TARMETS. BEACH AREA IS

1993 ADEC RESTORATION PROJECT # 930380 SHORELINE OILING SUMMARY

PAGE	1	OF	<u>3</u>
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Y MEMRERS	D. MUNSOM, C. CRUSEY, PUSSEL KUNIBE;
T MILIMIDLES.	ADEC - S. KORN: NMPS - K. HARICH: FS
	K FARLEY: HONR - B TRAVIS: USCG -
	G EVANDEF: CUC - S. STOKER, TKELLY:

EXXON

SEGME	NT EV039	
SUBDIV	rision <u>A</u>	
DATE _	8111	93

SEE DES COMMENTS.

~~V	E _	7	:_/	2	to _	10	_:_	75	-		HUE L	EVEL _	<u>J. 0</u> 11	i. 10 <u>~ ~ . </u>	11.		CM	יטחב	LEAST THE WITT
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	AL I	.ENG	тн	SHO	RELI	NE S	SUR	VEYI	ED: _		m	*	IEAR SH	ORE SHEE	EN:		BR		RB SL NONE
EST	r. O	IL C	ATI	EGO	RY	LE	NGT	H:	H_		_m M_		m L_	m \	/L	•	m	N	m NSm
80-11			SUA	FAC	E OII	CH	ARA	CTE	A		SURFACE			REA LENGTH		70	WE		
0	AP	MS	TB	SOR	CV	СТ	ST	FL	DB			VHML		m		U	_	u	NOTES
				5	4	5	5				REDROLK	L	10	15					SURVICE NEEDLES à DIC IN FRACTURE

DISTRIBUTION: C=61-100%; B=51-80%; P=11-80%; B=1-10%; T=<1%

BRPC

RBCP

81	OPE: V=	VERT	TCAL:	H = HK	H AN	ILE:	M = N	EDIL	M ANGLE	L-LOW	ANGLE	PHOTO	OR C	L.P				FRAMES
	PIT		_	UBSU					OILED	CLEAN	Hao	SHEEN		-	भा		SURFACE-	
L.,)	DEPTH	L	OIL	. CHAI	RACTI				ZONE		LEVEL	COLOR			WE		SUBSURFACE	
	(cm)	OP	HOR	MOR	LOR	OF	TR	NO	cm-cm	YAN	(bas)	BRSN	3	U	M	п		NOTES
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	25								•							·	BCP/GC	
3	IC																BC/CG	
II.	17				<u></u>												BCP/GC	
7 Z	17					<u> </u>					13	N					BCIGC	
-	19					 			-	-							BCP/GC	
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	37					201									, ₂ ,		PIGP	,
14	33				and I			4		 ,, 						<u> </u>	P/GP	
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	17								9-15	14							BCP/GPC	
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E	3					\vdash	- , * }			14		<u> </u>					BCP/GP	Soft AP extends took
- L	2								2-11	I N					-		BCP/GPCM	
- 3						,		-	12-13	M							M	Seeffer Smell
22	12								4-0		9	5					BCPGINSPG	V

PIT OLEPTH OLE CHARACTER OIL CHARACTER OIL CHARACTER OP HOR MORI LOR OF TR NO CITY (cm) 8 R S N S UM MI U SEDIMENTS NOTES N		-1/	39		•				SUI	BOIVISIO)N	<u> </u>			1 01 195			
OEPTH OIL CHARACTER OIL	PIT	Т	St	JBSU	RFAC	E						1 1					SURFACE-	
(cm) OP HOR MORLON OF THE TO CHICATORY YN (cm) BASN S UT WIT D SELPHASPIC IN C			OIL	CHAP	RACTI	<u> </u>	1	140										h
23 17-25 N BCP/msPG See comments Principle P		OP	HOR	MOR	LOR	OF	III	NO			(cm)	BRSN	-31	UI	MI	u		
							_				_				\dashv		CCP/MSPG	MOTED IN PI
	14								8-0	U	સ				\dashv	-	BCF/MSPE	See comments
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							044		BANKOW	<u> </u>	- A	NONE						<u> </u>

of oil were observed in pit - silver Sheen also observed in pit 150 bit source was not determined - possible in non oxide -

LOCATION "B AP - SOFT/FRIABLE PATCHY COVERAGE OF 45m x 8m WIDE AREA, EXPOSED AP TO 25cm thick (RLWS SUBSURFACE) OP/OR) AP/SOR ALSO IN FRACTURES OF BEDROCK

APPROX. 65m

LOCATION "C" SPORADIC COVERAGE ON BEDROCK SHELF BEDFOCK WY BIC

BOULDERS

, TALL SEASTACK

BERM

1993 Surface Oil Summary Segment EV039 Subdivision A

Location	Area o	f Oiling MS	Type in	•	Meters CT	
A	0.	0.	9.	9.	9.	
В	108.	0.	0.	0.	0.	the same same same same same same same sam
С	3.	0.	3.	3.	3.	
TOTALS=	111.	0.	12.	12.	12.	
AP= asphalt; Areas are co coverage of are converte continuous=	mputed by m each oil ty d to the me 95%; broken	ultiplyi pe. Fie dian per	ng the and categorial court of the court of	ffected a pries of ue as fol 0%; spor	area by the percent oil llows:	percent . coverage

SUBSURFACE OIL SUMMARY FOR SEGMENT EV039A

				7		TREAT	TMENT	1993	OILE	D SED	. VO	L. (m3)	1992	OILE	SED	. VOL	. (m3)	1991	OILED	SED.	VOL.	(m3)	WT.	ed OII	L VOL.	8 CHANG	E WT. '	ed VOL.
Loc.	1993 PIT	# Gr. Sz.	Zn.	En.	Note	1992	1991	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991	92 to	91 to	91 to
ZA	7,10,11,	CPG-PGS	U	Н	FRIABLE OR IN '92		ET,Rs, Rb,MR	0.0	0.0	2.8	1.8	0.0	0.0	4.0	2.0	0.0	0.0	24.0	16.0	0.0	0.0	0.0	11.9	22.0	184.0	-45.9	-88.0	-93.5
ZB	20-23	BCP-GPCM	U	Н	H2S SMELL		MR, Rs, Rb	5.9	0.0	2.9	1.3	0.0	0.0	0.2	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	40.9	3.0	0.0	1270.2	Inf	Inf
ZC		PGB-PGBR	U	Н		NO	MR, Rs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.0	0.0	0.0	0.0	0.0	0.0	36.0	0.0	-100.0	-100.0
ZD		BPG-BPG	U	Н		NO	MR, Rs, Rb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	15.0	0.0	0.0	0.0	0.0	0.0	1.2	75.0	-100.0	-98.4	-100.0
ZE		BP-BPR	U	Н		NO	MR, Rs		0.0		0.0		0.0			0.0			0.0	10.10			1	1	300.0		-100.0	
	*****************	. 10 7 4 7 4 7 4 7 4 7 4 7 4 7 4 7 4 7 4 7	4		di eta ta t	***********	TOTALS-	5.9	0.0	5.7	3.0	0.0	0.0	4.2	2.6	0.8	0.0	106.	16.0	0.0	0.0	0.0	52.8	26.2	595.0	101.5	-95.6	-91.

Loc. = location name of specific oiling area (subsite).

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.

OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2

% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil.

1-800-767-0777 STOCK ≠ PPV840-000

EXXON VALDEZ OIL SPILL OFFICIAL PHOTOGRAPH ADEC

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 17:15

SEGMENT#: EV039

STATION#: -0-

LOCATION: NE CORNER OF EVANS IS. JUST N. OF EVO37A

KEYWORDS: SHORELINE EVALUATION-SRVY REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF THE BEACH 8 LOOKING

TO THE NORTH FROM THE SITZ IN THE MIDDLE OF THE

BEACH. PHOTO 93RTK002 #19 IS A VIEW LOOKING TO THE

SOUTH.

TAKEN BY: RUSSELL KUNIBE

INITIALS:_ 3th

ROLL #: 93RTK002 FRAME #: 20 EVIDENCE ID#:_

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 17:25

SEGMENT#: EV039 STATION#: -0-LOCATION: N.E. CORNER OF EVANS IS. JUST N. OF EV037A

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF AP SOFT IN THE HITZ. ON THE UNDERSIDE OF THE COBBLES THE OILING IS A STICKY MOOSE, PHOTO 93RTK002 #21 IS A WIDE ANGLE OF THIS

PHOTO

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK002 FRAME #: 22 EVIDENCE ID#:

INITIALS:___

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL TIME: 17:15 OFFICE: ANCHORAGE DATE: 08/01/93 STATION#: -0-SEGMENTA: EVUSY
LOCATION: NE CORNER OF EVANS IS. JUST N. OF EVOSTA KEYWORDS: SHORELINE EVALUATION-SRYY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF THE BEACH B LOOKING TO THE SOUTH FROM THE SITZ IN THE MIDDLE OF THE BEACH. PHOTO 93RTK002 #20 IS A VIEW LOOKING TO THE INITIALS:______

INITIALS:_____

INITIALS:_____

INITIALS:____

INITIALS:____

FRAME #: 19 EVIDENCE ID#:_

ROLL #: 93RTK002 FRAME #:

> OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93

TIME: 17:25

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS. JUST N. OF EV037A KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF AP SOFT IN THE HITZ. ON THE UNDERSIDE OF THE COBBLES THE OILING IS A STICKY

MOOSE. PHOTO 93RTK002 #22 IS A CLOSE UP OF THIS PHOTO

TAKEN BY: RUSSELL KUNIBE

INITIALS:___

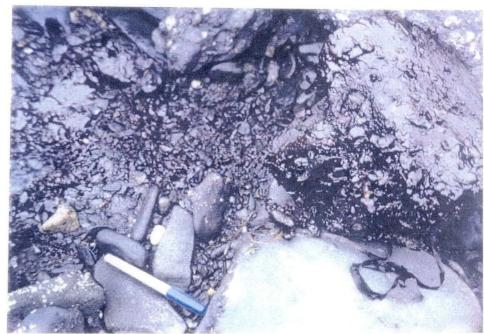
ROLL #: 93RTK002 FRAME #: 21 EVIDENCE ID#:







8----











OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

DATE: 08/01/93 OFFICE: ANCHORAGE

TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF AP BETWEEN THE COBBLES AND GRAVEL. THE SMALL YELLOW GRANUALS. IN THE PHOTO MAY

BE CUSTOM BLEND FERTLIZER USED DURING THE SPILL

CLEAN UP.

TAKEN BY: RUSSELL KUNIBE INITIALS: ROLL #: 93RTKO02 FRAME #: 24 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93

TIME: 18:00

SEGMENT#: EV039 STATION#: -0-LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EVO37

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF AP BETWEEN THE COBBLES AND GRAVEL. A ROCKS HAS BEEN ROLLED BACK TO EXPOSED A MOOSE SATURATED LAYER. PHOTO #25 IS A CLOSE-UP WIDE

VIEW.

TAKEN BY: RUSSELL KUNIBE

TAKEN BY: RUSSELL KUNIBE INITIALS: THE ROLL #: 93RTK002 FRAME #: 26 EVIDENCE ID#:

EXXON VALDEZ OIL SPILL OFFICIAL PHOTOGRAPH ADEC

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF OILING IN THE FRACTURES OF

THE BEDROCK AND BETWEEN THE COBBLES AND BOULDERS.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK002 FRAME #: 23 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93

TIME: 18:00

SEGMENT#: EV039

STATION#: -0-LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF AP BETWEEN THE COBBLES AND

GRAVEL. A COUPLE OF ROCKS HAVE BEEN ROLLED BACK TO EXPOSED A MOOSE SATURATED LAYER. PHOTO #26 IS A

CLOSE-UP

TAKEN BY: RUSSELL KUNIBE INITIALS: AT /2

ROLL #: 93RTK002 FRAME #: 25 EVIDENCE 1D#:_____









OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93

TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF PIT # 15 WHICH HAD LOR FROM

6 TO 9 CM BELOW THE SURFACE. THE PIT WAS LOCATED

JUST BELOW THE LAST HIGH TIDE LINE.

TAKEN BY: RUSSELL KUNIBE INITIALS: 1/1 K

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037 KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF A SMALL TAR SPLATTER ON A

BOULDER IN THE HITZ. NOTICE THAT THE TAR I HOLDING GRAINS OF SAND AND GRAVEL.

TAKEN BY: RUSSELL KUNIBE INITIALS: JT/L
ROLL #: 93RTK002 FRAME #: 30 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO FROM LOCATION B TOWARD

THE N. AT THE CENTER OF THE BEACH. TO THE LT. IS THE OIL DRUM AND TO THE RT. IS LOCATION A AT BASE OF

BEDROCK

TAKEN BY: RUSSELL KUNIBE INITIALS: RTL.

ROLL #: 93RTK002 FRAME #: 27 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 18:00

SEGMENT#: EV039

STATION#: -0-LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF PIT # 15 (OVERVIEW) C CROSBY AND D.MUNSON ARE KNEELED OVER THE PIT. THE PIT WAS LOCATED JUST BELOW THE LAST HIGH TIDE LINE.

TAKEN BY: RUSSELL KUNIBE INITIALS: Kt K PROLL #: 93RTK002 FRAME #: 29 EVIDENCE ID#:









OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 18:00

SEGMENT#: EV039 LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037 KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF AP WHICH HAS FORMED BETWEEN THE GRAVEL AND COBBLES BEHIND A BOULDER. THE COBBLES HERE HAVE BEEN TURNED OVER EXPOSING THE

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK002 FRAME #: 32 EVIDENCE ID#:

EXXON VALDEZ OIL SPILL OFFICIAL PHOTOGRAPH ADEC

OFFICE: ANCHORAGE

DATE: 08/01/93

TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF THE BEACH LOOKING TO

THE SOUTH. THIS PHOTO COULD GO WITRH 93RTK002 #33

AND 35 TO SHOW THE WHOLE BEACH.

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK002 FRAME #: 34 EVIDENCE ID#:____

INITIALS: RTK

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93

TIME: 18:00

SEGMENT#: EV039

STATION#: -0-LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EVO37

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF AP WHICH HAS FORMED BETWEEN THE GRAVEL AND COBBLES BEHIND A BOULDER. THE PEN CAP IS RESTING ON AP.

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK002 FRAME #: 31 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93

TIME: 18:00

SEGMENT#: EV039

STATION#: -0-LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF THE BOUTLDER IN LOCATION A LOOKING TO THE SOUTH ALONG THE BEACH. THIS AREA IS

WHERE PHOTOS # 30, 31 AND 32 WERE TAKEN.

TAKEN BY: RUSSELL KUNIBE ROLL #: 93RTK002 FRAME #: 33 EVIDENCE ID#:__





OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 07:00

SEGMENT#: EV053

STATION#: -0-

LOCATION: N SHOR OF BETTLES ISLAND.

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF THE BEACH LOOKING TO THE NORTH. THIS BEACH IS COMPOSED OF MAINLY LARGE

ANGULAR BOULDERS.

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK002 FRAME #: 36 EVIDENCE ID#:

EXXON VALDEZ OIL SPILL OFFICIAL PHOTOGRAPH ADEC

OFFICE: ANCHORAGE DATE: 08/01/93

TIME: 18:00

SEGMENT#: EV039

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS; SHORELINE EVALUATION-SRVY

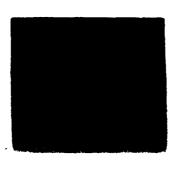
REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF THE BEACH LOOKING TO THE SOUTH. THIS PHOTO COULD GO WITRH 93RTK002 #33

AND 34 TO SHOW THE WHOLE BEACH.

TAKEN BY: RUSSELL KUNIBE

STATION#: -0-

ROLL #: 93RTK002 FRAME #: 35 EVIDENCE ID#:



SEGMENT: EV 050 C

LOCATION: Chenega Island Area Group; Bettles Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Convex shoreline with cliffs and small indentations. Sediments in small pockets include very poorly sorted surface boulders and cobbles with a subsurface sandy matrix. Beaches have steep slopes.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach. Type 8; sheltered rocky.

Fetches and Directions (kilometers)

NE=2

Energy Level

Low overall with some very low areas.

GENERAL BIOLOGICAL SETTING

Eagle nest.

Fry release.

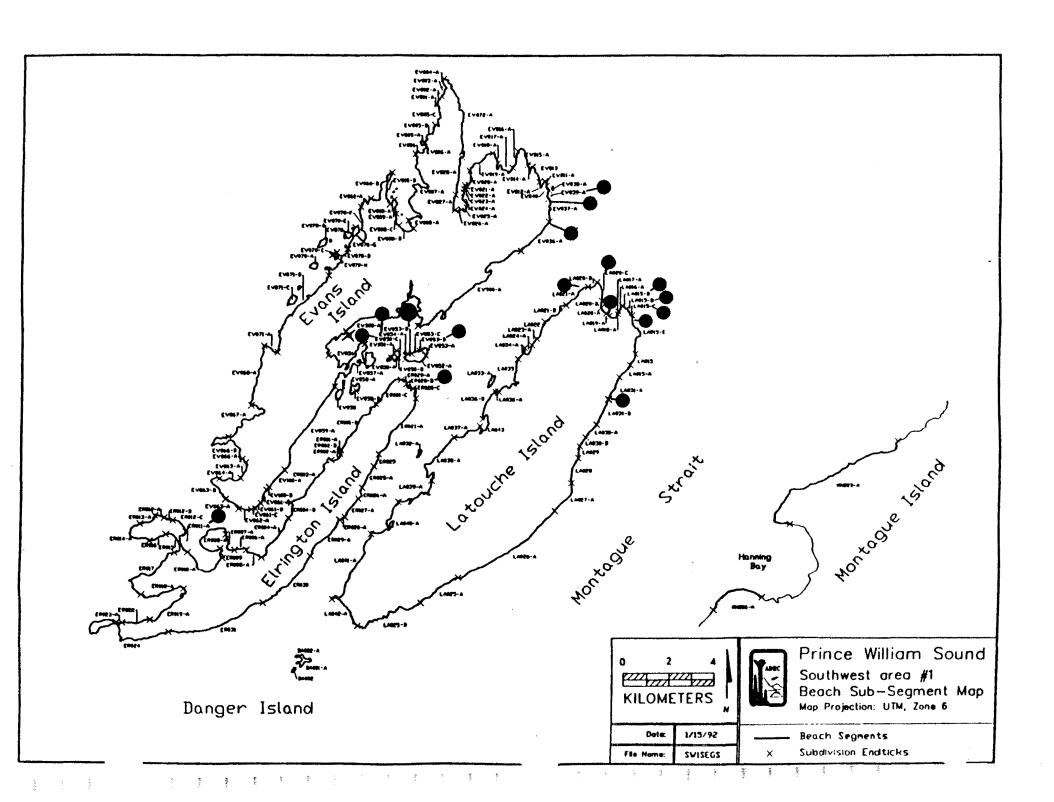
Fish harvest area.

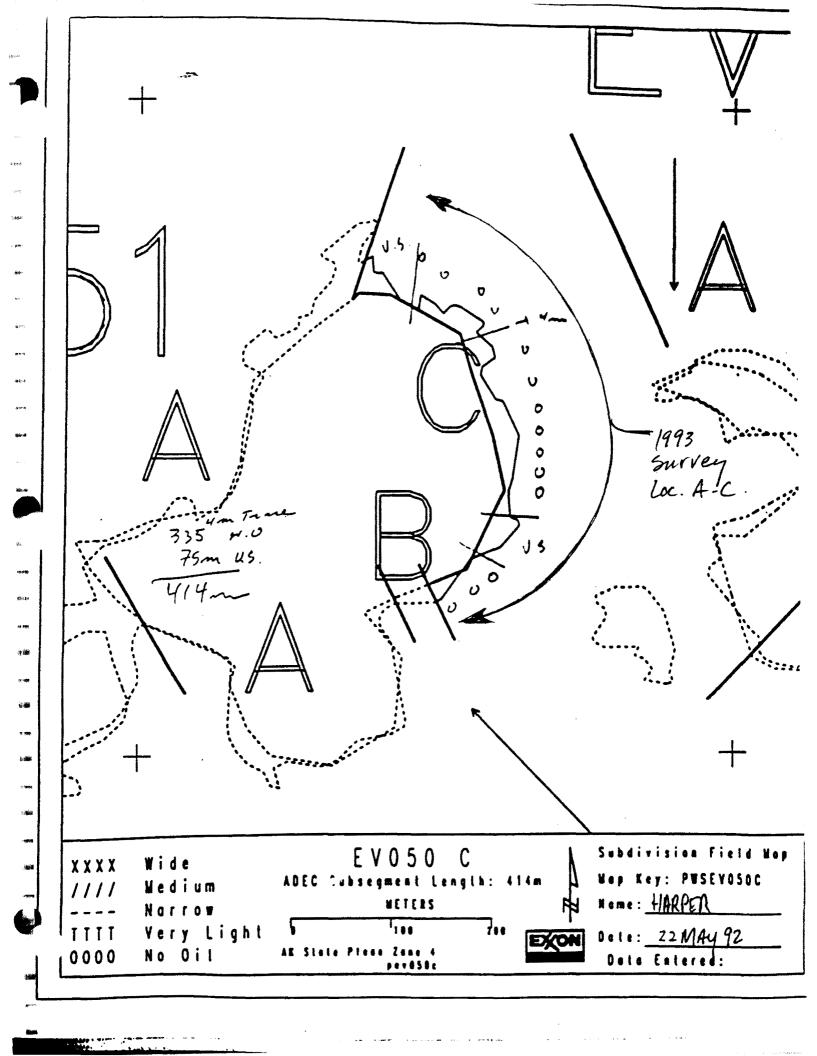
Deer harvesting.

OILING SUMMARY

Very small amounts of AP and even smaller amounts of SOR were discovered in three locations in 1993. Significant reduction of AP has occurred at these sites largely due to AP removal in 1991 and 1992.

Surveyors found no subsurface oil in 1993, and very little was recorded in 1991 and 1992.





. 0 EV-50C 0 0 Segment Reference Mep E V 0 5 0 Exzes Coastline Map Key: PWSEY050 METERS EAGLE NEST 1150 300 AE State Pleas Zone 4 pev050 STREAMS

1993 ADEC RESTORATION PROJECT #930380 SHORELINE SURVEY COMMENT SHEET

TATION $= 1.05$ IS. SEGMENT $= 1.05$ SUBDIVISION $= 0.05$ DATE $= 0.05$
ALIATION SIGNATURE SIGNATURE
I taken oil concentrations. At could be nomined. Supports marine
Manunal populations. Poettes to impt. area to Chenge By ordinate a users. All presence Doil must be
remand.
AFFILIATION
NAME OSCG - BOB TRAVIS SIGNATURE Roberts Ample
FIRST BEAR + UBRY SMALL POCKET BEACH. SMALL SPOTS OF AP.
BELOND BEACH - SIGNIFICANT SPEASH/LOAT; AP UNDER/BELIND BOULDERS
IN UITZ; ONE 4" PATCH OF MIR.
GENERALLY CONCURR W/LOMMENTS
PIT LOG.
AFFILIATION ONR NAME KATTE FARLEY DIV. OF LAND SIGNATURE KATHLEEN M. Sauley
last year's report apparently did not record the finding
of any oil. O concur with this year's finding as detailed in the Behoreline Diling Summary & Diagram
as detailed in the BShoreline Ocheng summary & Blaglam
AFFILIATION IAMESIGNATURE
JOHN TORE

1993 ADEC RESTORATION PROJECT # 930380 SHORELINE OILING SUMMARY

PAGE / OF 2 SEGMENT EVOSO SUBDIVISION_C DATE 8 12 193

TEAM MEMBERS: 2. MUNSON, C.C. ROSBY, R. KUNIBE: HOEC K FARLEY: ADNR , KHARICH: USES B. TRAVIS: USCG 5. KURN : NMPS STOKER: EXXON. TKELLEY:

TIME 11 : 20 to 18 : 20 TIDE LEVEL 5.0 ft. to 4.0 ft. ENERGY LEVEL: H M L

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

TOTAL LENGTH SHORELINE SURVEYED: _____ m

NEAR SHORE SHEEN: BR RB SL NONE

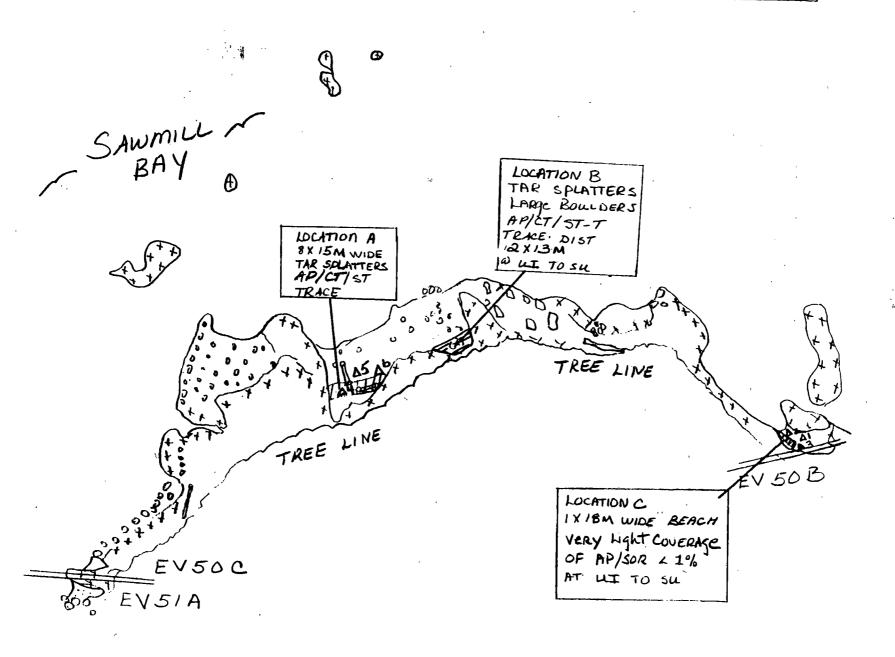
EST. OIL CATEGORY LENGTH: H____m M___m L___m VL___m N___m NS___ m

L			SUF	IFAC	E OI	L CH	IARA	CTE	A		SURFACE			REA							
0											SEDIMENT	SLOPE	WIDTH	LENGTH			DNE				
C	AP	MS	TB	BOR	CV	CT	ST	FL	DB	NO	TYPE	VHML	m	m	S	UI	MI	Ш		NOT	ES
A	7	1				7	T				BC	M	8	15	•				YERY	LIGHT	COVERAGE
a	+	\vdash				7	T		•		32	M	2	13					YERY	LIGHT	CONTRACE
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DISTRIBUTION: C = 01-100%; B = 51-60%; P = 11-50%; B = 1-10%; T = <1%

SL	OPE: V=1	VERT	TCAL:	H - HIG	BH ANG	ILE:	M = 1		M ANGLE:	L = LOW	ANGLE	PHOTO) RO	L/				FRAMES
PIT	PIT		S	UBSU	RFAC	E .			OILED	CLEAN	H2O	SHEEN			भा		SURFACE-	· ·
	DEPTH	l	Off	CHAP	PACTI	R			ZONE	BELOW	LEVEL	COLOR		ZC	ME		SUBSURFACE	
	(cm)	OP	HOR	MOR	LOR	OF	TR	NO	cm-cm	YM	(cm)	BASN	S	IJ	MI	u	SEDIMENTS	NOTES
7	19								•					77			BCP GPGN	
7	27								•								BCP GRAW	
3	15								•									conce sand.
4	19								-								BC/PGS	Spice.
5	14								•		10			1			BC/PGS	
10	15								•		12	5			,		BC/PGS	AP man pot
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EV050C 8/2/93



ingc 2062

1993 Surface Oil Summary Segment EV050 Subdivision C

Location	Area c AP	of Oiling MS	Type in SOR	Square CV	Meters CT
Α	0.6	0.	0.	0.	0.6
В	0.13	0.	0.	0.	0.13
С	0.09	0.	0.09	0.	0.
TOTALS=	0.82	0.	0.09	0.	0.73

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows: continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT EV050C

		,				TREAT	MENT	1993	OILE	D SED	. Voi	. (m3)	1992	OILE	SED.	VOL	(m3)	1991	OILED	SED.	VOL.	(m3)	WT.	ed OIL	VOL.	& CHANG	E WT.	ed VOL.
Loc.	1993 PIT	Gr. Sz.	Zn.	£n.	Note	1992	1991	OΡ	HOR	MOR	lor	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	of/tr	1993	1992	1991	92 to 93	91 to 92	91 to
ZA		BC-SGR	บ	L		Rs,MT,Rb	NO	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	-100.0	Inf	0.0
ZB		BC-BCG	U	L		NO	Rs,MR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.8	0.0	-100.0	-100.0
2C		PC-PM	U	VL.		NO	MR, Rs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		1	0.0		· ·			0.0		-100.0
							TOTALS=	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.0	0.0	1.6	1.2	-100.0	33.3	-100.0

Loc. = location name of specific oiling area (subsite).

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

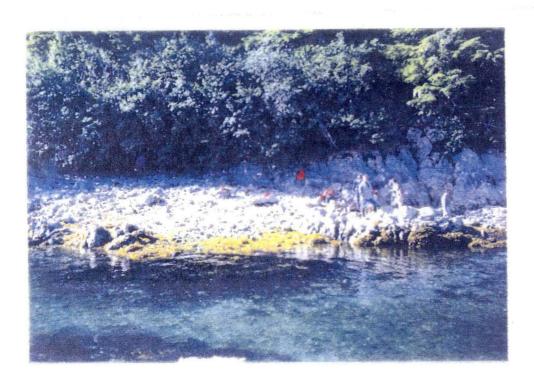
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.

OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments—water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

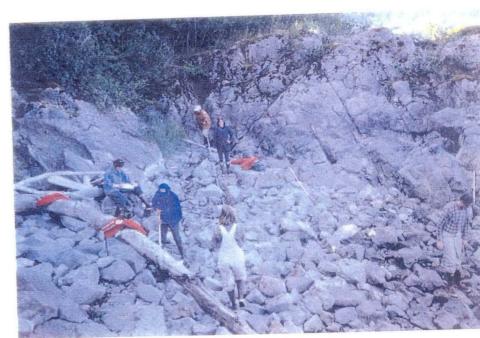
WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2

% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil.









--- · P (D) : 133 113 02 1-800-767-0777 STOCK ≠ PPV840-000

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93

TIME: 17:20

SEGMENT#: EV050

STATION#: -0-

LOCATION: EAST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY REASON FOR TAKING PHOTO: OVERVIEW PHOTO OF THE STEEP ROCK

SHORLINE TO THE N. OF LOCATION C.

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK003 FRAME #: 25 EVIDENCE ID#:

EXXON VALDEZ OIL SPILL GFFICIAL PHOTOGRAPH ADEC

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 18:00

SEGMENT#: EV050

STATION#: -0-

LOCATION: EAST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVEVIEW OF LOCATION A BEING MEASURED.

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL TIME: 17:20 OFFICE: ANCHORAGE DATE: 08/02/93 STATION#: -0-

LOCATION: EAST END OF BETTLES ISLAND KETWURUS: SHURELINE EVALUATION-SKYT
REASON FOR TAKING PHOTO: OVERVIEW PHOTO OF LOCATION C FROM THE ROCK INFRONT OF THE BEACH.

INITIALS:____

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK003 FRAME #: 24 EVIDENCE ID#:_

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 17:20

SEGMENT#: EV050 STATION#: -0-LOCATION: EAST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: CLOSE UP PHOTO OF PIT #2. NO OIL.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK-ROLL #: 93RTK003 FRAME #: 26 EVIDENCE ID#:



-



OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93

TIME: 18:00

SEGMENT#: EV050

STATION#: -0-

LOCATION: EAST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVEVIEW OF LOCATION A BEING

MEASURED.

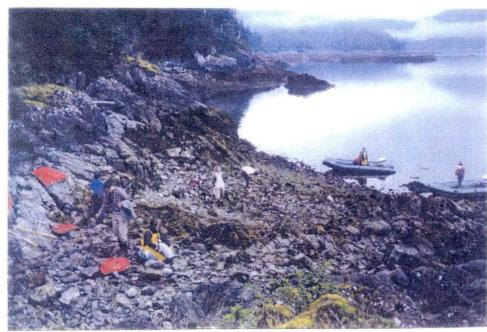
TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK003 FRAME #: 28 EVIDENCE ID#:











OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 07:30

STATION#: -0-

LOCATION: THE NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY REASON FOR TAKING PHOTO: PHOTO CLOSE UP OF BROKEN AP IN THE HITZ. IN LOCATION F.

TAKEN BY: RUSSELL KUNIBE ROLL #: 93RTK003 FRAME #:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 07:30

STATION#: -0-

LOCATION: THE NORTH SHORE OF BETTLES ISLAND

REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF LOCATION E. THIS PHOTO GOES WITH PHOTO 93RTK003 #02.

TAKEN BY: RUSSELL KUNIBE 3 EVIDENCE ID#:___
ROLL #: 93RTK003 FRAME #:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALUEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 07:00

SEGMENT#: EV053

STATION#: -0-

LOCATION: N SHOR OF BETTLES ISLAND. KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: CLOSE UP OF AP BETWEEN THE BOULDERS

WHICH IS ACTING TO HOLD COBBLES AND GRAVEL TOGETHER.

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK002 FRAME #: 37 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 07:30

SEGMENT#: EV053

STATION#: -0-

LOCATION: THE NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF LOCATION E. THIS PHOTO GOES WITH PHOTO 93RTK003 #03.

ROLL #: 93RTK003 FRAME #: 2 EVIDENCE ID#:_

SEGMENT: EV 053 B

LOCATION: Chenega Area, near north end of Bettles Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Rocky shoreline with several small pocket beaches. Pocket beaches consist of steeply sloping angular boulder and cobble sediments. Cliffs separate pockets and protective intertidal outcrops occur just off shore.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Type 8; sheltered rocky.

Fetches and Directions (kilometers)

NE=2

Energy Level

Low with some very low areas.

GENERAL BIOLOGICAL SETTING

Eagle nest.

Fry release.

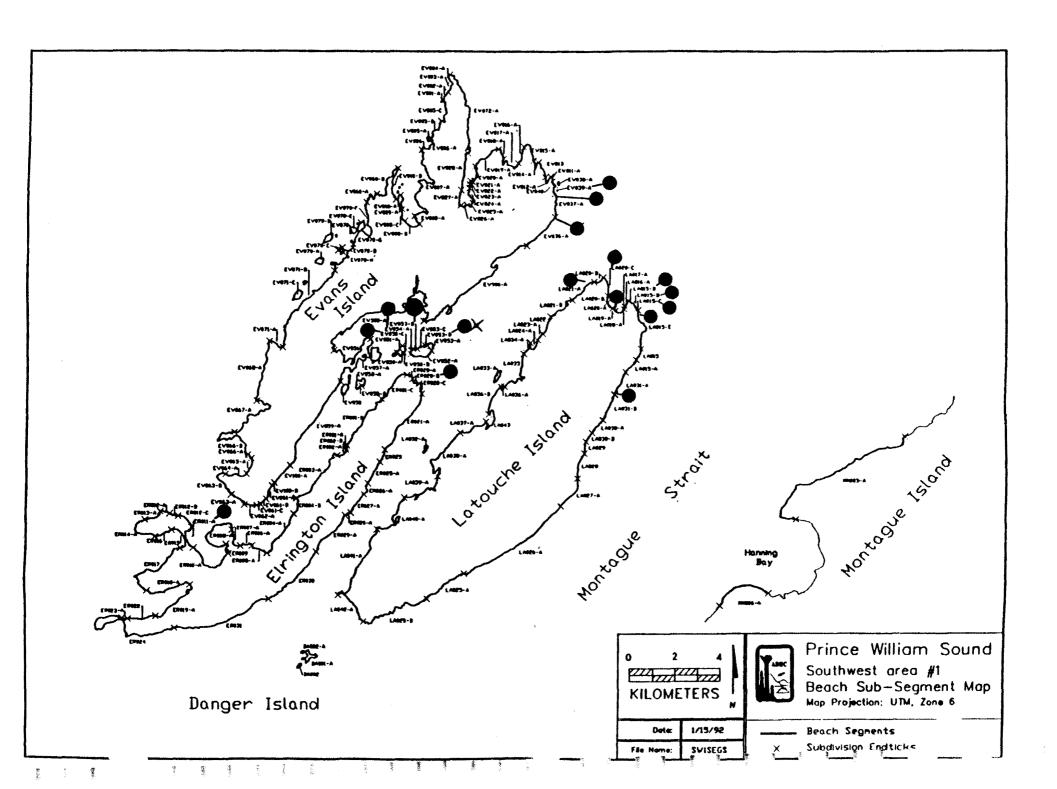
Fish harvest area.

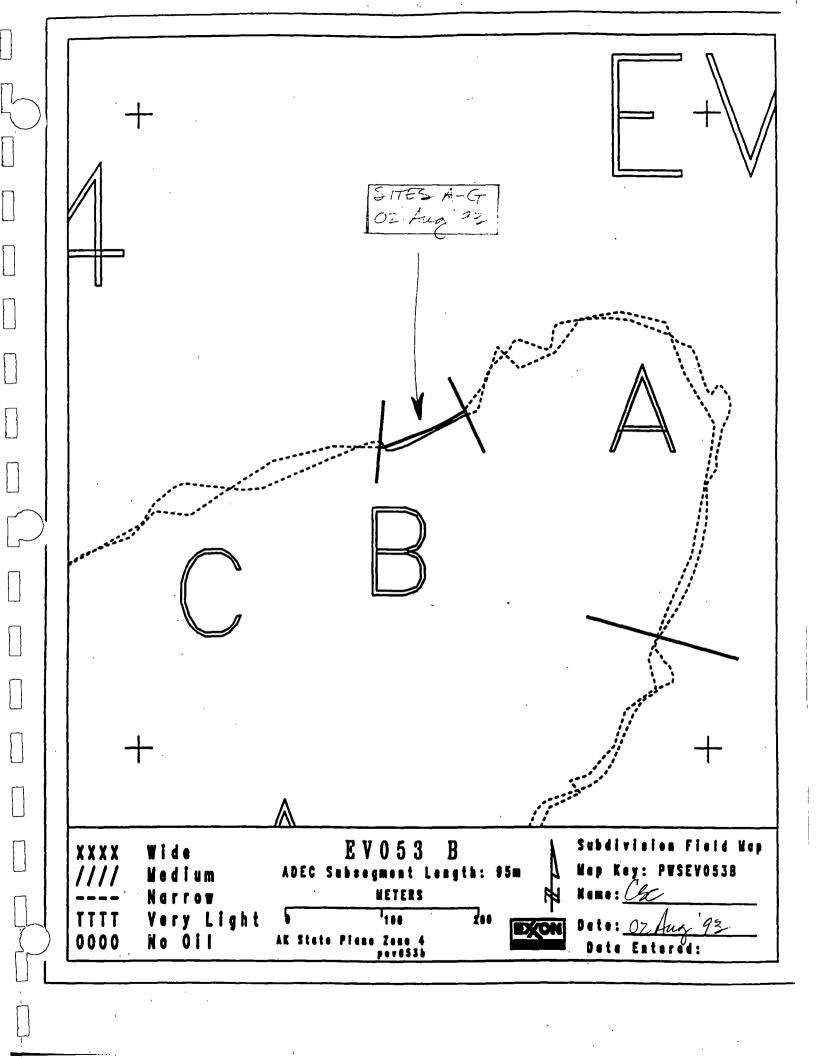
Anadromous stream.

OILING SUMMARY

Only minor amounts of AP and SOR were discovered in 1993. On the western end of the site, however, significant CT and CV exist on a cliff face and on boulders. There does appear to be a significant decrease in the amount of CV since 1991.

Minor amounts of OP and HOR were discovered in 1993 in one area on the eastern side of the site. Only very small amounts of subsurface oil were reported in 1991.





1993 ADEC RESTORATION PROJECT #930380 SHORELINE SURVEY COMMENT SHEET

,	SHOKELINE SUP	RVEY COMMENT SHEET	
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IST BEACH	Bouloble - Locations	G & F ON FINSAP.	ousse (Bu Azzs Cotem) LNOSE
ZNO BENCH	NO SIGNIFICANT	OIL SEEN ON THIS BEACH. D	ID NOT OBSERVE PITA
3RO BEACH ALON	Some WATFSTAIN	PLUS A UNIQUE TIDE L	INE OF BLACK STAIN
	GENERAL MAP(s).	-PIT LOG	S INDICATED ON
AFFILIATION NAME <u>KATIE FARLES</u>	DNR	ATURE Katalien m.s	Tayley
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3 Subsistence 7	be Alex	possible unless site	isting use not

1993 ADEC RESTORATION PROJECT # 930380 SHORELINE OILING SUMMARY

PAGE	Ш_	OF	
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MEMBERS: DIMUNSON C. CROSPY R KUNIBE ADER KFARLEL : ADNR . K HARICH : 1)SFS, B. TRAVIS: USCGT, S. KORN'NMPS 5 STOKER . T KELLEY EXXX

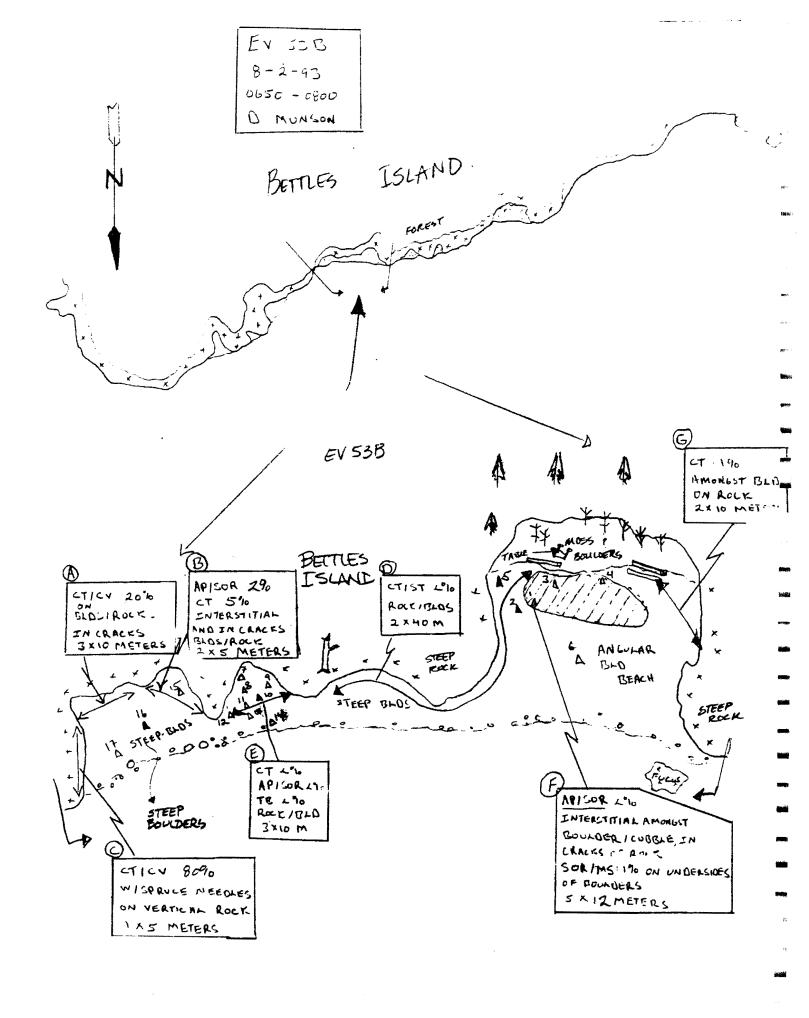
GAIL EVANUFF (CVC)

SEGMENT EVO53 SUBDIVISION B DATE 8 12 193

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DISTRIBUTION: G = 61-100%; B = 51-80%; P = 11-50%; B = 1-10%; T = <1%

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1993 Surface Oil Summary Segment EV053 Subdivision B

Location	Area AP	of Oiling MS	Type in SOR	Square CV	Meters CT	
A	0.	0.	0.	9.	9.	
В		0.				
C	0.	0.	0.	3.5	3.5	
D	0.	0.	0.	0.		
E	0.15	0.				
F	0.	3.6	3.6	0.	0.	
G	0.	0.	0.	0.	1.2	
TOTALS=	0.75	3.6	4.35	12.5	14.85	

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows: continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT EV053B

							TREAT	THENT	1993	OILE	D SED	. voi	L. (m3)	1992	OILE	SED.	. VOL	(m3)	1991	OILED	SED.	VOL.	(m3)	WT.	ed OII	VOL.	1 CHANG	E WT.	ed VOL.
Loc.	1993 P	TT 6	Gr. Sz.	2n.	En.	Note	1992	1991	OP	HOR	MOR	LOR	OF/TR	ΟP	HOR	HOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991	92 to 93	91 to	91 to
ZA	2,5		BC-PGCB	U	L		MR, Rs	MR,Rs, Rb	0.3	0.2	0.0	0.0	0.0	3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.2	?	0.2	?	?	1094.7
ZB		10	BCP-PG	υ	L		MR, Rs	NO	0.0	0.1	0.0	0.0	0.0	?	?	?	?	?	0.0	0.0	0.0	0.0	0.0	0.3	?	0.0	?'	3	Inf
ZC		16	BC-PBCG	U	L			MR,Rs, Rb	0.0	0.0	0.0	0.0	0.0	?	?	?	?	3	0.1	0.0	0.0	0.3	0.0	0.0	?	1.0	ś	3	-100.0
								TOTALS-	0.3	0.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.1	2.6	0.0	1.2	Inf	-100.0	108.6

Loc.= location name of specific oiling area (subsite).

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.

OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2

% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount o' negative values indicate decreases, "Inf" (infinite percent increase) ind' newly discovered oil.









1-800-767-0777 STOCK≠ PPV840-000

OFFICIAL PHOTOGRAPH ADEC

SEGMENT#: EV053

KEYWORDS: SHORELINE EVALUATION-SRVY

OFFICE: ANCHORAGE

EXXON VALDEZ OIL SPILL OFFICIAL PHOTOGRAPH ADEC

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 07:30

SEGMENT#: EV053

STATION#: -0-

LOCATION: THE NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY REASON FOR TAKING PHOTO:PHOTO OVERVIEW OF LOCATION C. CLOSE UP OF THE DISTICTIVE "BATH TUB RING" OF CT/CV WITH

SPRUCE NEEDLES ON VERTICAL ROCK. PHOTO 93RTK003 #4

IS OVERVIEW

TAKEN BY: RUSSELL KUNIBE

5 EVIDENCE ID#: ROLL #: 93RTK003 FRAME #:

> OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

TIME: 08:15 OFFICE: ANCHORAGE DATE: 08/02/93

STATION#: -0-SEGMENT#: EV053

LOCATION: NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY REASON FOR TAKING PHOTO: OVERVIEW PHOTO LOOKING TO THE EAST. GOES WITH PHOT 93RTK003 # 06. SHOWS THE EXPOSED

ROCKS AT LOW TIDE.

TAKEN BY: RUSSELL KUNIBE ROLL #: 93RTK003 FRAME #: 7 EVIDENCE ID#:

SHOWS THE DISTICTIVE "BATH TUB RING" OF CT/CV WITH SPRUCE NEEDLES ON VERTICAL ROCK. PHOTO 93RTK003 #5 IS CLOSE UP INITIALS:___ TAKEN BY: RUSSELL KUNIBE 4 EVIDENCE ID#:___ ROLL #: 93RTK003 FRAME #:

REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF LOCATION C. PHOTO

DATE: 08/02/93

LOCATION: THE NORTH SHORE OF BETTLES ISLAND

EXXON VALDEZ OIL SPILL

STATION#: -0-

TIME: 07:30

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93

TIME: 08:15

SEGMENT#: EV053

STATION#: -0-

LOCATION: NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO TO THE SOUTH. GOES WITH 93RTK003 #07 TO SHOW THE ROCK WHICH ARE INFRONT OF THIS BEACH DURING LOW TIDE.

TAKEN BY: RUSSELL KUNIBE ROLL #: 93RTK003 FRAME #: 6 EVIDENCE ID#:







OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 08:20

SEGMENT#: EV053

STATION#: -0-

LOCATION: NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: CLOSE UP PHOTO OF AP IN THE ROCK

FRACTURES IN LOCATION B.

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK003 FRAME #:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 08:20

SEGMENT#: EV053

STATION#: -0-

LOCATION: NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: CLOSE UP PHOTO OF PIT #1 IN LOCATION B. THIS PIT CONTAINED OP OILING FROM 7 TO 20 CM.

BELOW THE SURFACE.

TAKEN BY: RUSSELL KUNIBE INITIALS: KTK ROLL #: 93RTK003 FRAME #: 8 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 08:20

SEGMENT#: EV053

STATION#: -0-

LOCATION: NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO LOOKING TO THE WEST AT THE LOW IRRGULAR ROCK SHELF (BETWEEN PHOTOGRAPHER AND SKIFF). THIS IS LOCATION B AND PHOTOS OB AND 09

TAKEN BY: RUSSELL KUNIBE ROLL #: 93RTK003 FRAME #: 10 EVIDENCE ID#:

INITIALS: KTK

SEGMENT: EV 053 D

LOCATION: Chenega Area, southwestern Bettles Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Irregular rocky shoreline with small indentations of angular boulders, cobbles, and pebbles, stretches of boulder beaches and prominent irregular bedrock outcrops. Protective rocks are present just offshore.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Type 8; sheltered rocky.

Fetches and Directions (kilometers)

N=1

Energy Level

Overall low with some very low areas.

GENERAL BIOLOGICAL SETTING

Fry release.

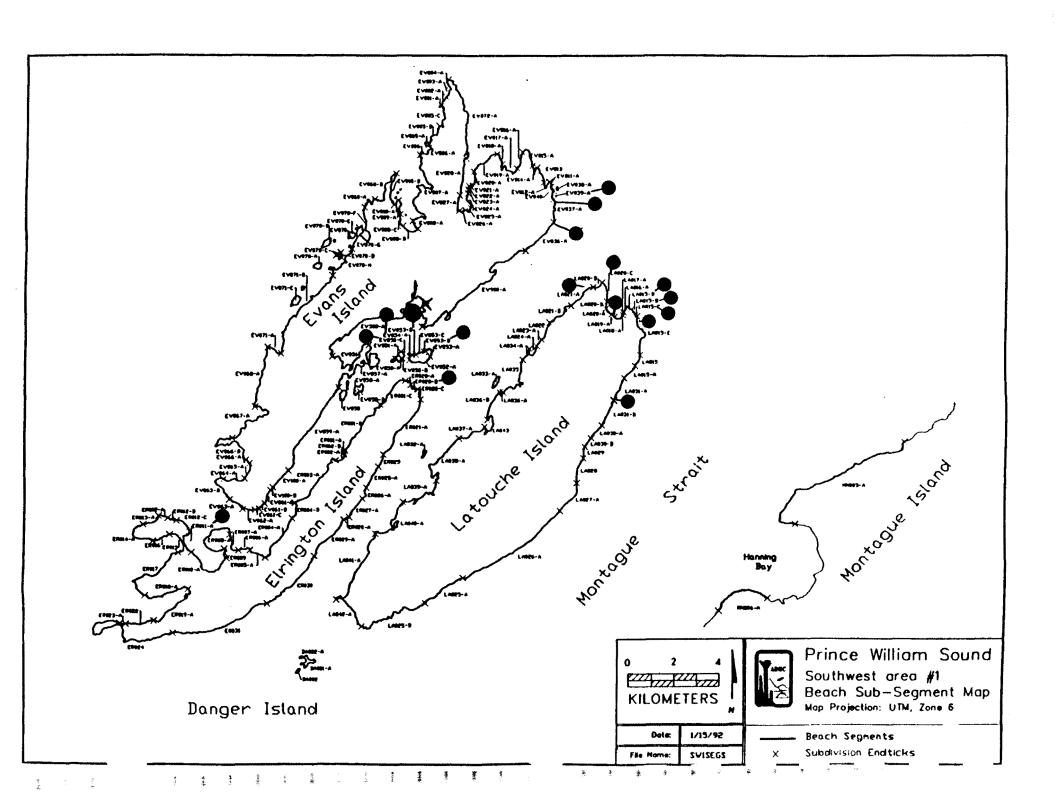
Fish harvesting.

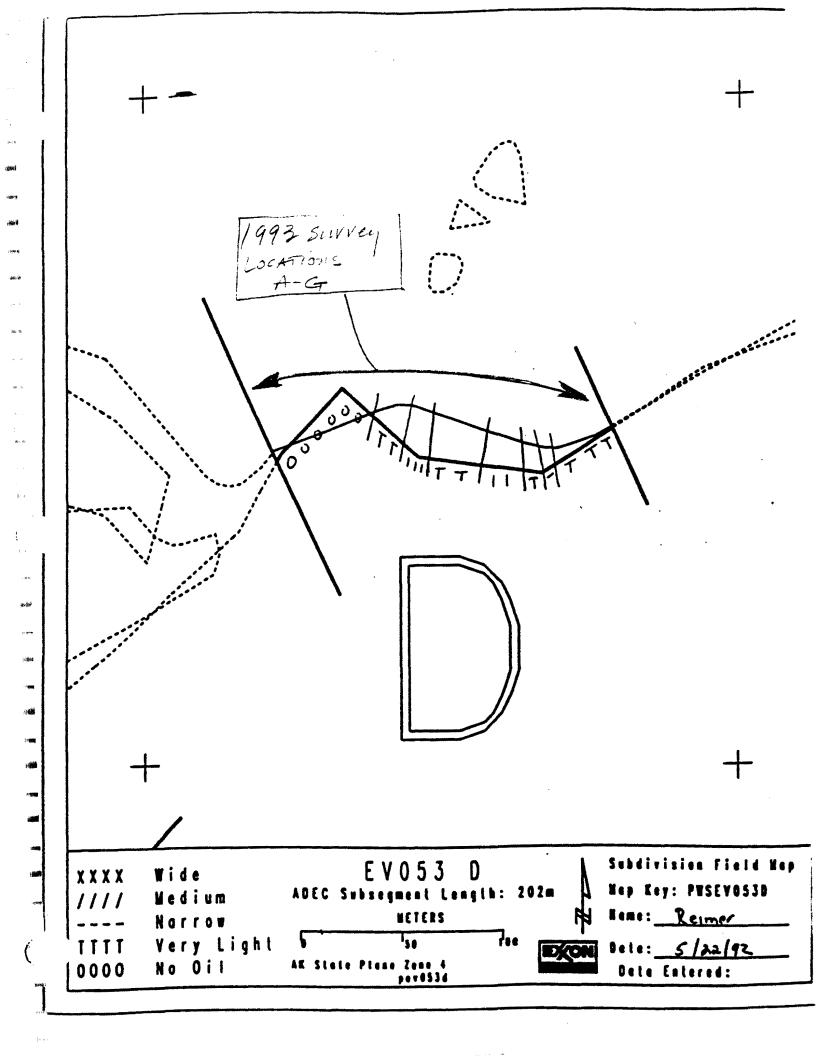
Deer harvesting.

OILING SUMMARY

Two areas of about 100 m² each have moderate concentrations of SOR. The oil in these areas is among boulders and in bedrock fractures. AP concentrations have decreased in these two locations ('B' and 'D') mostly due to removal in 1991 and 1992. Another location with SOR, location 'B', has shown no measurable improvement since 1991. Location 'B' was not treated in previous years, and AP, SOR, and MS persist in rock fractures and under boulders.

Small amounts of OP and HOR associated with the surface oil in location 'B' was the only subsurface oil detected. This subsurface oil has significantly decreased and another small OP/HOR site completely cleaned up since 1991, although amounts were small to begin with in 1991.





1993 ADEC RESTORATION PROJECT #930380 SHORELINE SURVEY COMMENT SHEET

CATION E A 4 L	SEGMENT EVENT	SUBDIVISION	DATE 0 / ~ / 93
AFFILIATION NAME	Corp. SIGNA	TURE C	
Coil Concentra	tions should be	semined before	it asphalt sur. Any i ou types of hery be remined.
AFFILIATION NAME KARE Hand	Umpa Forest Serie SIGNA	TURE Natu Sa	
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AFFILIATION IAME USCG 1300	TDAUS	SIGNATURE JUL	15.2.1
BIL IN UPPER	SUPEA ITZ, HEAVY C		OP, MOUSE UNDER
ALONG BASE O		9 MALL ROOKS, BOULDER	
AFFILIATION IAME KATIE FA	DNR PLEY DIV Flait SIGNA	TURE Kallien M.	failer
its sig	neficance for co.	thes Island to Commercial fishing,	henega and recreation and let be restricted. running distributionies

1993 ADEC RESTORATION PROJECT # 930380 SHORELINE OILING SUMMARY

SEGMENT EYOS?
SUBDIVISION
DATE 8/2 / 93

PAGE ____OF ___

MEMBERS: D. MUNEON, C. CROSBY, R. KONIBE;

ADEC.-K. FARIEY: ADNR

K. HARICH: USES - S. KORN: NMPS

S. STOKER, T KELLEY: EXXON

P. TRAVIS: USECT DAILE : ANGER CVC

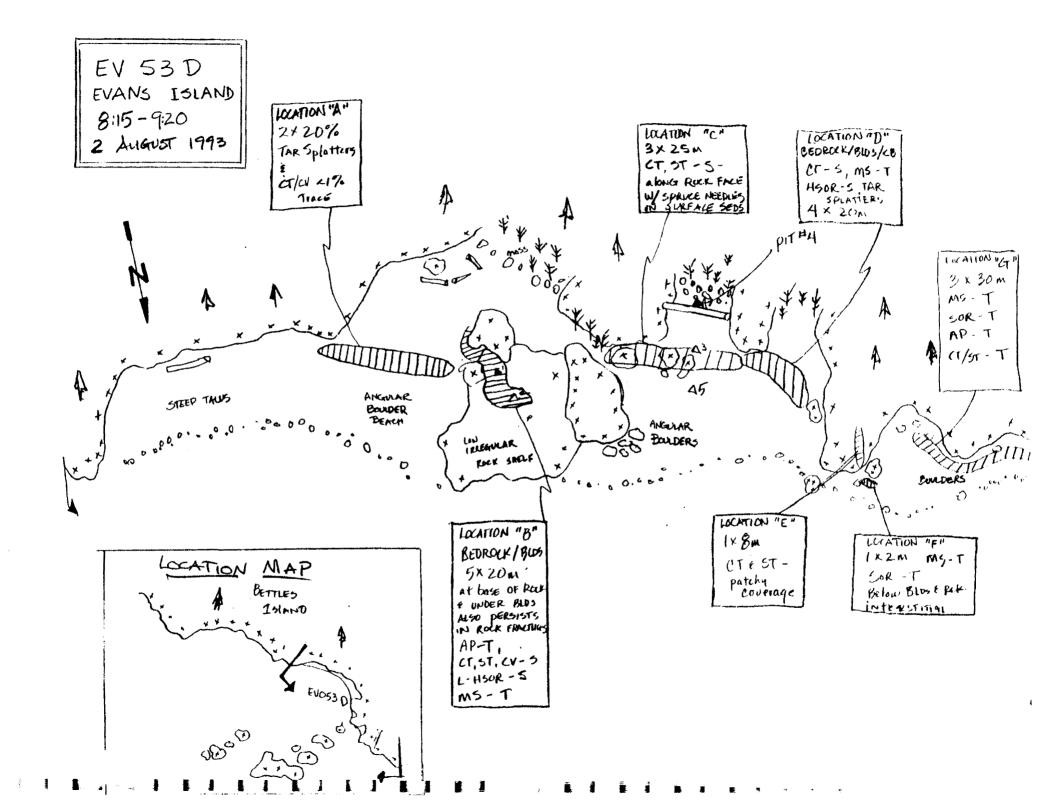
VIE 08:15 to 09:20 TIDE LEVEL 72.0 ft. to 0.5 ft. ENERGY LEVEL: H M LENGTH SHORELINE SURVEYED: M NEAR SHORE SHEEN: BR RB SL NONE

FST. OIL CATEGORY LENGTH: H____m M___m L___m VL___m N___m NS___m

LT			SUR	FAC	E OI	L CH	IARA	CTE	R		SURFACE	SHORE	AF	REA					
o				_							SEDIMENT	SLOPE	MIDTH	LENGTH		Z	SNE		
· ;	AP	MS	TB	SOF	CV	CT	ST	FL	DB	NO	TYPE	VHML	m	m	S	Ų	MI	Ц	NOTES
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DISTRIBUTION: C = 61-100%; B = 51-90%; P = 11-50%; B = 1-10%; T = <1%

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1993 Surface Oil Summary Segment EV053 Subdivision D

Location	Area AP	of Oiling MS	Type in SOR	-	Meters CT	
Α		0.				
В		0.5				
С	0.	0.	0.375	0.	0.375	
D	0.	0.4	4.8	0.	4.8	
Е	0.	0.	0.	0.	2.4	
F	0.	0.01	0.01	0.	0.	
G		0.45		0.	0.45	
TOTALS=				6.2	14.225	

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows: continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT EV053D

						TREA	TMENT	1993	OILE	D SED	. VOI	(m3)	1992	OILE	O SED.	VOL	. (m3)	1991	OILED	SED.	VOL.	(m3)	WT.	ed OII	VOL.	1 CHANG	E WT. 'e	d VOL.
Loc.	1993 PIT 1	Gr. Sz.	Zn.	En.	Note	1992	1991	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991	92 to 93	91 to 92	91 to 93
ZA	1,2	BR-CPG	u		WITH SOR, AP, MS IN 93 492	MR, Ra	MR,Rs, Rb	0.5	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0,0	1.5	0.0	0.0	0.0	0.0	3.6	0.8	7.5	339.5	-89.2	-52.5
ZB		B-CPGB	U	L		NO	MR,Rs, Rb	0,0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	2.8	0.0	-100.0	-100.0
							TOTALS-	0.5	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	1.9	0.2	0.0	0.0	0.0	3.6	0.8	10.3	339.5	-92.1	-65.4

Loc.= location name of specific oiling area (subsite).

1 1

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking. ?= unknown, NO= no treatment.

OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2

% CHANCE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount c egative values indicate decreases, "Inf" (infinite percent increase) ind newly discovered oil.

SEGMENT: EV 054 A

LOCATION: Chenega Area Group, west end of Bettles Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Irregular shoreline with gently sloping pebble beaches intermixed with steeply sloping boulder beaches and small rocky promontories. Sediments are generally angular, and peat underlies some areas. Bedrock is fractured.

Environmental Sensitivity Index (ESI)

Type 7, gravel beach.

Type 8; sheltered rocky.

Fetches and Directions (kilometers)

N=1

Energy Level

Low with very low locations.

GENERAL BIOLOGICAL SETTING

Eagle nest.

Fry release.

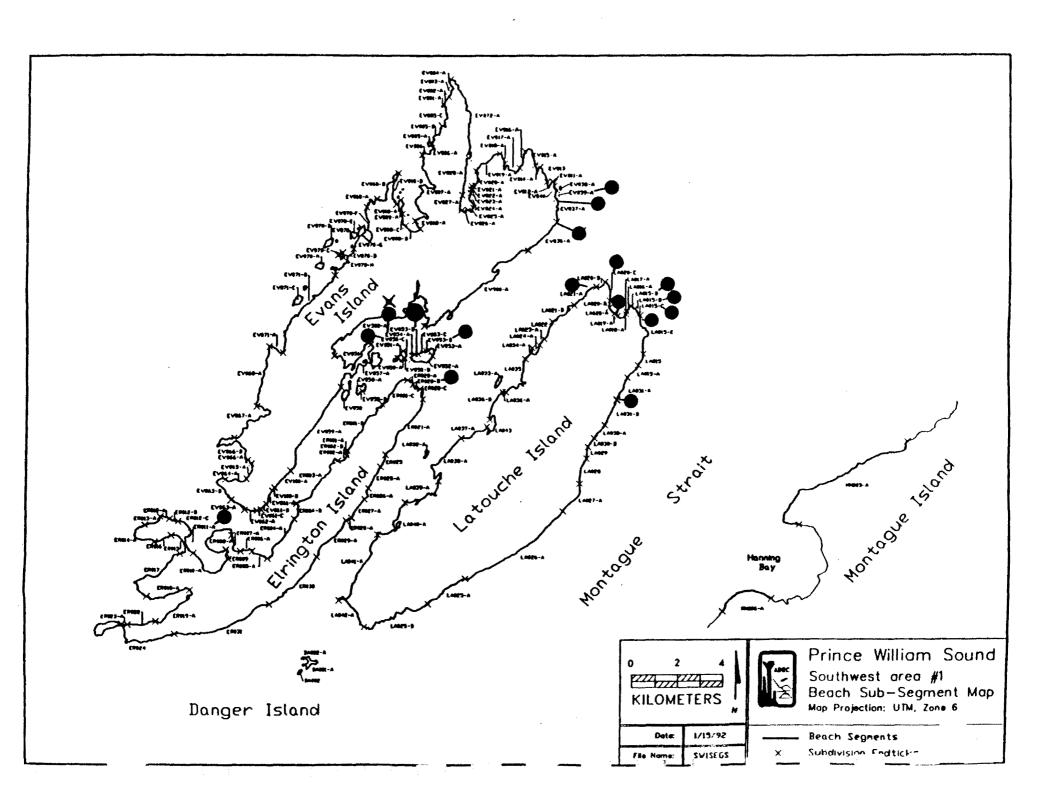
Fish harvesting.

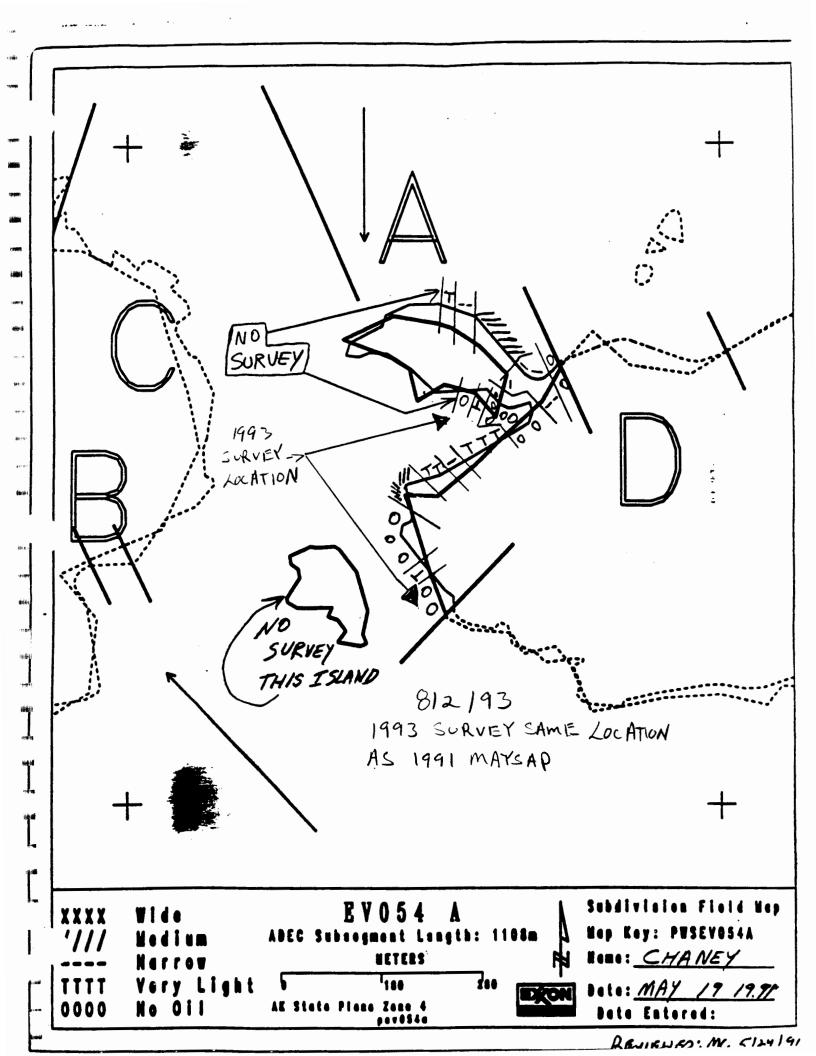
Deer harvesting.

OILING SUMMARY

At least seven locations contain AP, SOR, CV or various combinations of these types of surface oil. The largest area containing AP, SOR, and CV is location 'G'. The CV is concentrated to about 40% and occurs in bedrock fractures, the AP and SOR occur interstitially between boulders at location 'G'. Manual pick up did occur at 'G' in 1991, but there has been no measurable improvement since 1991. Location 'E' also contains significant amounts of SOR that is mixed with pebbles. No improvement has occurred at 'E' since 1991, and in fact, more SOR was measured in 1993 than in 1991. Locations 'C' and 'B' apparently greatly improved since 1991 with the reduction of AP and SOR. AP in area 'B' was picked up in 1991.

Only small amounts of light subsurface oil were discovered in 1993. The oil was discovered in surface location 'C' and showed significant decreases since 1991, even though the amounts in 1991 were relatively small. The decrease coincides with the significant decrease in SOR at this location.





1993 ADEC RESTORATION PROJECT #930380 SHORELINE SURVEY COMMENT SHEET

CATION IS HAND SEGMENT EV 054 SUBDIVISION A DATE 8 / 2 / 93
AFFILIATION NAME hences Cop- SIGNATURE
mall pockets a arometic ocling in UITZ be removed. Thea Supports mouni mammal propulations + 40 Bettles
Bland group list To be Seal howe out area, mesting, sinning son 2 abit at area. New impt. researce use area.
NAME Have Harch USOA Forest Service SIGNATURE 15
Coating occurred in bounder helds as did brok- HOR concentrations
asonat I aggregation occurred in these areas also - Little to no Dil
remarked in part pits in and to him intertidal Tome.
AFFILIATION NAME USCG-BOBTRAUS SIGNATURE The Shien &
Some AP/TARMATS IN BOLKS; some speash. CONCURR W/ CONDITIONS INDICATED
ON MAP/PIT LOG.
AFFILIATION DUR. DIU. OF LAND
NAME KATIE FARLEY SIGNATURE Kathley M. Farley

1993 ADEC RESTORATION PROJECT # 930380 SHORELINE OILING SUMMARY

PAGE		OF	2
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M MEMBERS: D. MUNSON C. CROSRY R KUNIPE (ADEC)

KATIE FARLEY CADAR KATIE HARICHEUSES)

SID KORN (NOMA) BOBTRAVIC (USCO)

SAM STOKER, TOM KELLEY (EXON)

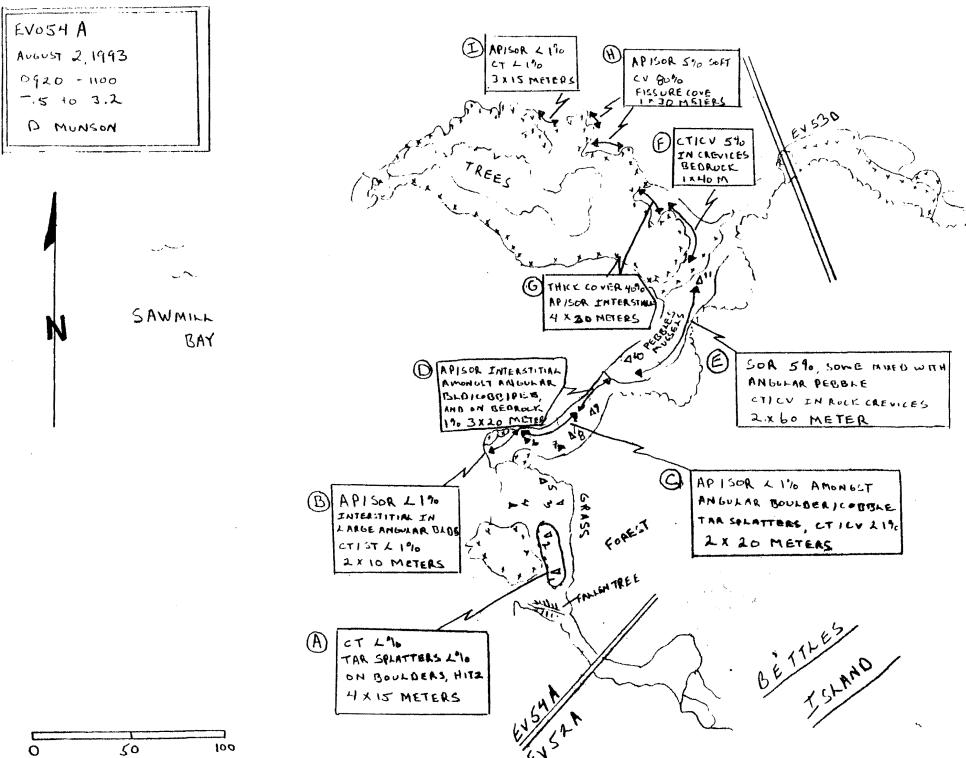
GAIL E VANDEF (CVC)

SEGMENT EVOSH
SUBDIVISION A
DATE 8 12 193

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DISTRIBUTION: C = 61-100%; B = 61-90%; P = 11-50%; B = 1-10%; T = <1%

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3	56					<u> </u>	-		-	<u> </u>						<u> </u>	6166	
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7	12						_	4.5	30 - 3	Y						<u> </u>	BRIPG	AP ON SURFICE
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1993 Surface Oil Summary Segment EV054 Subdivision A

Location		of Oiling MS				
Α	0.	0.	0.	0.	0.3	
В	0.1	0.	0.1	0.	0.1	
C	0.2	0.	0.2	0.2	0.2	
D	3.6	0.	3.6	0.	0.	
E	0.	0.	7.2	0.6	0.6	
F	0.	0.	0.	2.4	2.4	
G	7.2	0.	7.2	36.	0.	
Н	1.8	0.	1.8	21.	0.	
I	0.225		0.225		.0.	
TOTALS=						

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows: continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT EV054A

						TREA	TMENT	1993	OILE	D SED	. VO	L. (m3)	1992	OILE	SED.	VOL	. (m3)	1991	OILE	SED.	VOL.	(m3)	WT.	ed OII	VOL.	& CHANC	GE WT.	ed VOL.
Loc.	1993 PIT	# Gr. Sz.	Zn.	En.	Note	1992	1991	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991	92 to	91 to	91 to
ZA	6,7	BCPR-CPG	U	L	AP ON SURFACE IN	MR	МО	0.0	0.0	0.1	0.2	0.0	?	?	?	?	?	0.0	0.0	3.0	0.0	0.0	0.8	?	9.0	?	?	-90.7
ZB		P-PGM	U	L		MR	Rs	0.0	0.0	0.0	0.0	0.0		0.3	190				0.0					1.1		-100.0		
		a natra na na na na na na na na na	*****		******************	*****	TOTALS=	0.0	0.0	0.1	0.2	0.0		0.3				0.0			0.0			1.1		-25.0		-90.7

Loc.= location name of specific oiling area (subsite).

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

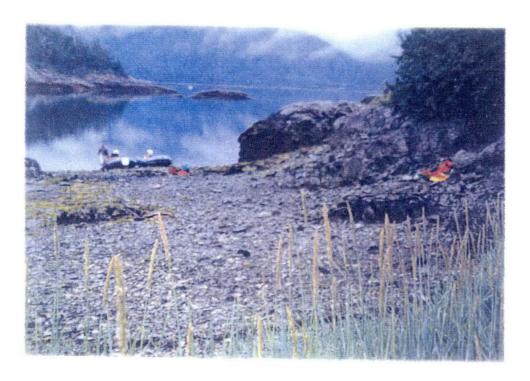
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

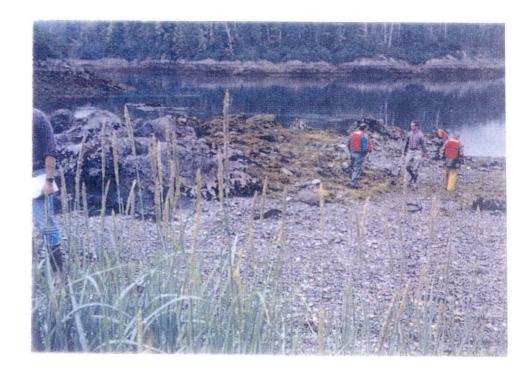
TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.

OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2

% CHANCE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount confidence increases, "Inf" (infinite percent increase) independent of the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount confidence increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount confidence increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the given years = ((year 2 - year1)/(year









OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 09:25

SEGMENT#: EV054

STATION#: -0-

LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PAN PHOTO WHICH GOES WITH 93RTK003 #11-15. THIS IS A VIEW OF THE BEACH AT THE S. END OF THE SEGMENT. IN #13 BOB TRAVIS HAS DUG

PIT #1

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK003 FRAME #: 12 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93

TIME: 09:25

SEGMENT#: EV054

STATION#: -0-

LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PAN PHOTO WHICH GOES WITH 93RTK003 #11-15. THIS IS A VIEW OF THE BEACH AT THE

S. END OF THE SEGMENT. IN #13 BOB TRAVIS HAS DUG

PIT #1

TAKEN BY: RUSSELL KUNIBE

INITIALS:

ROLL #: 93RTK003 FRAME #: 14 EVIDENCE ID#:_

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93

TIME: 09:25

SEGMENT#: EV054

STATION#: -0-LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PAN PHOTO WHICH GOES WITH 93RTK003 #11-15. THIS IS A VIEW OF THE BEACH AT THE

S. END OF THE SEGMENT. IN #13 BOB TRAVIS HAS DUG

PIT #1

TAKEN BY: RUSSELL KUNIBE

TAKEN BY: RUSSELL KUNIBE INITIALS: **TC**
ROLL #: 93RTK003 FRAME #: 11 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93

TIME: 09:25

SEGMENT#: EV054

STATION#: -0-LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PAN PHOTO WHICH GOES WITH 93RTK003 #11-15. THIS IS A VIEW OF THE BEACH AT THE

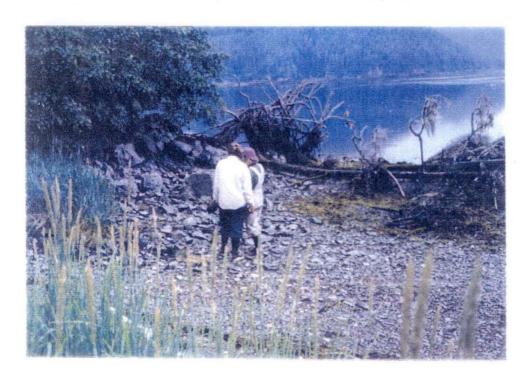
S. END OF THE SEGMENT. IN #13 BOB TRAVIS HAS DUG

PIT #1

TAKEN BY: RUSSELL KUNIBE

INITIALS: FT/1

ROLL #: 93RTK003 FRAME #: 13 EVIDENCE ID#:









20th Century Plastics 1-800-767-0777 STOCK + PPV840-000

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 09:35

SEGMENT#: EV054

STATION#: -0-

LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF AP IN THE BOULDERS, COBBLES

(LOCATION B). NOTE THE TARING ON THE BOULDER IN THE FORGROUND AND AP TO THE RT. AND ABOVE. GAIL

EVANOFF, CVC

TAKEN BY: RUSSELL KUNIBE

INITIALS:

ROLL #: 93RTK003 FRAME #: 16 EVIDENCE ID#:

EXXON VALUEZ OIL SPILL OFFICIAL PHOTOGRAPH ADEC

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 09:35

SEGMENT#: EV054

STATION#: -0-

LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO WHICH GOES WITH 93RTK003 #18. PHOTO 17 LOOKING TO THE E. ALONG

LOCATION C. LOCATION D AND E ARE IN PHOTO #18.

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK003 FRAME #: 18 EVIDENCE ID#:

INITIALS: PAL

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 09:25

SEGMENT#: EV054

STATION#: -0-

LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PAN PHOTO WHICH GOES WITH 93RTK003 #11-15. THIS IS A VIEW OF THE BEACH AT THE

S. END OF THE SEGMENT. IN #13 BOB TRAVIS HAS DUG PIT #1

TAKEN BY: RUSSELL KUNIBE

INITIALS:___

ROLL #: 93RTK003 FRAME #: 15 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 09:35

SEGMENT#: EV054

STATION#: -0-LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

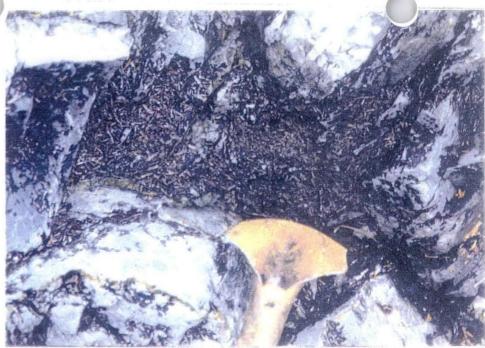
REASON FOR TAKING PHOTO: OVERVIEW PHOTO WHICH GOES WITH 93RTK003 #18. PHOTO 17 LOOKING TO THE E. ALONG LOCATION C. LOCATION D AND E ARE IN PHOTO #18.

TAKEN BY: RUSSELL KUNIBE

INITIALS: ITA

ROLL #: 93RTK003 FRAME #: 17 EVIDENCE ID#:









OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 10:15

SEGMENT#: EV054

STATION#: -0-

LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: CLOSE UP PHOTO OF SPURCE NEEDLES IN CV AND CT ON BEDROCK. PHOTO #21 IS AN OVERVIEW OF THE AREA. LOCATION G ON THE N. SIDE OF THE ISTHMUS

TAKEN BY: RUSSELL KUNIBE

INITIALS: ZTE

ROLL #: 93RTK003 FRAME #: 20 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93

· TIME: 10:30

SEGMENT#: EV054

STATION#: -0-

LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: CLOSE UP OF SURFACE AP AND OP OILING

BELOW. THIS PHOTO WAS IN LOCATION I.

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK003 FRAME #: 22 EVIDENCE ID#:

INITIALS: FTK

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 09:40

SEGMENT#: EV054

STATION#: -0-

LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO WHICH IS LOOKING TO THE SW. TOWARD LOCATION C.

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK003 FRAME #: 19 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

STATION#: -0-

OFFICE: ANCHORAGE

DATE: 08/02/93

TIME: 10:15

SEGMENT#: EV054

LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO OF SPURCE NEEDLES IN CV

AND CT ON BEDROCK. PHOTO #20 IS AN CLOSE UP. LOCATION G ON THE N. SIDE OF THE ISTHMUS. CLARA

CROSBY, SID KORN

TAKEN BY: RUSSELL KUNIBE INITIALS: FTK
ROLL #: 93RTK003 FRAME #: 21 EVIDENCE ID#:



men was not seen not need and party



OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93

TIME: 10:30

SEGMENT#: EV054

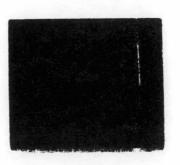
STATION#: -0-

LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO OF THE NORTH SIDE OF THE ISTHMUS IN EV054A LOOKING TO THE EAST.

TAKEN BY: RUSSELL KUNIBE INITIALS: ROLL #: 93RTK003 FRAME #: 23 EVIDENCE ID#:



SEGMENT: GR 101 B

LOCATION: Outer Islands Group, on the north side of a detached island north of Green

Island.

OTHER STUDIES

ADEC transect station #146.

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Wave-cut platform with boulder and cobble veneer containing a sandy, pebbly, granular matrix in the subsurface. Boulder and cobble armor is on the surface with some bedrock outcrops.

Environmental Sensitivity Index (ESI)

Type 2; exposed wave-cut rock platform.

Type 7; gravel beach.

Fetches and Directions (kilometers)

NNE= 75

Energy Level

High.

GENERAL BIOLOGICAL SETTING

Seabird colony.

Pinniped haulout.

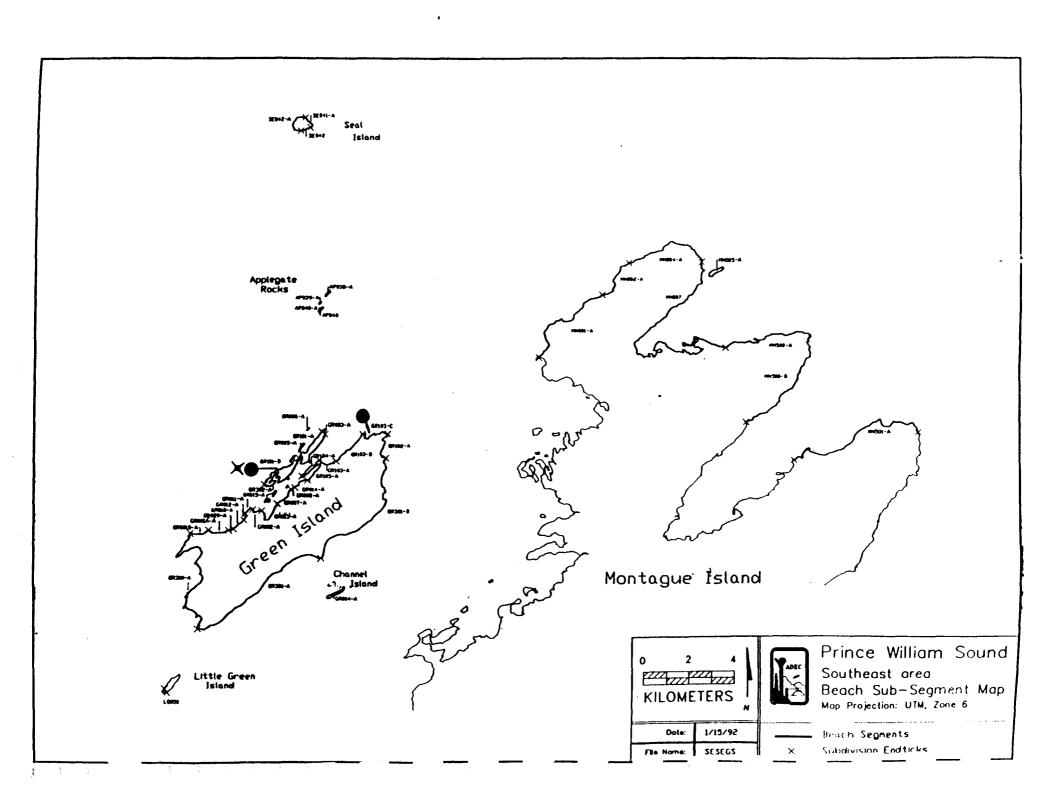
Herring spawning.

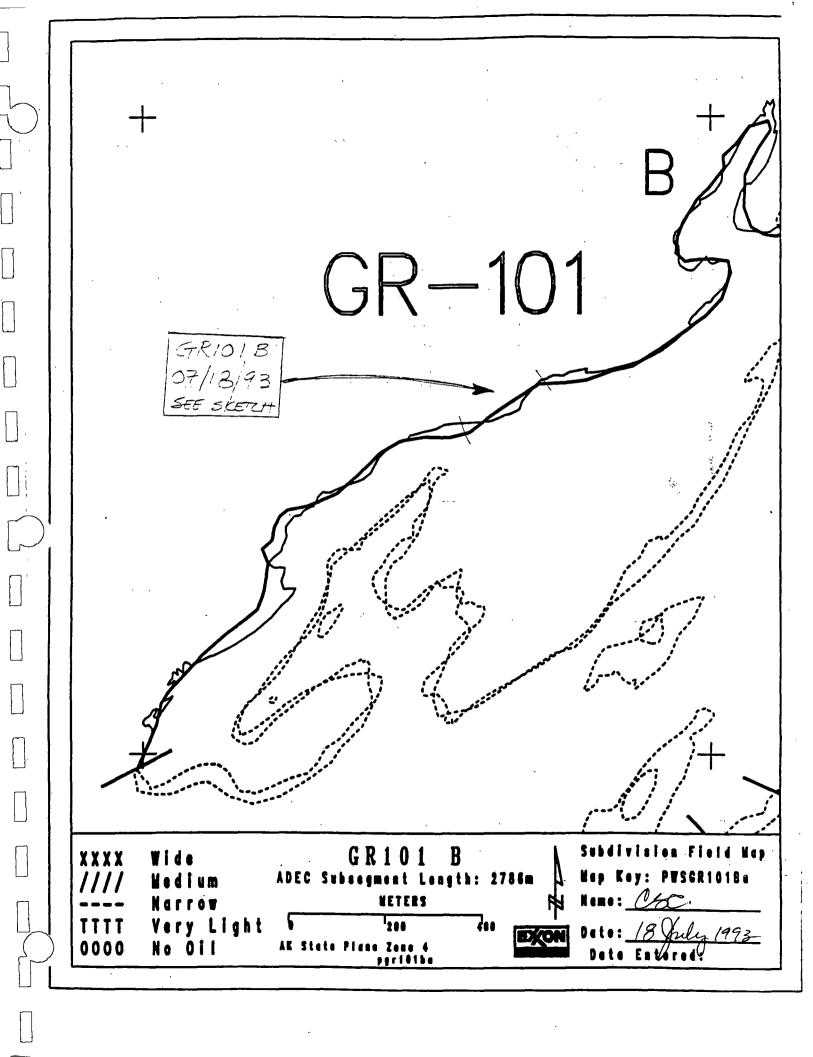
Deer harvesting.

OILING SUMMARY

No surface oil was recorded in 1993 or 1993. It is not clear if the site was surveyed in 1991.

Subsurface oil occurs as an MOR area encompassed by a LOR area. of considerable extent. This same location had HOR oil in 1992 and thus has probably experienced significant improvement since 1992. The actual amount of oil measured is greater in 1993 than in 1992, but this is due to an under estimation of the size of the affected area by surveyors in 1992.





SHORELINE SURVEY COMMENT SHEET

ATTON GREENISL SEGMENT GRIOI SUBDIVISION B DATE 07/18/93	
AFFILIATION DNR DIV. of Land AME KUTUS FRILEY SIGNATURE FASTILLED IN TAILED	- ,
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pocket of MOR MORION) - hat Volonda le monitored	
during any future surveys. Both Sam stoker (Exist)	
consultant) as a result of pierrous trouts and Jim Great	-
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surrary notes thought that the site was in better condition this year than in the past.	וו
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1993 ADEC RECTORATION PROJECT # 930380 SHORELINE OILING SUMMARY

SEGMENT	GR 101	
SUBDIVISIO	N_B	
DATE	1_/8/9	23

PAGE / OF 3

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DISTRIBUTION: C = 01-100%; 8 = 61-60%; P = 11-60%; 8 = 1-10%; T = <1%

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RESTORATION SHORELINE OILING SUMMARY (cont.)

PAGE 2 OF 3

CO 101

SUBDIVISION B

DATE 07 18 193 TEAM NO. _ SEGMENT GRIOL

PIT PIT NO. DEPTH				JBSUI CHAF					OILED	CLEAN		SHEEN			TE		SURFACE- SUBSURFACE	VERANG
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OG COMMENTS: Location A	Sporadic Tour spectics,	ct, ST or rould/coss pitz primary.
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PROPILE Station 146 DATE 7-18-93 LOCATION GRIUIB RECORDERS J. G. Least **PHOTOGRAPHS** TIME 10:15 um WIND SPEED O WIND DIRECTION -TIDE STAGE Jour WEATHER Overcast PROFILE ANGLE B HT. O SAMPLES TAKEN: BIO CHEM SED exposed bedroak-boulder (able platform. Oil occurs in shallow enbourface to maximum depth of 20 cm T below a clean rounded boulder and colle armor Oiled sediments matrix with in collet bonder framework. A few coffles below, start of MOR 20440MT the atmor are stained as observed In the pits. Heaviest ailing is thin black MOR lens. Sheering occurs in pits w/ MOR and LOR. MOR area measures 20 x 40 m and is encompassed by LOR area, drawing perfice map view Laguar C

1993 Surface Oil Summary Segment GR101 Subdivision B

Area of Oiling Type in Square Meters

AP MS SOR CV CT Location

No surface oil.

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat

Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows:

continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT GR101B

						TREAT	MENT	1993	OILE	D SED	. voi	. (m3)	1992	OILED	SED.	VOL	. (m3)	1991	OILED	SED.	VOL.	(m3)	WT.	ed OII	VOL.	CHANG	E WT.	ed VOL.
Loc.	1993 PIT 1	Gr. Sz.	Zn.	En.	Note	1992	1991	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	o f/T r	1993	1992	1991	92 to	91 to 92	91 to 93
ZA	9-17	BC-PGS	UM	H		NO	NO	0.0	0.0	5.9	47. 5	32.7	0.0	1.2	3.0	1.5	0.0	3	?	?	?	. ?	112. 9	28.8	3	291.9	?	?
							TOTALS-	0.0	0.0	5.9	47. 5	32.7	0.0	1,2	3.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	112.	28.8	0.0	291.9	Inf	Inf

Loc. = location name of specific oiling area (subsite).

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

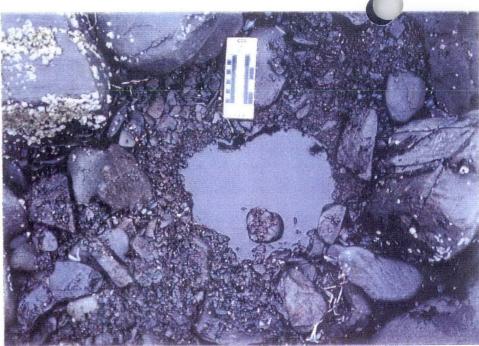
TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.

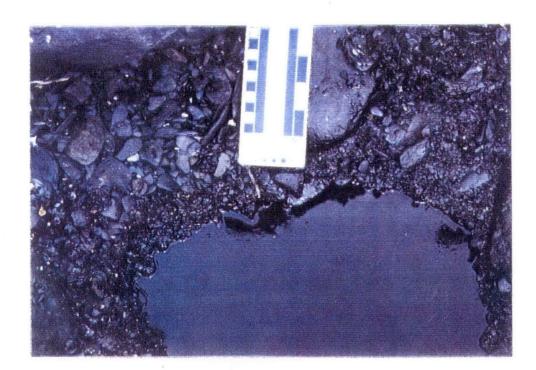
OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2

% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil.









OFFICIAL PHOTOGRAPH

Date: July 19,8 1993 Time: 10:15

Location (segment #): GR101B

Reason for taking photo: Pit 13

Taken by: L.J. Evans

Roll #: LJE001 Frame #: 015

Date: July 18,	1993 Time: 10:05 . GR101B	
	oto: Overview of segment	
(Exxon), Katie	Washington and the same of the	/KC
Taken by: L.J. Ev	ans Frame #:	

ADEC

OFFICIAL PHOTOGRAPH

OFFICIAL PHOTOGRAPH ADEC

Date: July 186, 1993 Time: 10:20

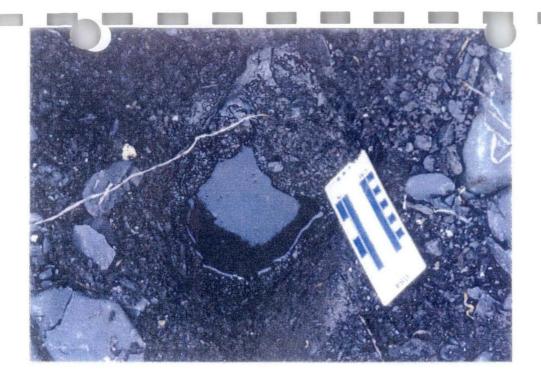
Location (segment #): GR101B

Reason for taking photo: Pit 17

Taken by: L.J. Evans

Roll #: LJE001 Frame #: 017

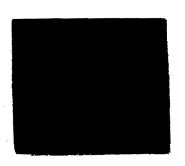
OFFICIAL PHOTOGRAPH ADEC
Date: <u>July 18, 1993</u> Time: <u>10:15</u> Location (segment #): <u>GR101B</u>
Reason for taking photo: Pit 13
Taken by: L.J. Evans Boll # LJE001 Frame #: 016





OFFICIAL PHOTOGRAPH	
Date: July 19, 1993 Time:	10:20
Location (segment #): GR101B	
Reason for taking photo: Pit 17	
100	
Taken by: L.J. Evans (96)	
Roll #: LJE001 Frame #:	018

Marita Man att



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SEGMENT: GR 103 C

LOCATION: Outer Islands Group, northeastern end of Green Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Irregular shoreline with boulder and cobble beaches and wave-cut platforms.

Environmental Sensitivity Index (ESI)

Type 2; exposed wave-cut platform.

Type 7, gravel beaches.

Fetches and Directions (kilometers)

NNE= 75

Energy Level

High.

GENERAL BIOLOGICAL SETTING

Eagle nest.

Herring spawning.

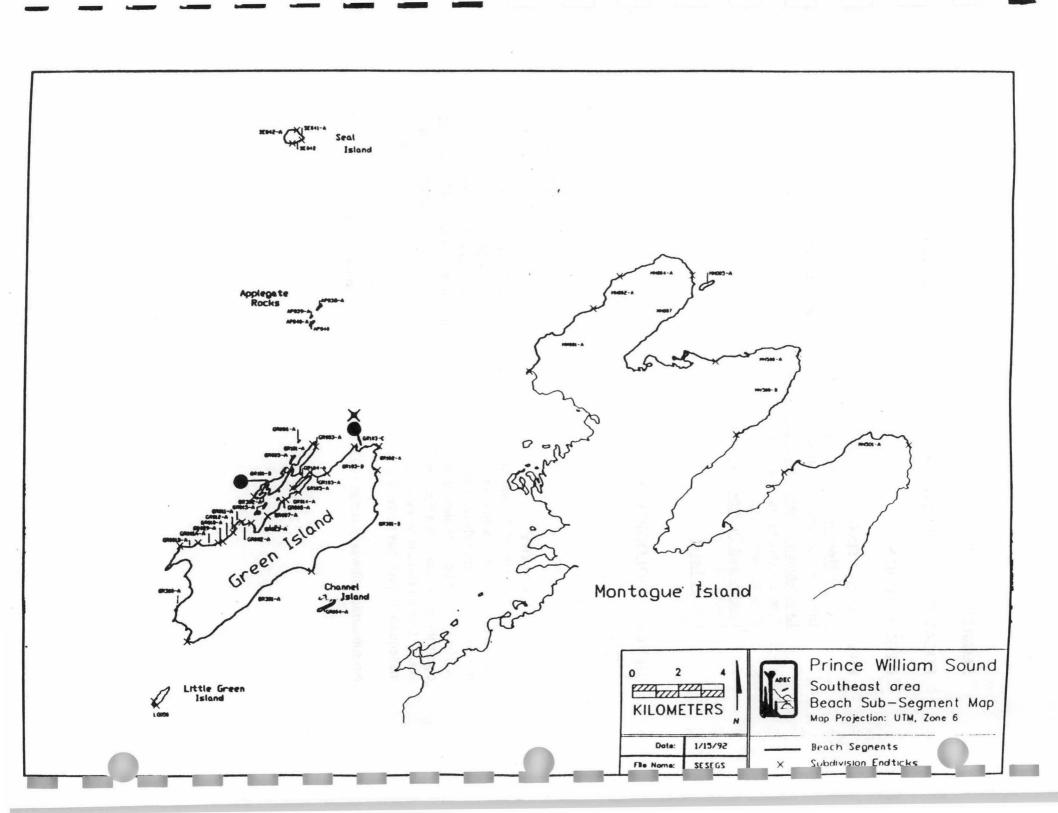
Deer harvesting.

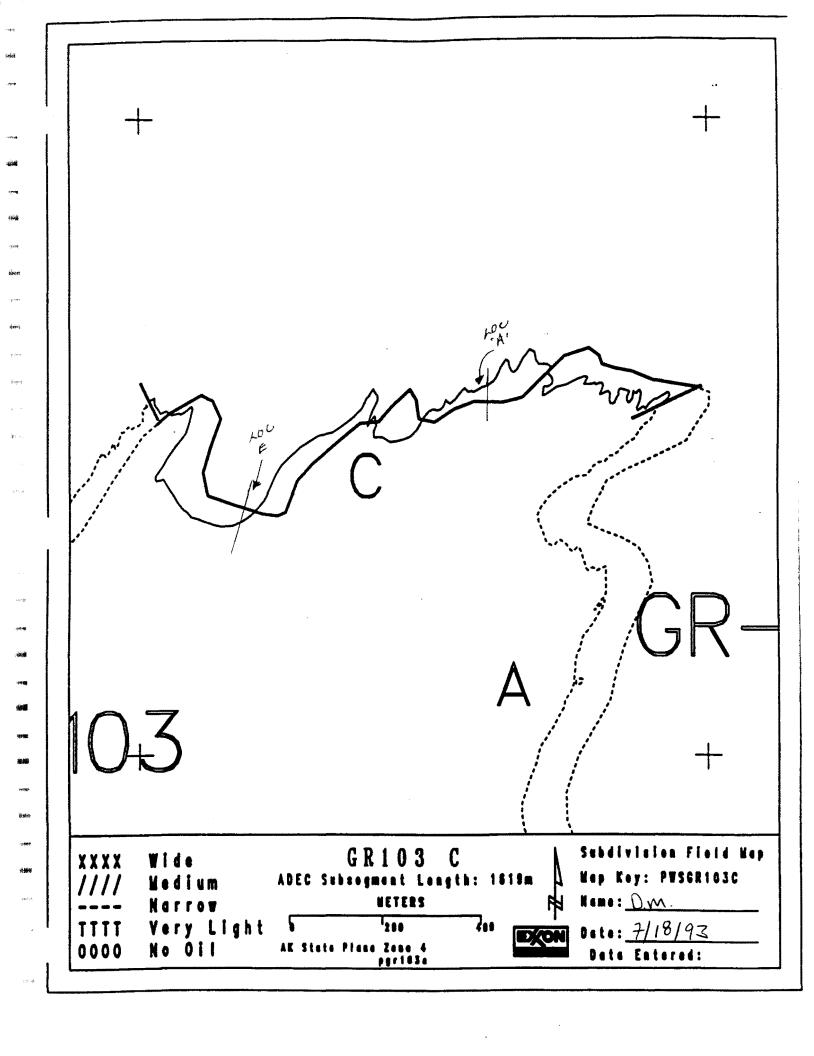
Salmon harvesting.

OILING SUMMARY

The greatest amount of AP and SOR at one location was found at this site. Location 'C' is a 20 m by 100 m area with over 50% coverage of AP and SOR trapped in vertical fractures of the vertically dipping shale bedrock. This location was not discovered in 1992 or 1991. Location 'E' is another area with relatively high concentrations of AP and SOR occurring interstitially in a boulder field. This area also was not discovered in previous years. Overall there is no evidence of improvement; in fact the 1993 survey shows the inadequacy of previous surveys for these locations.

No subsurface oil was noted in 1993, and only very small amounts were recorded in 1991.





1993 ADEC RESTORATION PROJECT #930380 SHORELINE SURVEY COMMENT SHEET

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AFFILIATION DNR, Division of Land NAME_KATIE FARLEY SIGNATURE KATHLE	en m. Hailey	,
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NAME THI Means USCG SIGNATURE		
CATION TREER 190 SEGMENT SUBDIVI	//SION DATE / / 93	
CATION GREEN ISL. SEGMENT GRIO3 SUBDIVIS	ISION DATE 07 / 18 / 93	

1993 ADEC RESTORATION PROJECT # 930380 SHORELINE OILING SUMMARY

PAGE		OF	3
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	DIS	TAIL	UTION	: C=0	1-1004	4; S	- 61 -	90%;	P = 11-601	4; 8= 1-	10%; T	<1%						
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RESTORATION SHORELINE OILING SUMMARY (cont.) PAGE 2 OF 3

TEAM NO. __

SEGMENT GRIO3

SUBDIVISION _____

DATE 07, 18/943

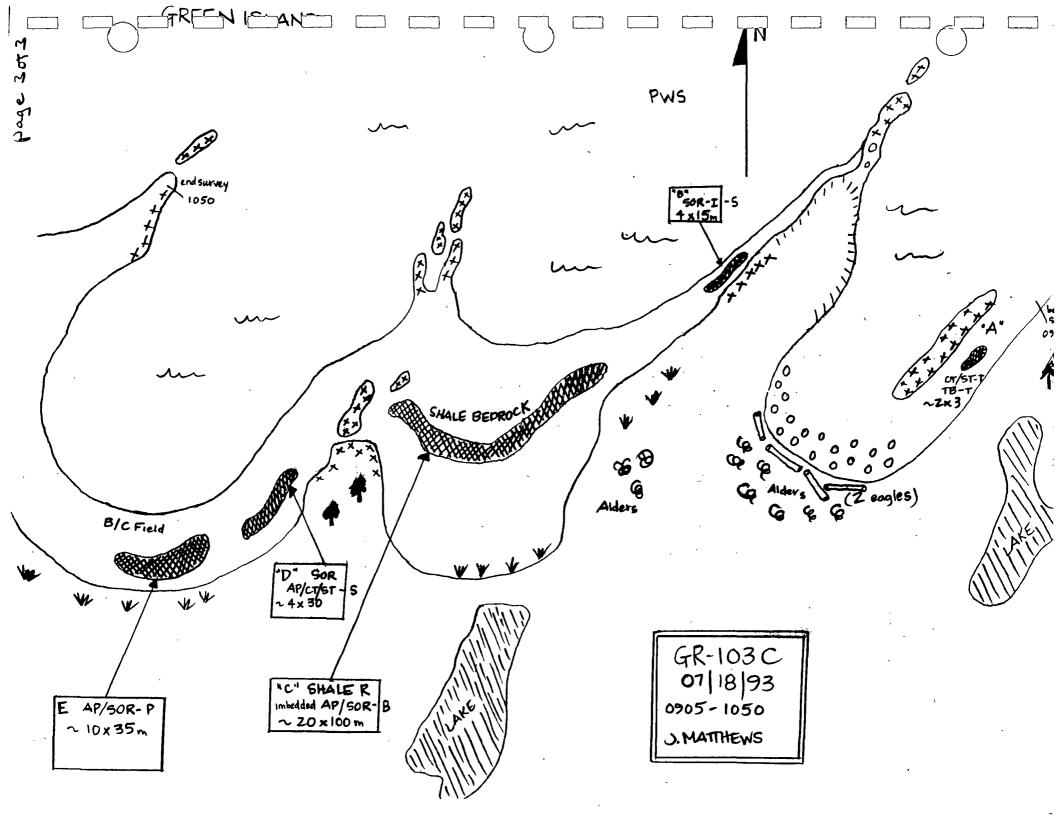
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SHEEN COLOR: 8 - BROWN; R - RAINBOW; 8 - SILVER; N - NONE

OG COMMENTS:

- Z eagles @ zast end of segment
- Harbor Seal on Haulout





1993 Surface Oil Summary Segment GR103 Subdivision C

	Jegme.	ne GRIOS		Jubul VIS		
Location	AP	MS	Type in SOR	CV	CT	
A	0.					
В	0.	0.	3.6	0.	0.3	
С	1400.	0.	1400.	0.	0.	
D	7.2	0.	7.2	0.	0.	
E	105.	0.	105.	0.	0.	
TOTALS=	1512.2	0.	1515.8	0.	0.3	
Areas are of coverage of are convert	computed by m each oil ty ed to the me	ultiplyi: pe. Fie. dian per	ng the and ld catego cent valu	ffected ories of ue as fo	due; CV= cover area by the percent oil bllows: adic= 6%; tra	coverage

SUBSURFACE OIL SUMMARY FOR SEGMENT GR103C

***************************************						TREAT	MENT	1993	OILE	D SED	. voi	L. (m3)	1992	OILE	SED.	VOL	(m3)	1991	OILED	SED.	VOL.	(m3)	WT.	ed OIL	VOL.	1 CHANG	E WT.	ed VOL.
Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	1992	1991	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991	92 to 93	91 to 92	91 to
ZA		B~SG	н	М		MR	NO	0.0	0.0	0.0	0.0	0.0	?	?	?	?	?	0.0	0.1	0.0	0.0	0.0	0.0	?	0.4	?	3	-100.0
ZB		BC+SG	Н	M		MR	NO	0.0	0.0	0.0	0.0	0.0	3	?	?	?	?	0.8	0.0			'			3.8	?		-100.0
*****							TOTALS=	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.1	0.0	0.0	0.0	0.0	0.0				~100.0

Loc. = location name of specific oiling area (subsite).

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from subsurface, Rs= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.

OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2

% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil.

SEGMENT: IN 031 B

LOCATION: Knight Island North Group, west side of Ingot Island in narrow passage between Ingot and Disk Islands.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Tombolo attached by an intertidal pebble beach and coarse-grained tidal flat. A relatively low-sloping, boulder and cobble beach grades westward to a cobblely, pebble gravel beach with pebble high-tide berms directly behind the tombolo. Sediments are subangular to angular and include a sandy, granular subsurface matrix.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Type 8; sheltered rocky.

Fetches and Directions (kilometers)

SE=35

Energy Level

Overall moderate with some low areas.

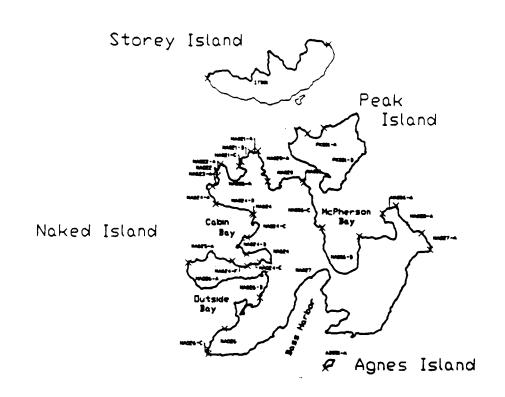
GENERAL BIOLOGICAL SETTING

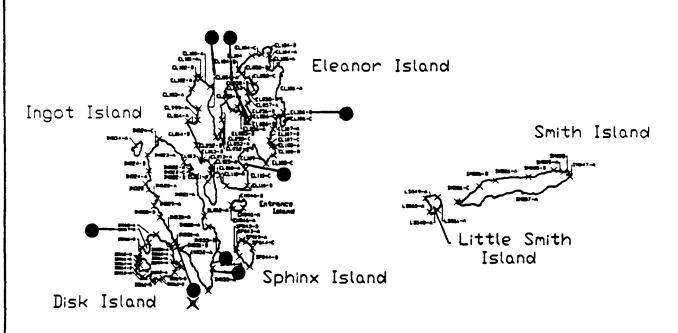
Mussel bed and clam bed adjacent to oiled locations. Eagle nest.

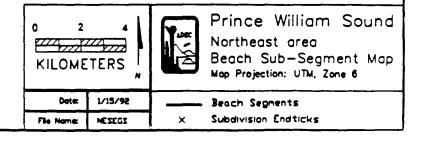
OILING SUMMARY

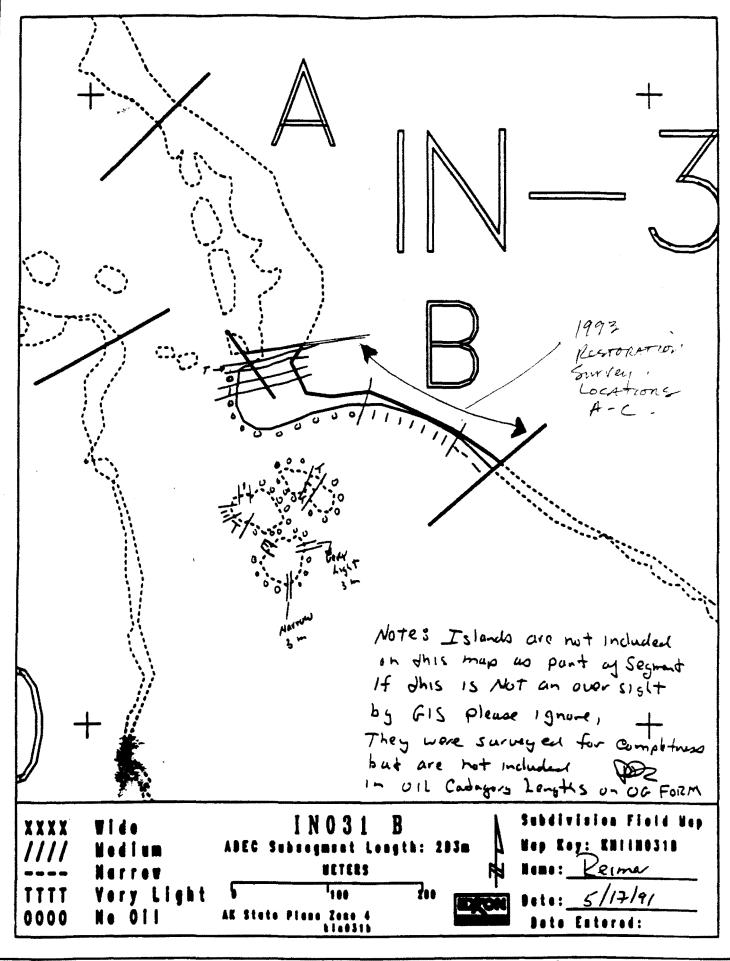
One 5 m by 49 m area (location 'A') of AP with a relatively high concentration remains at this site. The AP occurs interstitially between boulders and extends to the subsurface as HOR. MS and OP are present around large boulders. Areas 'A', 'B', and 'C' were all treated in 1991, 1992, and 1993 and have shown significant improvement although heavy oil persists in location 'A'.

HOR and OP Subsurface oil is associated with the AP and SOR in surface oil location 'A'. In 1991 only HOR was noted but it was estimated to have occurred over an area more than twice the size as surveyors measured in 1993. It is possible that the area was overestimated in 1991 and that no significant decrease in subsurface oil has occurred.









reviewed 5.21 94 REVIEWED: F.W. 5/22/91

1993 ADEC RESTORATION PROJECT #930380 SHORELINE SURVEY COMMENT SHEET

AFFILIATION	CATION ING	SEGMENT TNOS	SUBDIVISION B DATE 6 1241 93
Byota in oiled and is minimal compared to other near by area. Could be result of news action on of peat treatment. The beach bear could be potential camping location. We broke up as phalt. No fur then treatment recommended. AFFILLATION U.S. Forest Savice SIGNATURE Vic Baser Small amounts of surface tar and as phalt present. Asphalt was treated by breaking up and spreading. No additional treatment necessary AFFILLATION AFFILLATION NAME SIGNATURE SIGNATURE	AFFILIATION	DNR	12 /2
Byota in oiled and is minimal compared to other near by area. Could be result of news action on of peat treatment. The beach bear could be potential camping location. We broke up as phalt. No fur then treatment recommended. AFFILLATION U.S. Forest Savice SIGNATURE Vic Baser Small amounts of surface tar and as phalt present. Asphalt was treated by breaking up and spreading. No additional treatment necessary AFFILLATION AFFILLATION NAME SIGNATURE SIGNATURE	NAME WA	nenetee SIGN	NATURE Wyn Meraple
Byota in oiled and is minimal compared to other near by area. Could be result of news action on of peat treatment. The beach bear could be potential camping location. We broke up as phalt. No fur then treatment recommended. AFFILLATION U.S. Forest Savice SIGNATURE Vic Baser Small amounts of surface tar and as phalt present. Asphalt was treated by breaking up and spreading. No additional treatment necessary AFFILLATION AFFILLATION NAME SIGNATURE SIGNATURE	Concur	with findings.	
area. Could be result of vave action or of post treatment. The beach bear could be potential company location. We broke up as phalt. No further treatment recommended. AFFILIATION U.S. Forest Sarvice Signature Vic Baer Small amounts of surface tar and as phalt present. Asphaltwas treated by breaking up and spreading. No additional treatment necessary AFFILIATION NAME SIGNATURE AFFILIATION AFFILIATION	Riota I	n oiled are to mi	in mal compared to other near by
The beach beam could be potential company location. We broke up as phalt. No fur then trustment recommended. AFFILLATION U.S. Forest Sarvice Signature Small amounts of surface tar and as phalt present. Asphaltwas treated by breaking up and spreading. No additional treatment necessary AFFILLATION NAME SIGNATURE AFFILLATION NAME SIGNATURE	area.	Could be result of u	save action or of past treatment.
AFFILIATION AFFILIATION AFFILIATION AFFILIATION AFFILIATION AFFILIATION AFFILIATION AFFILIATION NAME AFFILIATION AFFILIATION NAME AFFILIATION NAME AFFILIATION NAME AFFILIATION	The beach	L bern could be p	stential camping location. We broke
AFFILIATION AFFILIATION AFFILIATION No further trutment recommended. AFFILIATION AFFILIATION AFFILIATION AFFILIATION AFFILIATION AFFILIATION AFFILIATION	a a c aha	St.	
Small amounts of Surface tar and asphalt present. Asphalt was treetal by breaking up and spreading. No additional treatment necessary AFFILIATION NAME	^	To further treatmen	
Small amounts of Surface tar and asphalt present. Asphalt was treetal by breaking up and spreading. No additional treatment necessary AFFILIATION NAME	AFFILIATION (LS. Forest Swrite	NATURE VERO
AFFILIATION NAME SIGNATURE AFFILIATION	Small an	nounts of surface	tar and asphalt present. Asphalt
AFFILIATION NAME SIGNATURE AFFILIATION	was tre	eated by breaking	jup and spreading. No additional
AFFILIATION NAME SIGNATURE AFFILIATION	treatu	nent necessary	\mathbf{J}
AFFILIATION SIGNATURE	7 V VI	(4)	
AFFILIATION SIGNATURE			
AFFILIATION	AFFILIATION		
	NAME		SIGNATURE
NAMESIGNATURE	AFFILIATION		
	NAME	SIGN	NATURE

1993 ADEC RESTORATION PROJECT # 930380 SHORELINE OILING SUMMARY

SEGME	NT IND31
SUBDIV	$\frac{3}{2}$
DATE	6,24,00

PAGE 1 of 3

T. M MEMBERS: D. MUNSON - ACEC In. PROFITA - A DEC V BAER - US FS W. MENEFEE - ADN R T. NANCE - USCG

T			SUF	IFAC	E OI	LC	IARA	CTE	R		SURFACE	SHORE	A	REA							
1											SEDMENT	SLOPE	WIDTH	LENGTH		ZC	ME				
ľ	AP	MS	TB	BOR	CV	CT	ST	FL	DB	NO	TYPE	VHML	m	m	S	UI	MI	U		NOTES	
•	P					7	7				BCP	M	5	44			į.		CT ON	PROTECTES	3106
T	テ					7	T				BL	M	3	60						DER FIEL	
Ì			7			7	T				RB	H	3	130					TAR	SPLATTER	٤
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DISTRIBUTION: G = 91-100%; B = 61-60%; P = 11-60%; B = 1-10%; T = <1%

		VENT					M = k		M ANGLE	L - LOW	ANGLE		OM C					FRAMES
"П	PIT			JBSU					OILED			SHEEN			ना		SURFACE-	
.10.	DEPTH		OIL	CHAP	PACTI	ER .	- المساود الم		ZONE	BELOW		COLOR			ME		SUBSURFACE	
	(cm)	OP	HOR	MOR	LOR	OF	TR	NO		YM	Î	BRSN	3	U	M	U		NOTES
, ear	18								2-5	Y							CP / PG	AP SURFACE
2	20						<u> </u>		3-16	Y							BCP/PG	
3	16								4 - 12	Y							BCP/ 96	BOWLDER FL
.4	26								-						- 1		CP / PG	
5	26								•								CP / PG	
*	23								-								PG / PG	
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TEAM NO.

SEGMENT IN03

SUBDIVISION 3

DATE 6 124 1 93

PIT	PIT				RFAC				OILED	CLEAN		SHEEN			AT ONE		SURFACE-	
4O.	DEPTH	-	OIL	LICE	LOR		TO	NO		BELOW					MI		SUBSURFACE SEDIMENTS	
_	(cm)	IOP	HOH	MUH	LUN	OF	110	140		Y/N	(cm)	BASN	3	UI	MI	l u	SEDIMENTS	NOTES
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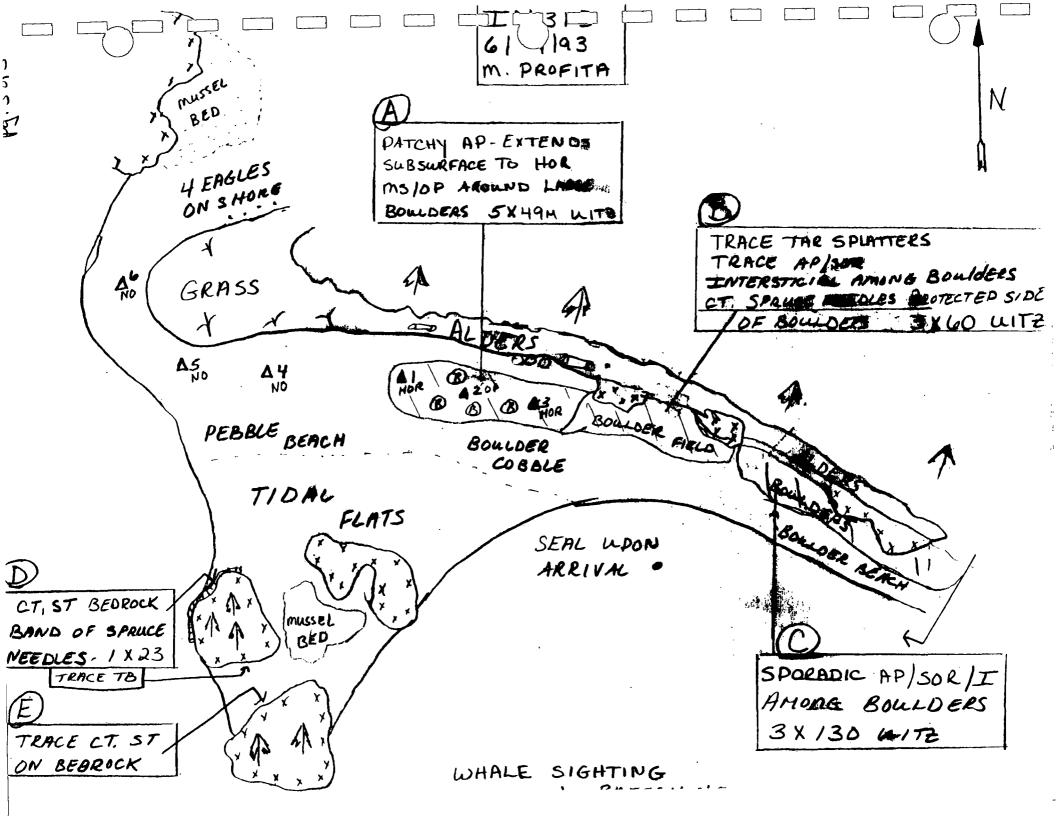
SHEEN COLOR: B = BROWN; R = RAINSOW; S = SILVER; N = NONE

OG COMMENTS:

- 4 Eagles on beach upon arrival in vicinity of pit 6.

- 1 scal of shore

- 1 whe breeching



1993 Surface Oil Summary Segment INO31 Subdivision B

	ocgino		·	Junuar vr.	J. 2011 D	
Location	AP	MS	Type in	CV	CT	
A	73.5	0.	0.	0.	1.225	
В		0.	0.	0.	0.9	
С		0.	0.	0.	1.95	
TOTALS=	74.4					
AP= asphalt; Areas are co coverage of are converte continuous=	mputed by meach oil ty	ultiplyi pe. Fie. dian per	ng the and ld category contracts and category	ffected ories of ue as fo	area by th f percent o ollows:	il coverage

SUBSURFACE OIL SUMMARY FOR SEGMENT IN031B

							TREA	TMENT	1993	OILE	D SED	. VO	L. (m3)	1992	OILED	SED.	. VOL	. (m3)	1991	OILE	SED.	VOL.	(m3)	WT.	ed OII	VOL.	8 CHANC	E WT. '	ed VOL.
Loc.	1993 PIT	# Gr. Sz.	Zn.	En.	Note		1992	1991	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991	92 to 93	91 to	91 to 93
ZA	1 - 3	BCP-PG	U	М	AP/SOF	ON SURFACE	MR	MR, Rs	5.1	5:0	0.0	0.0	0.0	5.3	3.0	1.8	0.0	0.0	0.0	22.5	0.0	0.0	0.0	45.5			4.2		-49.5
				••••			• • • • • • • • • • • • • • • • • • • •	TOTALS=	5.1	5.0	0.0	0.0	0.0	5.3	3.0	1.8	0.0	0.0	0.0	22.5	0.0	0.0	0.0	45.5	43.7		4.2	-51.5	-49.5

Loc.= location name of specific oiling area (subsite).

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.

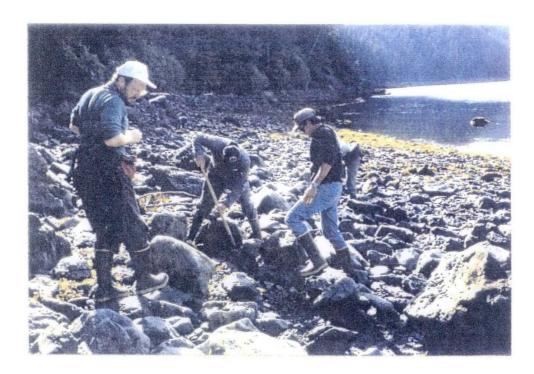
OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2

% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil.









STATION#: -0-SEGMENT#: IN031 LOCATION: INGOT ISLAND KEYWORDS: -0-REASON FOR TAKING PHOTO: HOR UNDER BOULDER COBBLE. INITIALS: AKEN BY: MARIANNE PROFITA ROLL #: 93MSP003 FRAME #: 33 EVIDENCE ID#:_ Roll #: 93/ns/003 Frame #: ___33 OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL TIME: -0-OFFICE: ANCHORAGE DATE: 06/24/93 STATION#: -0-SEGMENT#: IN031 LOCATION: INGOT ISLAND KEYWORDS: -0-REASON FOR TAKING PHOTO:PATCHY ASPHALT EXTENDS SUBSURFACE TO HOR WITH MS/OP AROUND LARGE BOULDER IN A 5 x 49 METER AREA. INITIALS: TAKEN BY: MARIANNE PROFITA ROLL #: 93MSP003 FRAME #: 35 EVIDENCE ID#:

DATE: 06/24/93

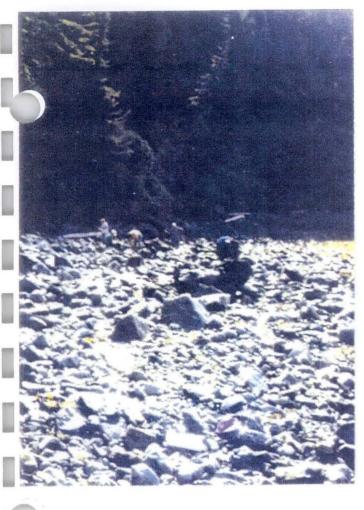
OFFICIAL PHOTOGRAPH ADEC

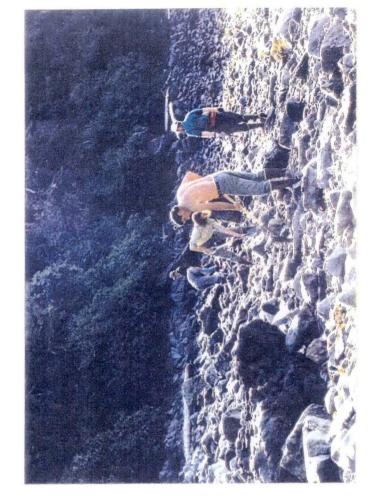
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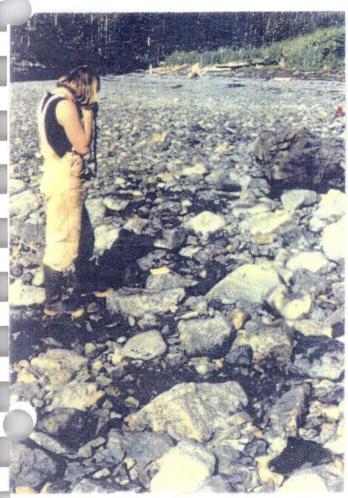
Γ	OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL
0	FFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-
KEYW	SEGMENT#: IN031 STATION#: -0- LOCATION: INGOT ISLAND ORDS: -0- N FOR TAKING PHOTO:OVERVIEW OF SURVEY CREW BREAKING UP AP.
TAKEN ROLL #	BY: MARIANNE PROFITA INITIALS: : 93MSP003 FRAME #: 32 EVIDENCE ID#:
	Taken by: M. PROFITA
	Roll #: 93/nsp003 Frame #: 32
l	OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL
	OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-
	SEGMENT#: IN031 STATION#: -0- LOCATION: INGOT ISLAND WORDS: -0- ION FOR TAKING PHOTO:SURVEY CREW MOVING BOULDER COBBLE TO EXPOSE HOR.
ROLL	BY: MARIANNE PROFITA INITIALS:
	Taken by: 11 PROTITE
	Roll #: 93/75/003 Frame #: 25 34

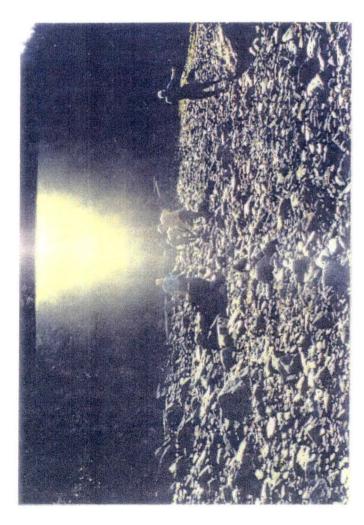
EXXON VALDEZ OIL SPILL

TIME: -0-









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LOCA KEYWORDS		GOT ISLA PHOTO:0	ND VERVIE	OF BOULD	STATION#:	-0- AREA-SURVE	ĒΥ
TAKEN BY: I ROLL #: 93	MARIANNE MSP003	PROFITA FRAME #	: 37	INIT	IALS: CE ID#:	· · · · · · · · · · · · · · · · · · ·	
				Lita			
Roll #	: 7.3/h	0003	- Frame	#:	-5/		
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OFFIC	E: ANCHO	RAGE	DATE: (06/24/93	TIM	E: -0-	ŀ
LOCA KEYWO		GOT ISLA	ND : SURVE	Y CREW BI	ION: -O- REAKING U	P ASPHALT I	ı N
ROLL #:9		FRAM	E #:	2 EAID	ENCE ID#:		
				if to	_	-	•
Roll	#. 1.51	13100	4 Fran	ne #·	5		

EXXON VALDEZ OIL SPILL

OFFICIAL PHOTOGRAPH ADEC

OFFICIAL PHOTOGR			DEZ OIL SPILL
OFFICE: ANCHORAGE	DATE: 0	6/24/93	TIME: -0-
SEGMENT: INOS	ISLAND	STATION:	
KEYWORD: -0- REASON FOR TAKING PI BOULDER/CO AREA.	HOTO:ASPHAL OBBLE AND S	T PATCHES BE UBSURFACE HO	TWEEN OR IN 5 x 4 METE
TAKEN BY: MARIANNE PR ROLL #:93MSP003	ROFITA FRAME #:	36 EVIDENCE	ALS:
Taken by:	m.f	RoFita	,
Roll #: 93/nspc	DOS Frame	#:30	6

TIME: -0-SEGMENT: IN031 STATION: -0-LOCATION: INGOT ISLAND KEYWORD: -0-REASON FOR TAKING PHOTO: SURVEY CREW BREAKING UP ASPHALT IN LOCATION B-BOULDER FIELD. TAKEN BY: MARIANNE PROFITA INITIALS: ROLL #:93MSP004 FRAME #: 2 EVIDENCE ID#: Taken by:

DATE: 06/24/93

EXXON VALDEZ OIL SPILL

OFFICIAL PHOTOGRAPH ADEC

OFFICE: ANCHORAGE









DATE: 06/24/93 OFFICE: ANCHORAGE STATION: -0-SEGMENT: IN031 LOCATION: INGOT ISLAND KEYWORD: -0-EASON FOR TAKING PHOTO: SURVEY CREW LOCATION B-BOULDER FIELD WITH ASPHALT AND SUBSURFACE HOR. INITIALS: KEN BY: MARIANNE PROFITA 5 EVIDENCE ID#: FRAME #: LL #:93MSP004 OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-SEGMENT: IN031 STATION: -0-LOCATION: INGOT ISLAND KEYWORD: -0-REASON FOR TAKING PHOTO: HOR UNDER BOULDER COBBLE. TAKEN BY: MARIANNE PROFITA INITIALS: ROLL #:93MSP004 FRAME #: 7 EVIDENCE ID#: Taken by:

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

TIME: -0-

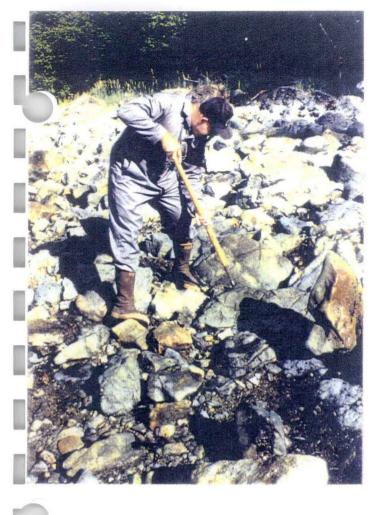
L	OFF	ICIAL	PHOT	OGRAP	H ADE	С	EXXO	VAL	DEZ O	IL SPIL
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	LOCA	TION:	0-	T ISLA				ION:		
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EXXON VALDEZ OIL SPILL OFFICIAL PHOTOGRAPH ADEC TIME: -0-OFFICE: ANCHORAGE DATE: 06/24/93 STATION: -0-

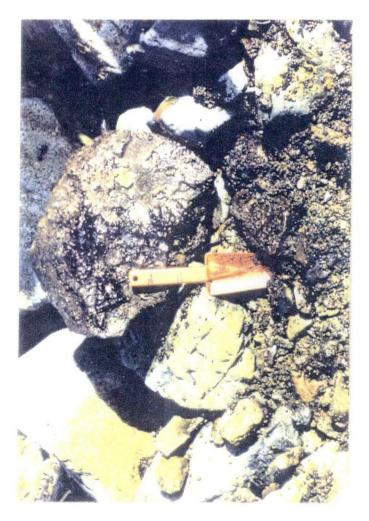
SEGMENT: IN031 LOCATION: INGOT ISLAND KEYWORD: -0-REASON FOR TAKING PHOTO: HOR UNDER BOULDER/COBBLE.

TAKEN BY: MARIANNE PROFITA INITIALS: Roll #: 93/ny och Frame









TAKEN BY: MARIANNE PROFITA INITIALS: ROLL #:93MSP004 FRAME #: 9 EVIDENCE ID#: OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-SEGMENT: IN031 STATION: -0-LOCATION: INGOT ISLAND KEYWORD: -0-REASON FOR TAKING PHOTO: SUBSURFACE HOR IN COBBLE PEBBLE. TAKEN BY: MARIANNE PROFITA INITIALS: ROLL #:93MSP004 FRAME #: 11 EVIDENCE ID#: Roll #: 93msp004 Frame #: 18

DATE: 06/24/93

REASON FOR TAKING PHOTO: MOVING BOULDERS TO EXPOSE SUBSURFACE

OFFICIAL PHOTOGRAPH ADEC

SEGMENT: IN031

LOCATION: INGOT ISLAND

HOR.

OFFICE: ANCHORAGE

KEYWORD: -0-

EXXON VALDEZ OIL SPILL

STATION: -0-

TIME: -0-

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL
OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-
SEGMENT: IN031 STATION: -0- LOCATION: INGOT ISLAND KEYWORD: -0-
REASON FOR TAKING PHOTO: HOR UNDER BOULDER COBBLE.
TAKEN BY: MARIANNE PROFITA INITIALS:ROLL #:93MSP004 FRAME #: 8 EVIDENCE ID#:
Taken by: M. Prichto
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OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL
OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-
SEGMENT: INO31 STATION: -0- LOCATION: INGOT ISLAND KEYWORD: -0-
REASON FOR TAKING PHOTO: ROLLED BOULDER EXPOSED OP/HOR SUBSURFACE.
AKEN BY: MARIANNE PROFITA INITIALS:OLL #:93MSP004 FRAME #: 10 EVIDENCE ID#:
Tokan bu M. Propeta

Roll #: 931458 US4 Frame #: _









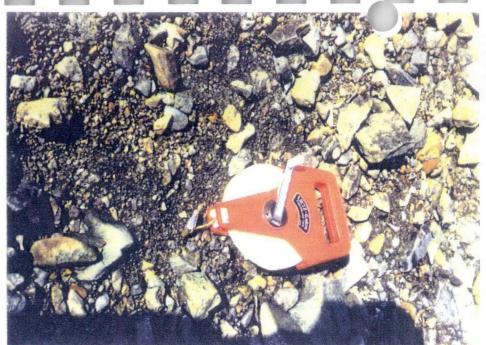
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SEGMENT: IN031 STATION: -0- LOCATION: INGOT ISLAND KEYWORD: -0-	
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EXXON VALDEZ OIL SPILL

OFFICIAL PHOTOGRAPH ADEC

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL
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SEGMENT: IN031 STATION: -0- LOCATION: INGOT ISLAND KEYWORD: -0- REASON FOR TAKING PHOTO: ASPHALT WHICH EXTENDS SUBSURFACE HOR.
TAKEN BY: MARIANNE PROFITA ROLL #:93MSP004 FRAME #: 13 EVIDENCE ID#:
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OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-
SEGMENT: INO31 STATION: -0- LOCATION: INGOT ISLAND KEYHORD: -0-
REASON FOR TAKING PHOTO: OVERVIEW LOOKING WEST TO LOCATION A.
AKEN BY: MARIANNE PROFITA INITIALS:OLL #:93MSP004 FRAME #: 16 EVIDENCE ID#:
Taken by: M. PROfita-
Roll #: 93/h5/'004 Frame #:





OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 06/24/93

TIME: -0-

SEGMENT: IN031

STATION: -0-

LOCATION: INGOT ISLAND

KEYWORD: -0-

REASON FOR TAKING PHOTO: LOCATION A ASPHALT.

TAKEN BY: MARIANNE PROFITA

INITIALS:

ROLL #:93MSP005

FRAME #:

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Taken by:_

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE

DATE: 06/24/93

TIME: -0-

SEGMENT: IN031

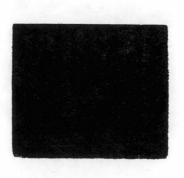
STATION: -0-

LOCATION: INGOT ISLAND

KEYWORD: -0-

REASON FOR TAKING PHOTO: ASPHALT BEFORE BREAKUP IN LOCATION A.

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SEGMENT: IN 033 A

LOCATION: Knight Island North Group, southeastern Ingot Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Very irregular shoreline with dominant fractured bedrock outcrops with large boulder veneers in bedrock lows.

Environmental Sensitivity Index (ESI)

Type 1; exposed rocky coast.

Fetches and Directions (kilometers)

SE= 33; E= 52; NE= 2

Energy Level

High with some bedrock protected moderate locations.

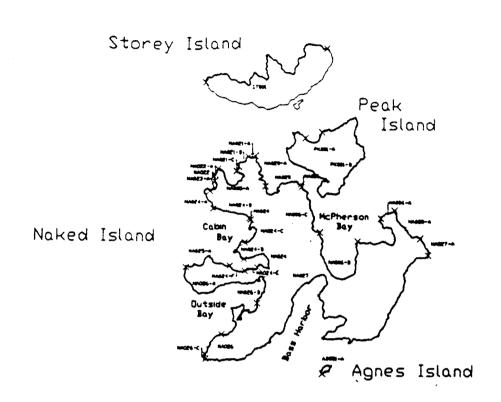
GENERAL BIOLOGICAL SETTING

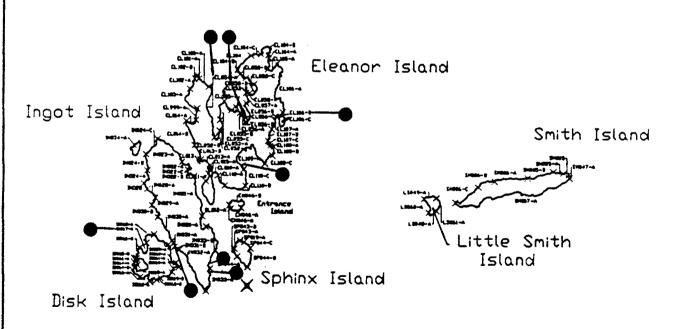
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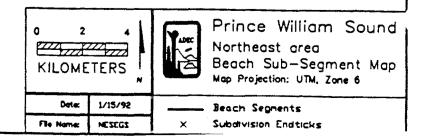
OILING SUMMARY

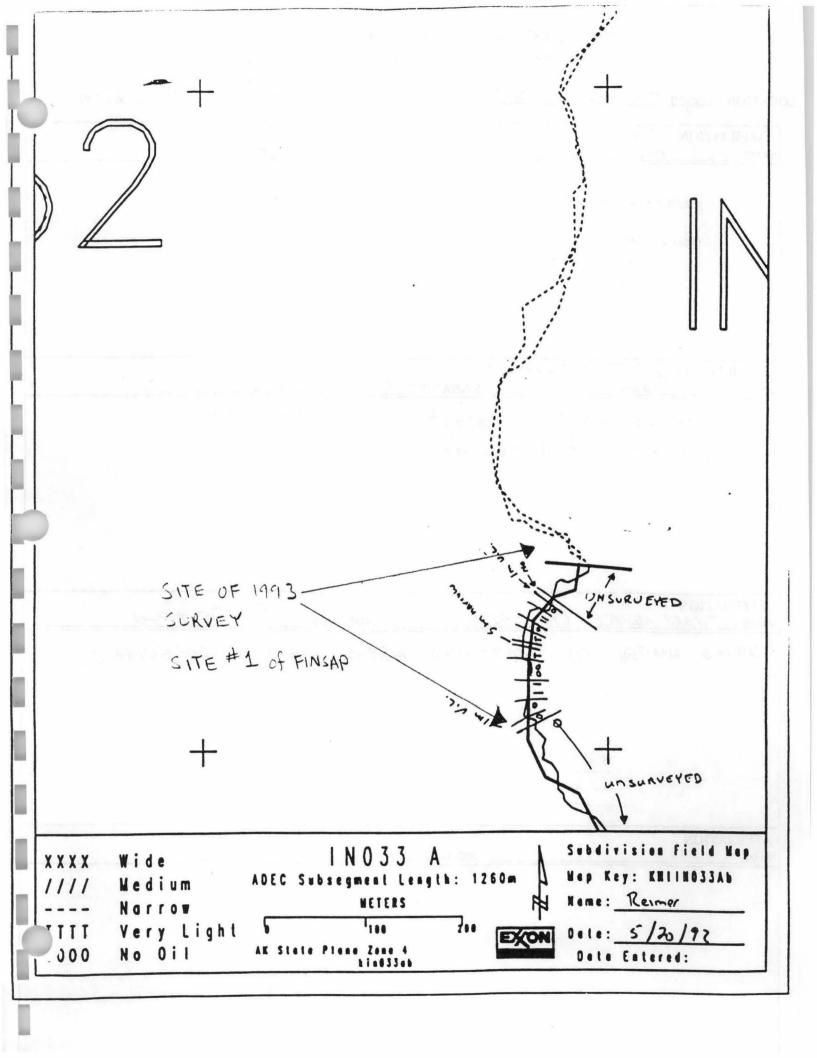
Numerous locations of SOR and MS are present. Oiling occurs interstitially between very large boulders and in protective bedrock fractures in the upper and supra intertidal zones. All the oil is soft, and no AP was discovered. Manual removal of surface and associated subsurface oil was conducted in 1991 and, to a much lesser degree, in 1992. Despite the earlier treatment, no measurable improvement of surface oiling has occurred since 1991, and considerable amounts remain.

Very little subsurface oil remains in 1993. As recorded, the amount of subsurface oil, particularly an OP location in the northern part of the site, has shown significant improvement. One should be cautious, however, in interpreting these data because the 1991 subsurface oil area was recorded as mostly surface oil in 1993 (location 'B'). Subsurface oiled-sediment removal occurred at this location in 1991, and it is possible that a real reduction in subsurface oil occurred but that some of this oil was turned-up and placed on the surface where it was discovered in 1993.









1993 ADEC RESTORATION PROJECT #930380 SHORELINE SURVEY COMMENT SHEET

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INDBSA 6/25/93 M. PROFITA 7822 D CT, SOR SOR ETIS BOULDERS/ROCK MS/HSOR m5/HSAR CT, ST/B SDEADIC SPLATTERS WEATHERED SOR ROCK CREVICES ms - msor ct ST. CT needles 1 ×15 SOR in B/C 142 M- HSOR LARGE BOWLDERS M-HSOR P/C MATELY 1 X2M CT, .5 x 54 HIGH ANGLE RUBBLE BEACH. VERT. VERTICAL ROCK ROCK FULUS ()

1993 Surface Oil Summary Segment IN033 Subdivision A

Location	Area AP	of Oiling MS		Square CV	Meters CT	
A	0.	0.	0.12	0.	0.	
В	0.	0.	46.2	0.	9.24	
C	0.	1.2	0.02	0.	0.02	
D	0.	0.	0.075	0.	0.9	
Е	0.	4.5	0.9	0.	4.5	
F	0.	0.	0.6	0.	0.6	
G	0.	0.	· 6.	0.	30.	
Н	0.	0.	0.	0.	0.15	
I	0.	0.	0.03	0.	0.	
J	0.	0.	0.12	0.	0.	
TOTALS=	0.	5.7	54.065	0.	45.41	

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows: continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT IN033A

						TREAT	TMENT	1993	OILE	D SED	. VO	L. (m3)	1992	OILE	SED	. VOL	. (m3)	1991	OILED	SED.	VOL.	(m3)	WT.	ed OII	VOL.	& CHANG	GE WT.	ed VOL.
Loc.	1993 PIT	# Gr. Sz.	Zn.	En.	Note	1992	1991	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991	92 to	91 to	91 to
ZA		2 BCP-PCG	U	М	AP ON SURFACE	NO	MR, Rb, R	0.0	0.2	0.0	0.0	0.0	?	?	?	?	?	7.5	2.3	0.0	0.0	0.0	0.8	?	46.5	?	?	-98.
2B		BP-GP	U	М		NO	ИО	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	-100.0	-100.
ZC		B-BPCG	S	Н	WITH SOR ON SURFACE	Rs	Rs, Rb			0.0	1			0.0					0.3							0.0	-100.0	
							TOTALS-			0.0				0.0					2.5					0.0			-100.0	

Loc.= location name of specific oiling area (subsite).

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.

OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2

% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100. positive values indicate increases in the amount of gative values indicate decreases, "Inf" (infinite percent increase) indi

SEGMENT: IN 033 B

LOCATION: Knight Island North Group, southeastern Ingot Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Two pocket beaches separated by shoreline cliffs. The central beaches contain varying percentages of pebbles, cobbles, and boulders. Bedrock outcrops are important, and cliffs and boulder beaches occur on the limbs.

Environmental Sensitivity Index (ESI)

Type 1; exposed rocky. Type 7; gravel beach.

Fetches and Directions (kilometers)

SE= 33; E= 52; NE= 2

Energy Level

High with some moderate locations.

GENERAL BIOLOGICAL SETTING

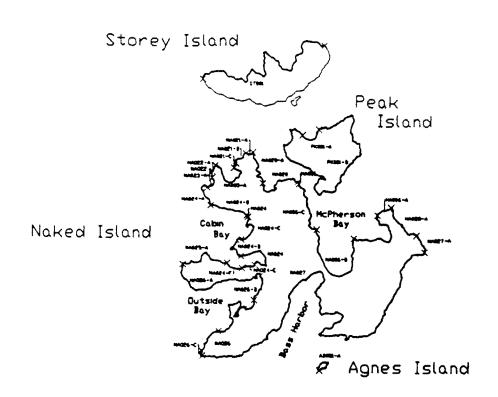
Deer harvesting.

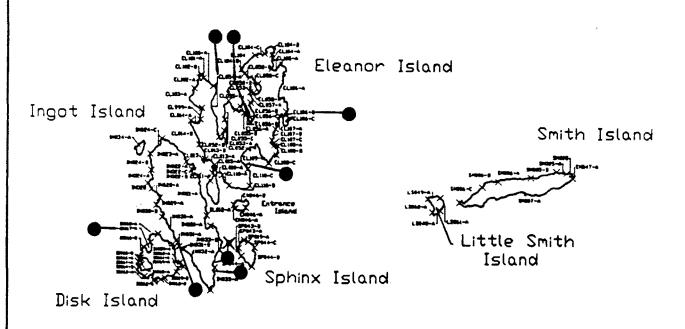
OILING SUMMARY

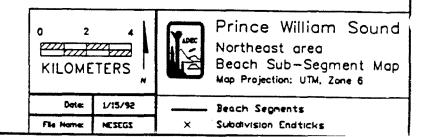
Site 1 contains a location with a large and concentrated amount of AP and SOR (location 'B'). AP and SOR in location 'B' occur among boulders, bedrock, and cobbles in the upper intertidal zone. The surface oil is associated with a subsurface oil lens. Two other areas in site 2 contain significant amounts of SOR ('E' and 'F'). Surface oil in locations 'E' and 'F' is also among boulders and bedrock in the upper intertidal zone. No improvement occurred at the above three locations since 1992, in fact, more surface oil was recorded in 1993 than in 1992. This is despite the fact that manual treatment took place in 1991 and 1992.

One location of MOR to OP subsurface oil remained in 1993. The oil at this location is associated with the surface oil in location 'B' at site 1, and surveyors recorded heavier and greater amounts in 1993 than in 1992. Another subsurface oil location was present in the northern part of site 2 in 1992 corresponding with the surface oil in location 'E' as designated on the 1993 sketch map. This subsurface oil was not present in 1993.

Oiling at site 'B' was minimal.







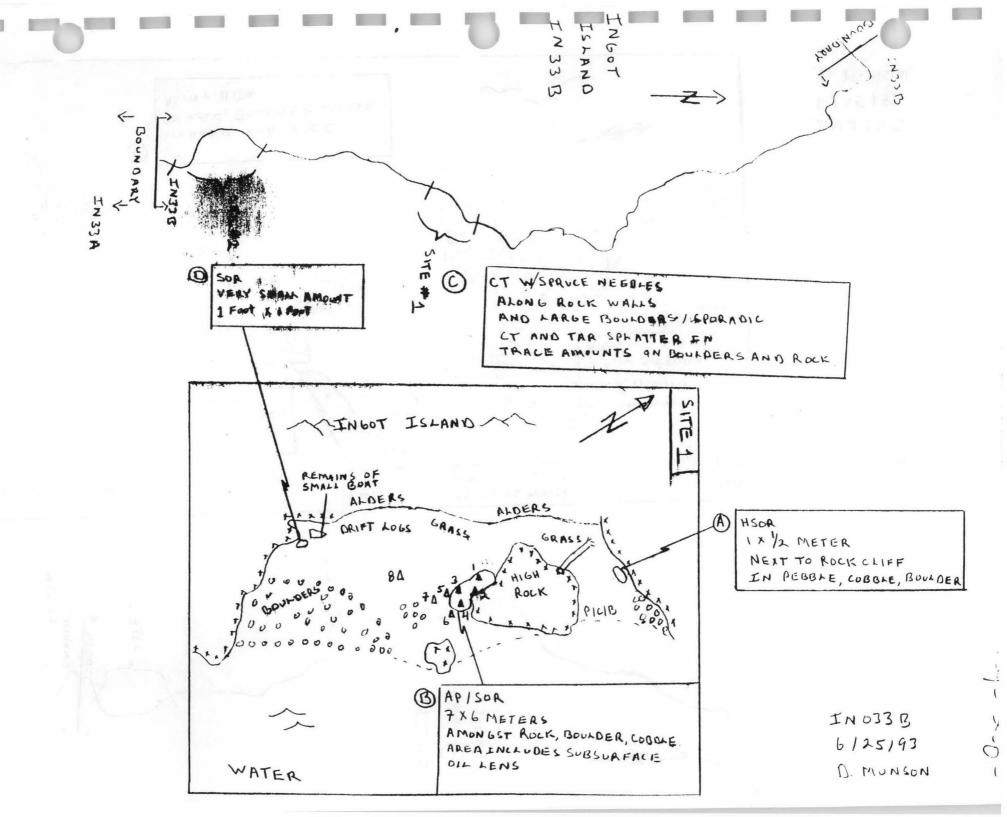
1993 ADEC RESTORATION PROJECT #930380 SHORELINE SURVEY COMMENT SHEET

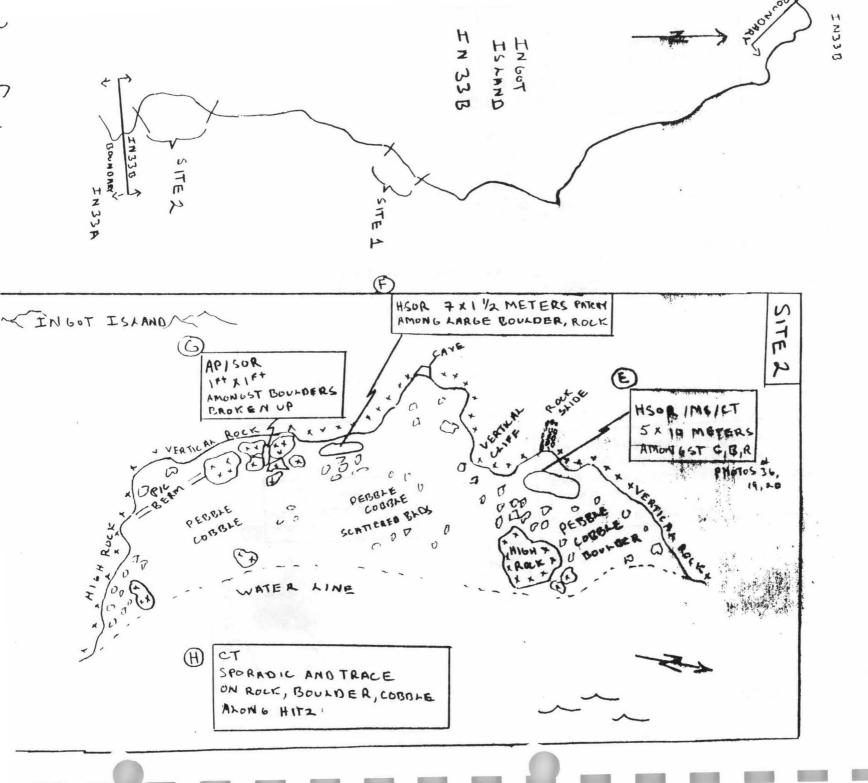
IN 50T ICATION ISLAND SEGMENT IN 033 SUBDIVISION B DATE 6 125/93
NAME Wyn Meneter SIGNATURE Wyn Minds
Consum with findings.
No treatment race unded.
The rock bearies were well armost and oil will take
a long time to de-sade.
AFFILIATION U.S. Forest Service
Small amounts of surface tar/asplo 1+ between large rocks
+ hat cover entire area. No treatment necessary.
NAME IVAN NAWE, LT, USCGR SIGNATURE & MANGE
OILING LIMITED TO PROTECTED AREAS AND CONT ON SURGES,
AFFILIATION
NAMESIGNATURE
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1993 ADEC RESTORATION PROJECT # 930380 SHORELINE OILING SUMMARY

PAGE_	OF	_3

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										5								DATE	1_25 / 93
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IN033B 6/25/93 D MUNSON

1993 Surface Oil Summary Segment IN033 Subdivision B

		MS	Type in SOR	CV	CT	
	0.	0.	0.475	0.	0.	
В			29.4			
C						
D			0.0855			
E				0.	15.	
F			3.15		0.	
G	0.027	0.	0.027	0.	0.	
Н			·			
TOTALS=	29.427					

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows: continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT IN033B

						TREAT	TMENT	1993	OILE	D SED	. VO	L. (m3)	1992	OILE	SED.	VOL	. (m3)	1991	OILED	SED.	VOL.	(m3)	WT.	ed OII	L VOL.	& CHANG	GE WT. '	d VOL.
Loc.	1993 PIT	# Gr. Sz.	Zn.	En.	Note	1992	1991	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991	92 to 93	91 to 92	91 to 93
ZA	1-4	RBCP-PG	UM	Н		MT, Rs	MT, SR	1.9	0:6	0.5	0.0	0.0	0.0	0.0	0.2	0.0	0.0	?	?	?	?	?	13.5	0.7	?	1781.3	?	?
ZB		BC-PGCSR	U	м			NO	0.0	0.0	0.0	0.0	0.0	3.5	0.0	0.0	0.0	0.0	?	?	?	?	?		17.5		-100.0		?
							TOTALS-	1.9	0.6	0.5	0.0	0.0	3.5	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	18.2	0.0	-25.7	Inf	

Loc.= location name of specific oiling area (subsite).

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.

OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

WT.'ed OIL VOL. = weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2

% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of gative values indicate decreases, "Inf" (infinite percent increase) indicate decreases in the indicate decreas









EXXON AVEDEZ OIL SPILL

5-31

0	FFICI	AL	РНОТО	GRAPH	ADEC	EXXON	VALDE	Z 01L	SPILL
OFF	ICE:	ANC	CHORAG	E (DATE: 0	6/25/93		TIME:	-0-
	CATIO	ON:	NT: IN INGOT O- AKING	ISLA			ION: -		ING SOUT
KEN	BY: #:93M	MAR	I ANNE	PROF I	TA 4E #:		NITIAL:	S:	
Tak	en by	/:	m	. /	Rit	The Control of the Co			
			15120	105	Frame	#:	35		
							4		

OFFICE: ANCHORAG	E DATE:	06/25/93	TIME:	-0-
SEGMENT: IN LOCATION: INGO KEYWORD: -0-		STATION	: -0-	
REASON FOR TAKING	PHOTO: PHO		BSURFACE	OILING
AKEN BY: MARIANNE OLL #:93MSP005	PROFITA FRAME #:	INITI 33 EVIDENC		
Taken by:	m	nosta		
Roll #: 93msf	005 Fram	e #:	3	

EXXON VALDEZ OIL SPILL

OFFICIAL PHOTOGRAPH ADEC

22-5

OFFICIAL PHOTOGRAPH ADEC

1x-5









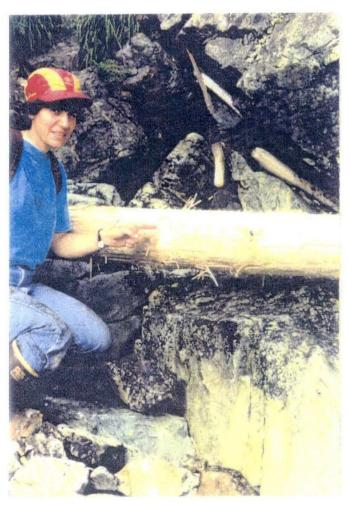
	OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL
	OFFICE: ANCHORAGE DATE: 06/25/93 TIME: -0-
R	SEGNENT#: IN033 STATION#: -0- LOCATION: INGOT ISLAND KEYWORDS: -0- EASON FOR TAKING PHOTO: MS/OP UNDER BEDROCK CLIFF OVERHANG IN BOULDER/COBBLE.
	KEN BY: MARIANNE PROFITA INITIALS:
	Taken by: Pa ofita
	Roll #: 93MSPOST Frame #:30
Dec 1181	
5-20	
	OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL
	OFFICE: ANCHORAGE DATE: 06/25/93 TIME: -0-
KEY	SEGMENT#: IN033 STATION#: -0- LOCATION: INGOT ISLAND WORDS: -0-
REAS	ON FOR TAKING PHOTO: OVERVIEW OF AREA CONTAINING MOUSSE/OP UNDER BOULDER/COBBLE.
	BY: MARIANNE PROFITA INITIALS:
	Taken by: M. Pasifita
	Roll #: 93/115P005 Frame #: 27

	OFFICIAL	PHOTOGRAPH	ADEC	EXXON	VALDEZ OIL SP	ILL
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TAKEN E ROLL #:		NE PROFITA		INITI	ALS:	
Tak	en by:	11. 1	PROS	+110-		
Ro	11 #:931m	1005 F	rame #:	3	1	_
o la	OFFICIAL F	HOTOGRAPH	ADEC	EXXON V	ALDEZ OIL SPIL	L
OF	FICE: ANCH	ORAGE DA	TE: 06/	25/93	TIME: -0-	
KEYWOR	DCATION: I	#: INO33 NGOT ISLAND G PHOTO: MS			ATION#: -0- ER/COBBLE.	
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Take	n by:	19. 6	Roti	itz		
			distant attended to	THE PERSON NAMED IN		









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OFFICE: ANCHORAGE DATE: 06	EXXON VALDEZ OIL SPILL
SEGMENT: IN033 LOCATION: INGOT ISLAND KEYWORD: -0- REASON FOR TAKING PHOTO: MOUSSE BOULDERS.	STATION: -0-
TAKEN BY: MARIANNE PROFITA ROLL #:93MSP005 FRAME #: 23	INITIALS: S EVIDENCE ID#:
Taken by: B. PROF	ita
Roll #93msp035 Frame #:	23
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OFFICIAL PHOTOGRAPH ADEC	EXXON VALDEZ OIL SPILL
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OFFICIAL PHOTOGRAPH ADEC OFFICE: ANCHORAGE DATE: 06, SEGMENT#: IN033 LOCATION: INGOT ISLAND KEYMORDS: -0- REASON FOR TAKING PHOTO: MOUSSE UP	/25/93 TIME: -0- STATION#: -0- IDER AND AROUND LARGE INITIALS:
OFFICIAL PHOTOGRAPH ADEC OFFICE: ANCHORAGE DATE: 06, SEGMENT#: IN033 LOCATION: INGOT ISLAND KEYWORDS: -0- REASON FOR TAKING PHOTO: MOUSSE UNBOULDERS. TAKEN BY: MARIANNE PROFITA COLL #: 93MSP005 FRAME #: 19	/25/93 TIME: -0- STATION#: -0- IDER AND AROUND LARGE INITIALS:
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SEGMENT: INO33 LOCATION: INGOT ISLAND KEYWORD: -0-	STATION: -O-	
REASON FOR TAKING PHOTO:	OVERVIEW OF BEDROCK OVERHANG SSE/OP UNDER BOULDER/COBBLE.	
TAKEN BY: MARIANNE PROFITA ROLL #:93MSP005 FRAME	#: 26 EVIDENCE ID#:	
Taken by:	20 fito-	
Roll #: 93/115/205 Fre	ame #:	
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OFFICIAL PHOTOGRAPH ADE		L
OFFICE: ANCHORAGE DATE:	: 06/25/93 TIME: -0-	
SEGMENT: 1N033 LOCATION: INGOT ISLAND	STATION: -0-	
KEYWORD: -0- REASON FOR TAKING PHOTO:PIT WRITTEN BY ADEC P	DRAWN ON LOG AS PIT LOCATOR. PERSONNEL.	NOT
TAKEN BY: MARIANNE PROFITA	; 22 EVIDENCE ID#:	
ROLL #:93MSP005 FRANE #:	SS EAIDENCE ID#:	
Taken by: Mrke	it, to	
Roll #: 93/15/2005 Fra	~ -	
Roll #: (Fra	ime #:	

DATE: 06/25/93

OFFICIAL PHOTOGRAPH ADEC

OFFICE: ANCHORAGE

EXXON VALDEZ OIL SPILL

TIME: -0-

Mary 1

SEGMENT: KN 024 A

LOCATION: Bay of Isles Group, Knight Island, northwest shore of Short Arm.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Two sites were surveyed in 1993. Site 'A' is a small, high-angle, pocket beach with angular pebbles, cobbles, and boulders on the surface and a fine-grained organic matrix in the subsurface. Drift logs are present in the upper and supra intertidal zones, but no well defined berms exist. Site 'B' is also a small pocket beach with a small intermittent stream forming a poorly defined channel down the center of the beach. Sediments at site 'B' are finer grained than at site 'A' and consist of angular cobbles and pebbles flanked by areas of bedrock and boulders on each side.

Environmental Sensitivity Index (ESI)

Type 7, gravel beach.

Fetches and Directions (kilometers)

NE=4

Energy Level

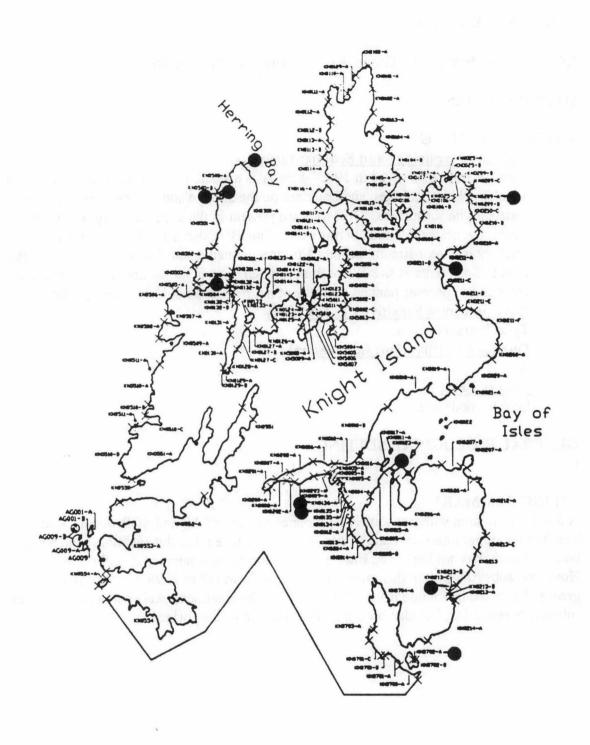
Low to moderate.

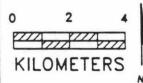
GENERAL BIOLOGICAL SETTING

Eagle nest.

OILING SUMMARY

A 3 m by 14 m area with a relatively high concentration of AP and SOR occurs across the beach in the upper intertidal zone of site 'A'. The surface oil at this location, which is a boulder beach, has not improved since 1991 despite manual removal in 1991 and 1992. However, subsurface oil in this same area reduced from OP to HOR conditions and greatly decreased in volume from 1991 to 1993. The treatment likely had an effect on this subsurface reduction, but also brought subsurface oil to the surface.



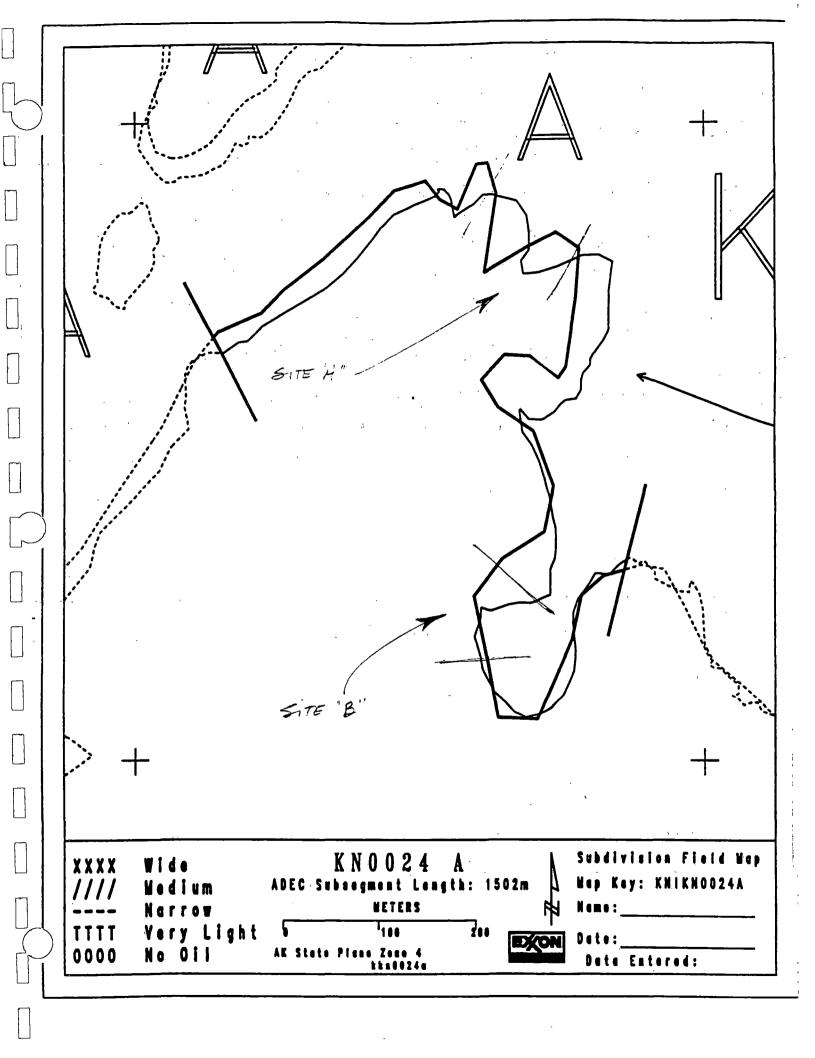




Prince William Sound Central area #2 Beach Sub—Segment Map Map Projection: UTM, Zone 6

	Date:	1/15/92		1
File	Nome:	CESSEGS	×	

Beach Segments Subdivision Endticks



1993 ADEC RESTORATION PROJECT #930380 SHORELINE SURVEY COMMENT SHEET

BAY OF ICHES OCATION KNIGHT IS SEGMENT KNO24 SUBDIVISION A DATE 7 1 19 193 AFFILIATIONADNR, DIV. OF LAND NAME KATIE FARLEY SIGNATURE Kathlien M Failey When further habitat restoration is done for any site in this vicinity, all sites with oil Z MOR should be restored at Bay of beles because of its significant recreation, fishery and contained so that additional clean-up is attainable while minimizing the ciew's transportation costs by staging out of the bay with access to several sites sites site is an excellent concharage and camping site to booters.

AFFILIATION USCG/DIT

NAME The Means SIGNATURE aesthetic values to the public. The oiled areas (EMOR) are with Shoreline Oiling Summary as written. break-up of small AP for enhanced degradation expected to result in release. **AFFILIATION** NAME SIGNATURE

SIGNATURE

AFFILIATION

NAME

1993 ADEC RESTORATION PROJECT # 930380 SHORELINE OILING SUMMARY

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RESTORATION SHORELINE OILING SUMMARY (cont.)

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TEAM NO. _____

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SUBDIVISION ____

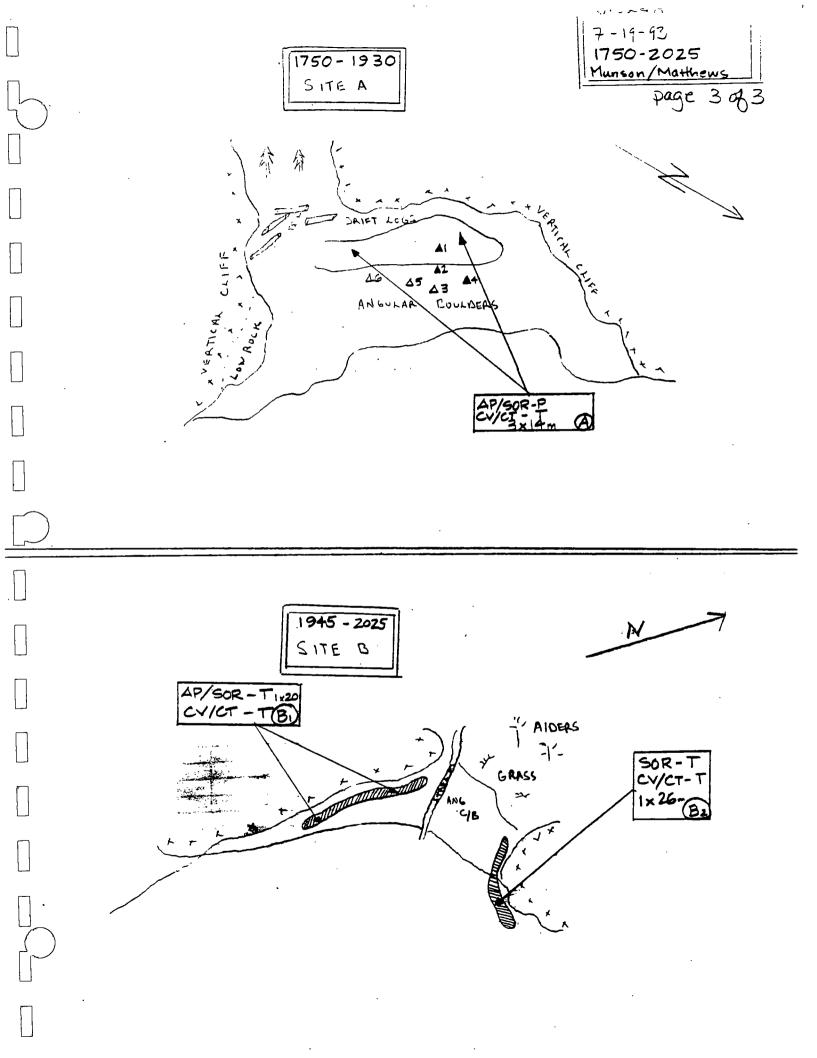
DATE 07/19198

IT IO.	PIT DEPTH		OII	UBSUF	RACTI	ER			OILED ZONE	CLEAN BELOW		SHEEN		Z	ONE	k	SURFACE- SUBSURFACE	SEEMENT IN
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PUEEN COLOR: B = BROWN: R = RAINBOW: S = SILVER: N = NONE

OG COMMENTS:

This site is high/sub angular Boulders/cobbles; oiling is sparadic AP/sor in a 3x14 m band in upper intertital zone - intersticatly located. Subsurface oil is discontinuous (no lens evident). Custombien pettets visible on both site A + B.



1993 Surface Oil Summary Segment KN024 Subdivision A

Location	Area o AP	f Oiling MS	Type in SOR	Square CV	Meters CT
Α	12.6	0.	12.6	0.21	0.21
B1	0.1	0.	0.	0.1	0.1
B2	0.	0.	0.13	0.13	0.13
TOTALS=	12.7	0.	12.73	0.44	0.44

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows: continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT KN024A

	TREA	TMENT	1993	OILE	D SED	. voi	. (m3)	1992	OILE	SED.	VOL	. (m3)	1991	OILEI	SED.	VOL.	(m3)	WT.	ed OII	VOL.	& CHANG	E WT. 'e	d VOL.
Loc. 1993 PIT # Gr. Sz. Zn. En. Note	1992	1991	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991	92 to 93	91 to	91 to 93
ZA 1,2,4-6 BCP-PGS UM M	Rs, MR	Rs, Rb, MT	0.0	0.7	1.1	0.0	1.0	0.0	0.0	0.4	0.0	0.0	15.0	7.5	0.0	0.0	0.0	6.1	1.2	105.0	408.3	-98.9	-94.2
		TOTALS-	0.0	0.7	1.1	0.0	1.0	0.0	0.0	0.4	0.0	0.0	15.0	7.5	0.0	0.0	0.0	6.1	1.2	105.0	408.3	-98.9	-94.2

Loc. = location name of specific oiling area (subsite).

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.

OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

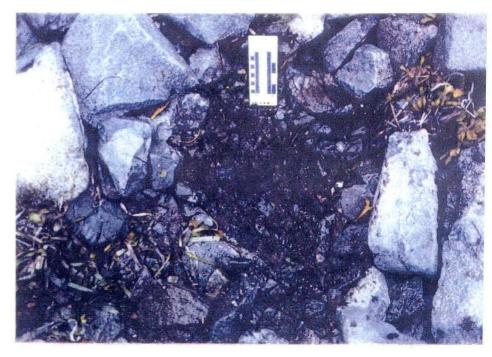
WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2

% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil.









OFFICIAL PHOTOGRAPH

ADEC

Date: July 19, 1993 Time: 17:55 (5:55 pm) KN24A Site A Location (segment #): ___ Reason for taking photo: HOR Pit 1 Taken by: L.J. Evans Roll #: LJE002 _ Frame #:

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OFFICIAL PHOTOGRAPH **ADEC**

Date: July 19, 1993 Time: 18:00 (6:00 pm) Location (segment #): KN24A Site A Reason for taking photo: Pit 2 L.J. Evans _Frame #: __024 Poll #: LJE002

OFFICIAL PHOTOGRAPH

Taken by: L.J. Evans

Roll #: __LJE002

Roll #: LJE002

ADEC

Date: July 19, 1993 Time: 17:48 (5:48 pm) Location (segment #): KN24A Site A Reason for taking photo: Overview towards Southeast

Frame #:

OFFICIAL PHOTOGRAPH

ADEC

023

XXX 020

Date: July 19, 1993 Time: 17:58 (5:58 pm) KN24A Location (segment #):___ Reason for taking photo: Diane Munson at Pit 2 Taken by: L.J. Evans (19

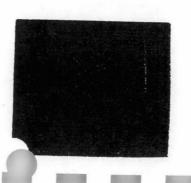
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Roll #: .	LJ	E002	21	Frame #:		025		



SEGMENT: KN 132 B

LOCATION: Knight Island North Group, west coast of Herring Bay, Knight Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Pocket beach with a long west limb and a stream delta with sandy, granular banks and pebbly tidal flats. The stream is bounded on the west by a granular beach that grades along shore to a pebble cobble beach and then to a mostly boulder beach. The stream is banked by a rocky headland to the west.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Type 8; sheltered rocky.

Type 9; sheltered tidal flat.

Fetches and Directions (kilometers)

NNE= 55

Energy Level

Low to moderate

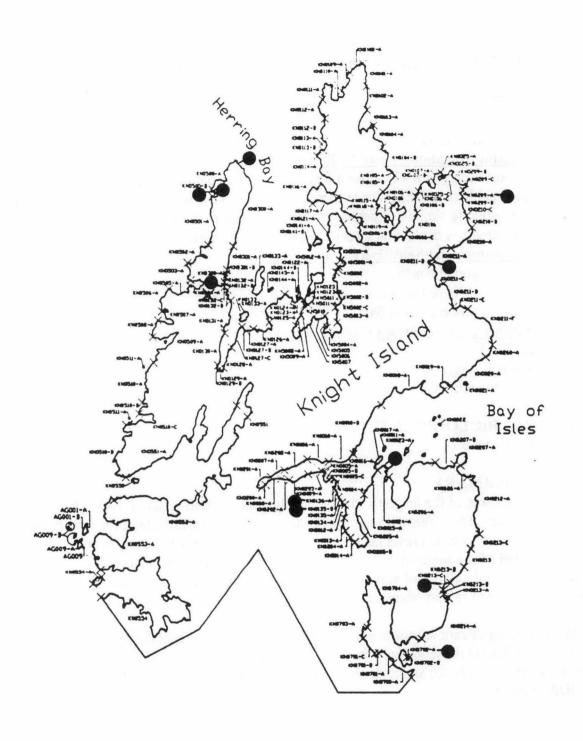
GENERAL BIOLOGICAL SETTING

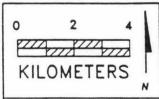
Anadromous stream.

OILING SUMMARY

This site has some of the largest and most highly concentrated areas of thick AP in Prince William Sound. The three areas run along the beach on the west side of the stream and occur on pebbly, cobble gravel near the stream and interstitially in boulders and cobbles on the north end of the segment. The amount of SOR appears to have decreased since 1991 as has the overall amount of surface oil. Manual removal and tilling occurred in 1991 and manual tilling and raking occurred in 1992.

One area of significant subsurface oil remained in 1993, and it is adjacent to the stream. The subsurface oil is associated with surface AP in a portion of location 'A'. The amount of subsurface oil has not significantly decreased and the oiling category has remained as MOR or greater.



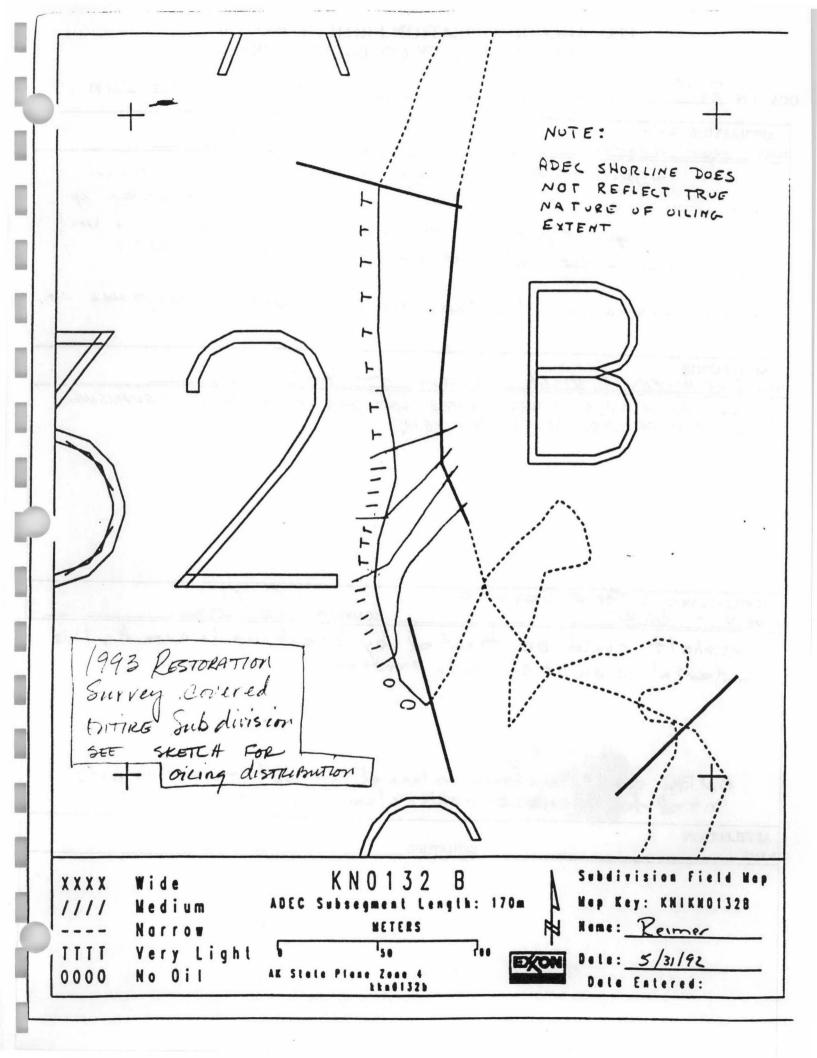


Date:	1/15/92
File Nome:	CESSEGS



Prince William Sound Central area #2 Beach Sub—Segment Map Map Projection: UTM, Zone 6

	Beach Se	gments
×	Subdivision	Endticks



1993 ADEC RESTORATION PROJECT #930380 SHORELINE SURVEY COMMENT SHEET

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ADFG Fish	camp is cleaned up.	Possible recreation	ral camp use now.
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MANE VER BOR	Forest Service	SIGNATURE SIGNATURE	204
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AFFILIATION NAME	SIGNATURE		
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1993 ADEC RESTORATION PROJECT # 930380 SHORELINE OILING SLIMMARY

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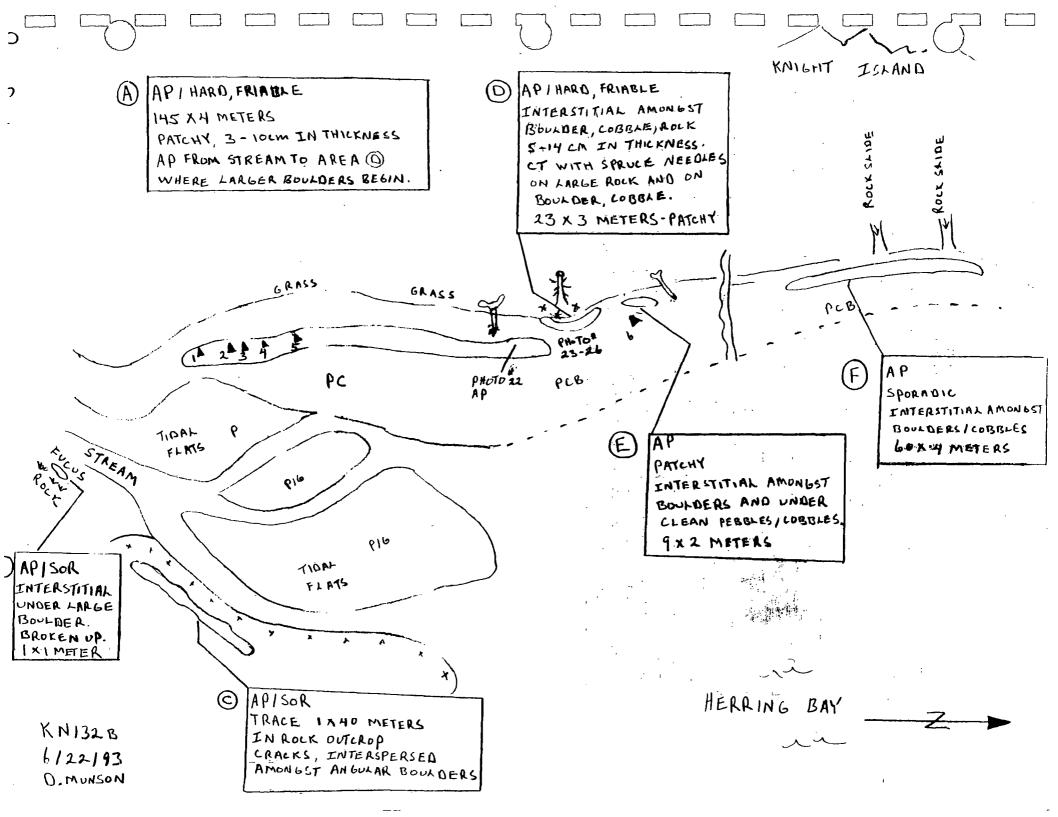
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SHEEN COLOR: 8 = 8ROWN; R = RAINSOW; S = SILVER: N = NONE

OG COMMENTS:

- 2 KITTIWAKES DEFENDING

- 2 OYSTER CATCHERS



1993 Surface Oil Summary Segment KN132 Subdivision B

Location	Area AP	a of	Oiling MS	Type in SOR	Square CV	Meters CT	
A	174.		0.	0.	0.	0.	100
В	0.7	D.	0.	0.7	0.	0.	
С	0.2		0.	0.2	0.	0.	
D	20.7	3	0.	0.	0.	20.7	
E	5.4		0.	0.	0.	0.	
F	14.4		0.	0.	0.	0.	
TOTALS=	215.4	1 4	0.	0.9	0.	20.7	

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows: continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT KN132B

						TREAT	MÉNT	1993	OILE	D SEC	. vo	L. (m3)	1992	OILE	D SED	VOL	. (m3)	1991	OILE	SED.	VOL.	(m3)	WT.	ed OII	VOL.	8 CHANG	E WT.	d VOL
Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	1992	1991	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991	92 to 93	91 to 92	91 to
ZA	1-5	P-GSP	U	L	AP ON SURFACE	MT	MT,MR, Rs,Rb	0.0	2.4	0.4	1.4	0.0		0.0	5.8	2.4	0.0	0.0	0.0	4.0	2.7	0.0	13.8	22.1	17.3	-37.7	27.5	-20.6
ZB	6	BCP-PS	Ü	L			MT,MR, Rs,Rb	0.0	0.3	0.0	0.0	0.0	?	?	?	?	?	0.0	0.0	0.0	0.0	0.0	1.1	?	0.0	?	?	Inf
ZC		B-PGS	υ	L			MT,MR, Rs,Rb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ZD		B-GS	ט	VL			MT,MR, Rs,Rb	0.0	0.0	0.0	0.0		0.0	1	0.0						0.0					-100.0	Inf	0.0
							TOTALS=	0.0	2.7	0.4	1.4	0.0	0.0	0.0	5.8	2.5	0.1	0.0	0.0	4.0	2.7	0.0	14.9	22.3	17.3	-33.4	28.9	-14.1

Loc.= location name of specific oiling area (subsite).

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.

OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2

% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil.









REYMORD: -0- REASON FOR TAKING PHOTO:Broken up asphalt - same area as photos #22-#24. REASON FOR TAKING PHOTO:Broken up asphalt - same area as photos #22-#24. REASON FOR TAKING PHOTO:Broken up asphalt - same area as photos #22-#24. REASON FOR TAKING PHOTO:Asphalt patches below large boulders with spruce needles attached. REASON FOR TAKING PHOTO:Asphalt patches below large boulders with spruce needles attached. TAKEN BY: Marianne Profita INITIALS: ROLL #: 93MSP002 FRAME #: 30 EVIDENCE ID#:	
OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL OFFICE: ANCHORAGE DATE: 06/22/93 TIME: 0900 SEGMENT#: KN0132 STATION#: -0- LOCATION: Knight Island KEYWORDS: -0- REASON FOR TAKING PHOTO: Asphalt patches below large boulders with spruce needles attached.	FOR TAKING PHOTO:Broken up asphalt - same area as photos #22-#24.
OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL OFFICE: ANCHORAGE DATE: 06/22/93 TIME: 0900 SEGMENT#: KN0132 STATION#: -0- LOCATION: Knight Island KEYWORDS: -0- REASON FOR TAKING PHOTO: Asphalt patches below large boulders with spruce needles attached.	93MSP002 FRAME #: 26 EVIDENCE ID#:
OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL OFFICE: ANCHORAGE DATE: 06/22/93 TIME: 0900 SEGMENT#: KN0132 STATION#: -0- LOCATION: Knight Island KEYWORDS: -0- REASON FOR TAKING PHOTO: Asphalt patches below large boulders with spruce needles attached.	
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OFFICE: ANCHORAGE DATE: 06/22/93 TIME: 0900 SEGMENT#: KN0132 STATION#: -0- LOCATION: Knight Island KEYWORDS: -0- REASON FOR TAKING PHOTO:Asphalt patches below large boulders with spruce needles attached.	Frame #:
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OFFICE: ANCHORAGE DATE: 06/22/93 TIME: 0900 SEGMENT#: KN0132 STATION#: -0- LOCATION: Knight Island KEYWORDS: -0- REASON FOR TAKING PHOTO: Asphalt patches below large boulders with spruce needles attached.	
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OFFICE: ANCHORAGE DATE: 06/22/93 TIME: 0900 SEGMENT#: KN0132 STATION#: -0- LOCATION: Knight Island KEYWORDS: -0- REASON FOR TAKING PHOTO:Asphalt patches below large boulders with spruce needles attached.	
OFFICE: ANCHORAGE DATE: 06/22/93 TIME: 0900 SEGMENT#: KN0132 STATION#: -0- LOCATION: Knight Island KEYWORDS: -0- REASON FOR TAKING PHOTO:Asphalt patches below large boulders with spruce needles attached.	
SEGMENT#: KN0132 STATION#: -0- LOCATION: Knight Island KEYWORDS: -0- REASON FOR TAKING PHOTO:Asphalt patches below large boulders with spruce needles attached.	OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL
LOCATION: Knight Island KEYWORDS: -0- REASON FOR TAKING PHOTO:Asphalt patches below large boulders with spruce needles attached.	OFFICE: ANCHORAGE DATE: 06/22/93 TIME: 0900
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REASON FOR TAKING PHOTO:Asphalt patches below large boulders with spruce needles attached.	SEGMENT#: KN0132 STATION#: -0-
with spruce needles attached.	LOCATION: Knight Island
AKEN BY: Marianne Profita INITIALS:OLL #: 93MSP002 FRAME #: 30 EVIDENCE ID#:	LOCATION: Knight Island WORDS: -0-
AKEN BY: Marianne Profita INITIALS:OLL #: 93MSP002 FRAME #: 30 EVIDENCE ID#:	LOCATION: Knight Island WORDS: -0- DN FOR TAKING PHOTO:Asphalt patches below large boulders
OLL #: 93MSP002 FRAME #: 30 EVIDENCE ID#:	LOCATION: Knight Island WORDS: -0- DN FOR TAKING PHOTO:Asphalt patches below large boulders
	LOCATION: Knight Island WORDS: -0- ON FOR TAKING PHOTO:Asphalt patches below large boulders with spruce needles attached.
	LOCATION: Knight Island WORDS: -0- ON FOR TAKING PHOTO:Asphalt patches below large boulders with spruce needles attached.
	LOCATION: Knight Island WORDS: -0- ON FOR TAKING PHOTO:Asphalt patches below large boulders with spruce needles attached.
Taken by: M. Proxita	LOCATION: Knight Island WORDS: -0- DN FOR TAKING PHOTO: Asphalt patches below large boulders with spruce needles attached. BY: Marianne Profita INITIALS: #: 93MSP002 FRAME #: 30 EVIDENCE ID#:

DATE: 06/22/93

EXXON VALDEZ OIL SPILL

TIME: 0900

OFFICIAL PHOTOGRAPH ADEC

Roll #: 93msp 0-2 Frame #:

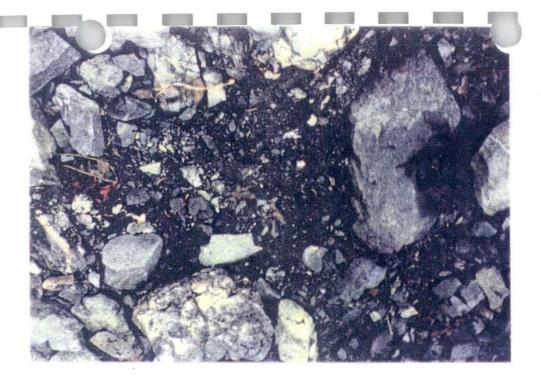
OFFICE: ANCHORAGE

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OFFICE: ANCHORAGE DATE: 06/22/93 TIME: 0900	
SEGMENT#: KN0132 STATION#: -0- LOCATION: Knight Island KEYWORDS: -0- REASON FOR TAKING PHOTO:Remaining Asphalt	
TAKEN BY: Marianne Profita INITIALS:ROLL #: 93MSP002 FRAME #: 24 EVIDENCE ID#: Taken by: M Profita Taken by: M Profita	-
Roll #: 93ms2032 Frame #: 34	
	50
1	
OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL	
OFFICE: ANCHORAGE DATE: 06/22/93 TIME: 0900	
SEGMENT: KN0132 STATION: -0- LOCATION: Knight Island KEYWORD: -0-	
REASON FOR TAKING PHOTO:Asphalt patches below large boulders with spruce needles attached (see photo #28)	i
AKEN BY: Marianne Profita INITIALS: DLL #:93MSP002 FRAME #: 29 EVIDENCE ID#:	
Taken by: M Profitz	
Roll #: 93 ms Poor Frame #: 29	

OFFICIAL PHOTOGRAPH ADEC

EXXON VALDEZ OIL SPILL

V2 - C







OFFICE: ANCHORAGE DATE: 06/22/93 TIME: -0
SEGMENT#: KN0132 STATION#: -0LOCATION: KNIGHT ISLAND
KEYWORDS: -0REASON FOR TAKING PHOTO:SPRUCE NEEDLES IN TAR STUCK TO LARGE
BOULDERS.

TAKEN BY: MARIANNE PROFITA INITIALS:
ROLL #: 93MSP003 FRAME #: 13 EVIDENCE ID#:

Taken by: M. PROFITA
Taken by: M. PROFITA

EXXON VALDEZ OIL SPILL

OFFICIAL PHOTOGRAPH ADEC

OFFICIAL PHOTOGRAPH ADEC EXXON VALUEZ (11: SPILL	
OFFICE: ANCHORAGE DATE: 06/22/93 TIME: -0-	
SEGMENT#: KN0132 STATION#: -0- LOCATION: KNIGHT ISLAND KEYWORDS: -0- EASON FOR TAKING PHOTO:ASPHALT WEST SIDE OF STREAM.	
KEN BY: MARIANNE PROFITA INITIALS: LL #: 93MSP003 FRAME #: 12 EVIDENCE ID#:	
Taken by: M PROfitz	
Roll #: 93/1/5/2003 Frame #:	
OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPIL	
OFFICE: ANCHORAGE DATE: 06/22/93 TIME: -0-	_
SEGMENT#: KN0132 STATION#: -0- LOCATION: KNIGHT ISLAND	
KEYWORDS: -0- REASON FOR TAKING PHOTO:ASPHALT PATCHES BELOW LARGE BOUL OVERVIEW SPRUCE NEEDLES STUCK ON BOULDER.	DERS
TAKEN BY: MARIANNE PROFITA INITIALS:ROLL #: 93MSP003 FRAME #: 14 EVIDENCE ID#:	_
Taken by: M. Phosita	
Roll #: 93/nspou3 Frame #: 14	

KN 135 B

_

SEGMENT: KN 135 B

LOCATION: Bay of Isles Group, western shore of South Arm

OTHER STUDIES

ADEC transect station #138.

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Angular boulder and cobble beach that grades along shore to a pebble beach in the vicinity of an intermittent stream. Multiple pebble swash bars are present on the south end of the segment near the poorly defined stream channel. High-tide pebble berms and drift logs are also present.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Fetches and Directions (kilometers)

NE=5

Energy Level

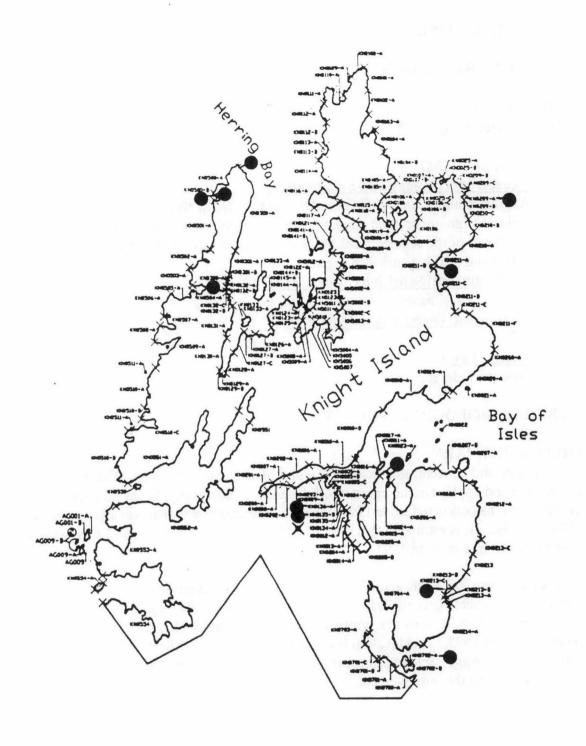
Low to moderate.

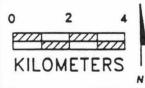
GENERAL BIOLOGICAL SETTING

OILING SUMMARY

Several large and concentrated areas of AP and SOR occur at this site. The locations are in boulders and cobbles in the upper intertidal zone. Though significant oil remains much improvement has occurred since 1991 largely due to aggressive removal and raking in 1991 and 1992. It is estimated that there is 80% less AP and SOR in 1993 than what was present before treatment in 1991.

An area of subsurface HOR and MOR is present in the southern end of the segment in sandy, pebbly, cobble gravel. This area was much larger in 1991 and has shown great improvement. Another area that contained a large amount of MOR in 1991 had only a small amount in 1993. This location is in boulder and cobble sediments in the northern half of the site. Aggressive treatment in 1991 that included oiled subsurface sediment removal enhanced the improvement.

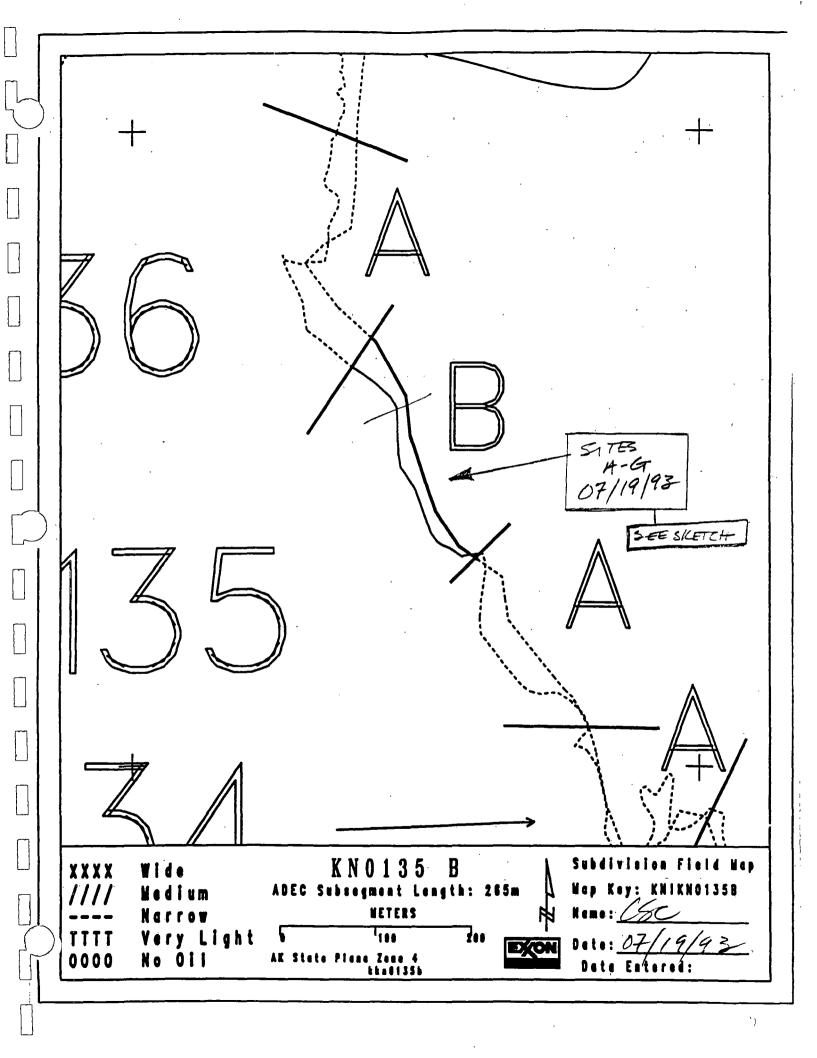






Prince William Sound Central area #2 Beach Sub—Segment Map Map Projection: UTM, Zone 6

Date:	1/15/92		Beach Segi	ments
File Name:	CESSEGS	×	Subdivision	Endticks



1993 ADEC RESTORATION PROJECT #930380 SHORELINE SURVEY COMMENT SHEET

BAY OF ICLES

SHORELINE SURVEY COMMENT SH

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1993 ADEC RESTORATION PROJECT # 930380 SHORELINE OILING SUMMARY

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PAG	E	OF .	2
		-	-

MEMBERS: D. Munson, E. Piper; J. Matthews, J. Gribeaut LJEVans - ADEC; Phil Means - USGG-Kate Fayley - ADNR; E. Owens and KNIGHT

SEGMENT KN D135
SUBDIVISION B

S. Show - Exxm

DATE 07 / 19 / 93

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13					(-					R	V	2	25			_	-	
	B					5					BC	M	9	8					Z 34 S No A M
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DISTRIBUTION: C=01-1004; B=51-804; P=11-504; B=1-104; T=<146

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-	(cm)	OP	HOR	MOR	LOR	OF	TR	NO		Y/N	the state of the state of	BRSN	3		MI	П	SEDIMENTS	NOTES
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ь	25									4			-				061060	ROCK Below
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1993 Surface Oil Summary Segment KN135 Subdivision B

Location	Area o	of Oiling MS	SOR	Square CV	CT	
Α	28.5	0.			0.	
В	0.	0.	0.	47.5	47.5	
С	50.4	0.	0.			
D		0.	0.	0.	0.	
E		0.			0.4	
F	0.	0.	0.	0.	14.4	
G	0.	0.	0.2	0.	0.2	
TOTALS=	90.9	0.	33.5	47.5	66.82	

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows: continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT KN135B

						TREA	TMENT	1993	OILE	D SED	. VOI	L. (m3)	1992	OILE	SED	. VOL	. (m3)	1991	OILE	SED.	VOL.	(m3)	WT.	ed OII	VOL.	& CHANG	GE WT.	ed VOL.
Loc.	1993 PIT	# Gr. Sz.	Zn.	En.	Note	1992	1991	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991	92 to 93	91 to	91 to
ZA	9,11,12, 14	PC-SG	UML	L		MR, Rs	MR, Rs, Rb	0.0	3.6	7.0	0.0	0.0	0.0	0.0	0.7	2.8	0.0	0.0	37.8	83.2	6.3	18.9	35.5	7.7	413.3	360.5	-98.1	-91.4
ZB	1	6 BCPG-SGR	UM	L		MR, Rs	MR, Rs, Rb	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.6	68.6	13.2	1.7	0.0	256.1	Inf	-100.0	-99.3
				•••			TOTALS=	0.0	3.6	7.0	0.8	0.0	0.0	0.0	0.7	2.8	0.0	0.0	37.8	122.	74.9	32.1	37.1	7.7	669.4	382.3	-98.8	-94.5

Loc.= location name of specific oiling area (subsite).

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

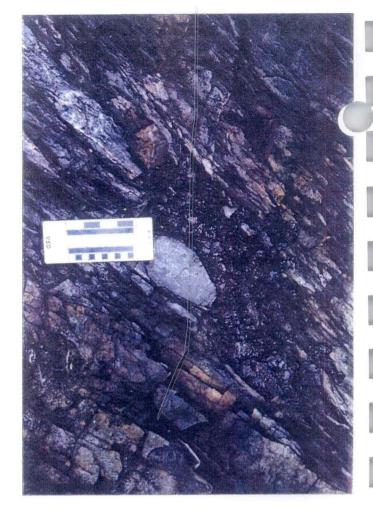
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

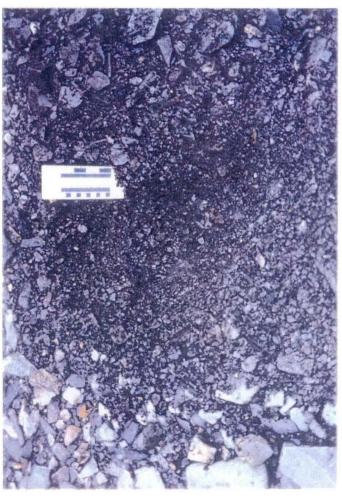
TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.

OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

WT.'ed OIL VOL. = weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2









OFFICIAL PHOTOGRAPH ADEC

Date: July 19. 1993 Time: 08:45 (8:45 am)

Location (segment #): KN135 Area A

Reason for taking photo: AP/SOR with some disturbance.

Taken by: L.J. Evans QE

Roll #: LJE002 Frame #: 005

OFFICIAL PHOTOGRAPH ADEC

The milital to a first

Date: July 19, 1993 Time: 08:55 (8:55 am)

Location (segment #): KN 135 Area A

Reason for taking photo: AP/SOR in vertical shale, after disturbance

Taken by: L.J. Evans Prame #: 007

OFFICIAL PHOTOGRAPH ADEC

Date:	July	19,	1993	Time:	08:41	(8:41	am)				
Locati	on (seg	ment	#):	KN135	135						
Reaso	n for tal	dng p	hoto: .	Pit 1	2						
				/							
Roll #:	LJ	E002	Fra	me #:	004						

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 __Time: ____08:50 (8:50 am)

Location (segment #): _____ KN135 Area A

Reason for taking photo: _____ AP/SOR in vertical

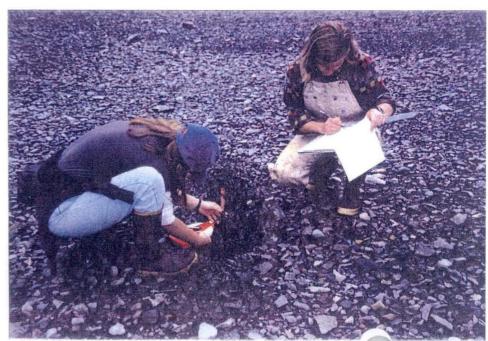
shale, undisturbed

Taken by: _____ L.J. Evans ______ Roll #: ______ LJE002 ____ Frame #: _______ 006









OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 09:00 (9:00 am)

Location (segment #): KN135

Reason for taking photo: Coat and cover with spruce needles in vertical rock face area

Roll #: LJE002 Frame # 009

FW LAC 091 IHNN 19.---

9

OFFICIAL PHOTOGRAPH ADEC

- 131 - mars () - 14

Date: July 19, 1993 Time: 08:55 (8:55 am)

Location (segment #): KN135 Area A

Reason for taking photo: <u>AP/SOR</u> in vertical shale, after disturbance, close-up

Taken by: L.J. Evans 08

Roll #: LJE002 Frame #: 008

"T/ NHNT T&G J∀T Ma

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 09:15 (9:15 am)

Location (segment #): KN135

Matthews & Dianne Munson

Roll #: LJE002 Frame #: 01E

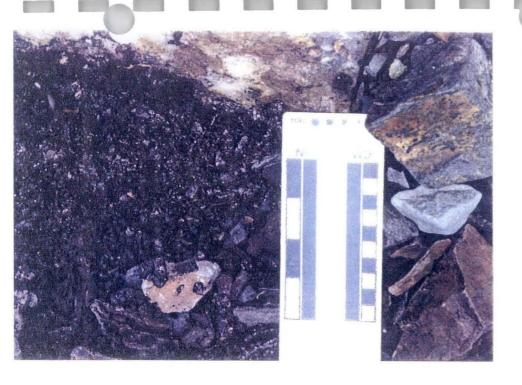
OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 09:00 (9:00 am)

Location (segment #): KN135

Reason for taking photo: Coat and cover with spruce needles in vertical rock face area Dine Munson

Taken by: L.J. Evans 4: 010









OFFICIAL PHOTOGRAPH

ADEC

Date: July 19, 1993 Time: 09:28 (9:28 am)

Location (segment #): KN135 Area B

Reason for taking photo: Interstitial asphalt/
SOR, friable (close-up)

Taken by: L.J. Evans
Roll #: LJE002 Frame #: 013

"Line and the second second

OFFICIAL PHOTOGRAPH

ADEC

* 1. Hit 3 .. 0 E.

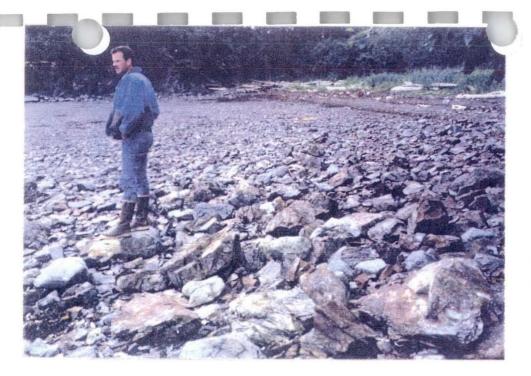
OFFICIAL PHOTOGRAPH ADEC

Date:	July	19,	1993	Time:	09:28	(9:28	am)
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SOR	, fri	авте					
Taken	by: L.	J. E	vans (QE	/		
	LJ			(ime #:	012		

OFFICIAL PHOTOGRAPH ADEC

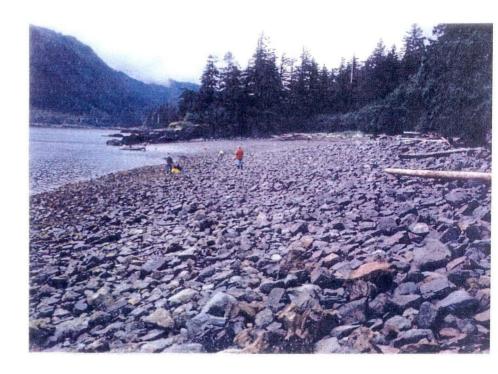
" " ... Plint. r i ...

Date:	July	19,	1993	_Time:	09:37	(9:37	am)
	on (segn			KN13	5 Area		
Reasor	n for tak	lna ph	oto: _	SOR,	weather	red or	top,
HSC							
Taken I	by:L.	J. E	vans	196)		
	LJ			/			









Date: July 19, 1993 Time: 10:00 (10:00 am) Location (segment #): KN135 Area E Reason for taking photo: ${\color{blue} {HSOR}}$ in boulders Taken by: L.J. Evans Roll #: __LJE002 Frame #: __017

*83 MINUT 160 897 Fail

12

ADEC OFFICIAL PHOTOGRAPH

Date: July 19, 1993 Time: 10:05 (10:05 am)

Overview from the Reason for taking photo: _

Location (segment #):_

Taken by: L.J. Evans WE

Poll #: __LJE002 __ Frame #: _

ADEC OFFICIAL PHOTOGRAPH

the interest of

Date: July 19, 1993 Time: 09:35 (9:35 am)

Location (segment #): KN135 Area B

Reason for taking photo: Overview of Area B (Peter Van Story in frame)

Taken by: L.J. Evans

LJE002 016 Frame #:

OFFICIAL PHOTOGRAPH ADEC

Mag Paris India .

Date: July 19, 1993 Time: 10:00 (10:00 am)

KN135 Area E Location (segment #):__

HSOR in boulders Reason for taking photo: _

Taken by: L.J. Evans 4

018 Roll #: LJE002 Frame #: -

SEGMENT: KN 136 A

LOCATION: Bay of Isles Group, western shore of South Arm.

OTHER STUDIES

ADEC transect station #90. UAF/IMS intertidal study.

PHYSICAL SETTING

Coastal Morphology and Sedimentology

High-tide lagoon with muddy, organic-rich (peaty) tidal flat. Gravel beach and berm occur in north lagoon entrance.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Type 8; sheltered rocky.

Type 9; sheltered tidal flat.

Fetches and Directions (kilometers)

For the tidal flat the fetch is 0 km.

For the gravel entrance: NE= 5.

Energy Level

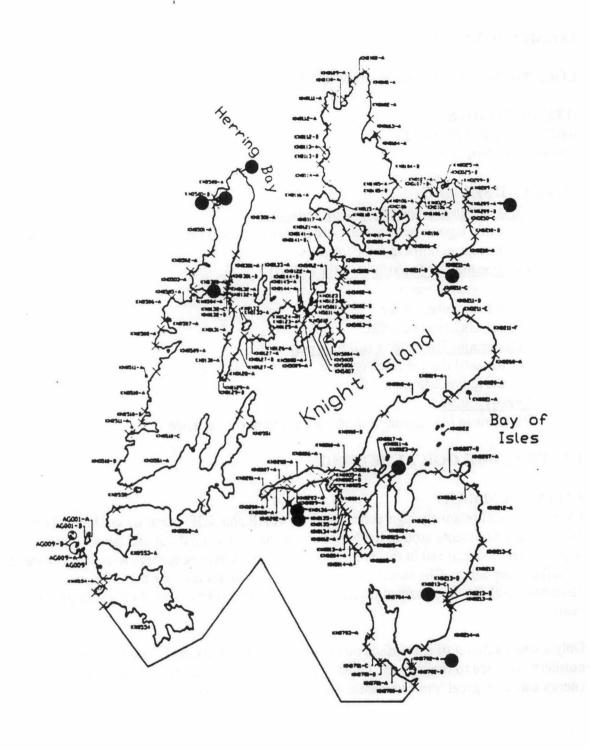
Very low in the lagoon to moderate at the north entrance.

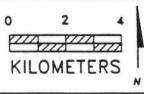
GENERAL BIOLOGICAL SETTING

OILING SUMMARY

Large areas and relatively high concentrations of AP and SOR occur on cobble, pebble, and granular sediments around the periphery of the central tidal flat and lagoon. No improvement as occurred in this area since 1991, and previous surveys were inadequate in describing the oiling. The central lagoon still sheens, and it appears that oil is still associated with the fine-grained organic-rich sediments as has been observed in previous years.

Only a small amount of subsurface oil persists in pebble and cobble gravel sediments in the northern entrance to the lagoon. Oiled-sediment removal and probably natural wave energy caused a great improvement at this location since 1991.



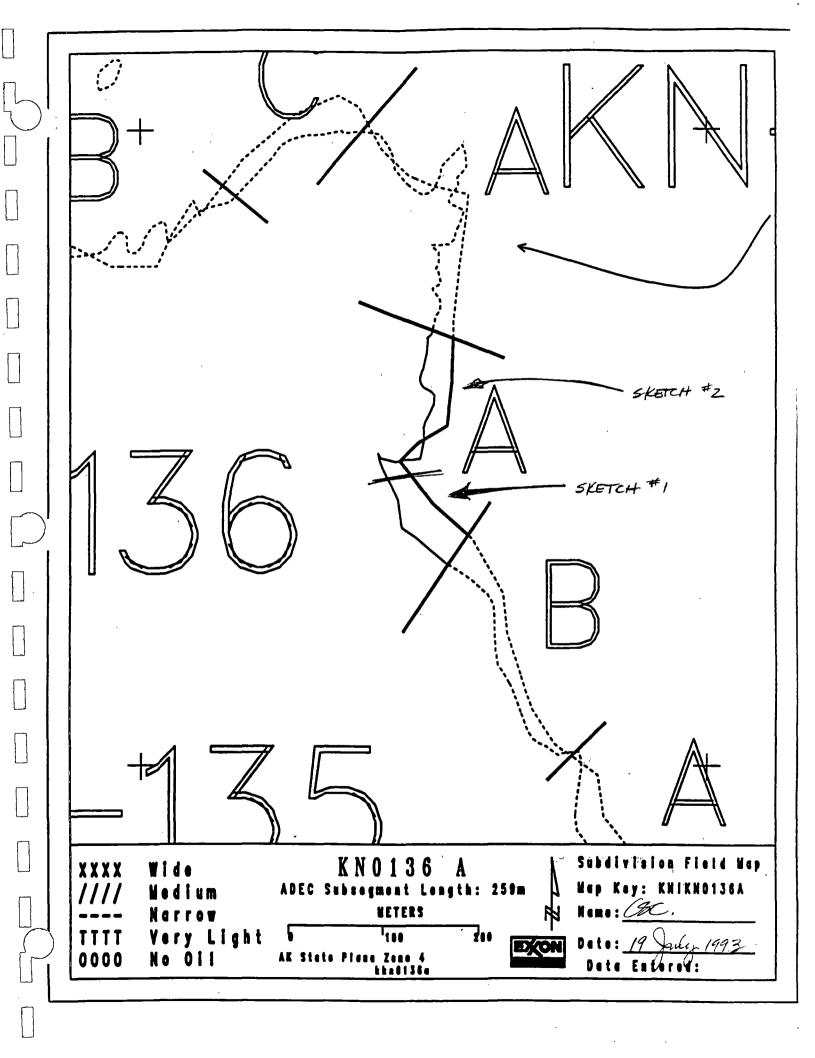


Date:	1/15/92
File Name:	CESSEGS



Prince William Sound Central area #2 Beach Sub—Segment Map Map Projection: UTM, Zone 6

	Beach	Seg	ments
×	Subdiv	sion	Endticks



1993 ADEC RESTORATION PROJECT #930380 SHORELINE SURVEY COMMENT SHEET

BAYOFISLES

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AFFILIATION NAME		SIGNATURE			
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NAME	SIGNATURE			NOTE THE RESERVE	-

1993 ADEC RESTORATION PROJECT # 930380 SHORELINE OILING SUMMARY

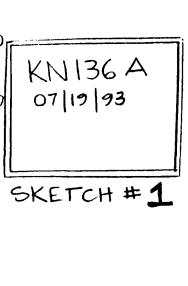
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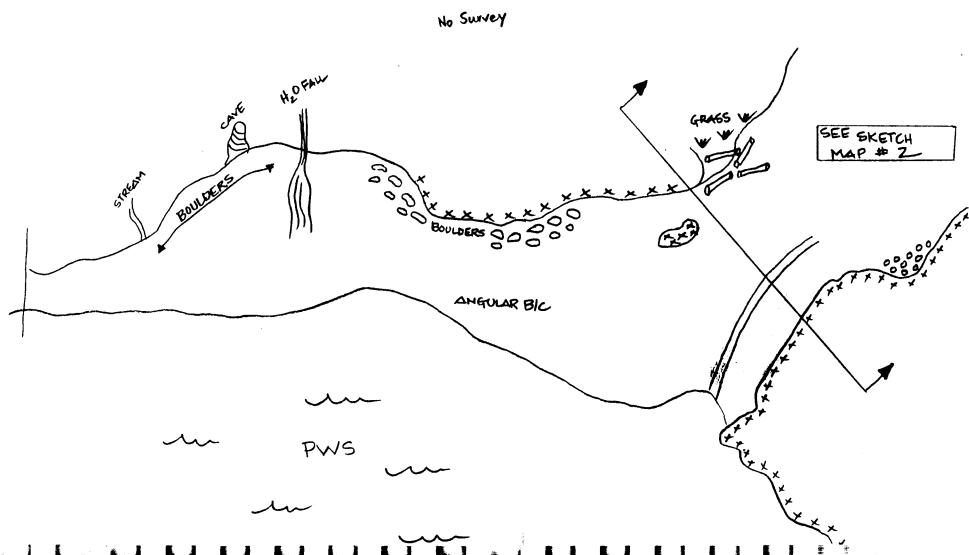
SEGMENT KN 0136

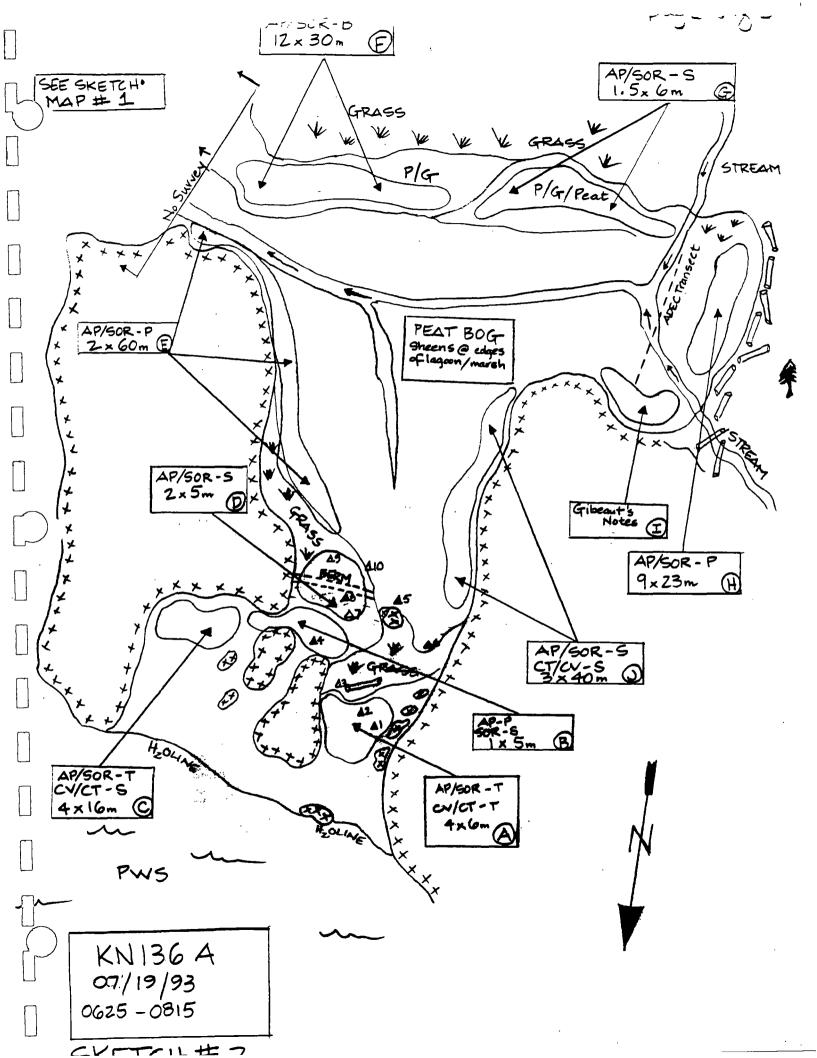
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DISTRIBUTION: C = 61-100%; B = 51-80%; P = 11-60%; S = 1-10%; T = <1%

O.	PIT DEPTH		Off	UBSUI CHAF	RACTI	ER			OILED	CLEAN		SHEEN		ZONE			THE RESERVE THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO			SURFACE- SUBSURFACE	
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Г	19								16-19	N	-	-					B.C.P/PG				
	21								2-7								BLP/PG				
3	24								P	-	-						BCP/PG	post below			
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Ŋ	26									U	18	R					LCP/G-S Keet	highoraques			
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1993 Surface Oil Summary Segment KN136 Subdivision A

Location	Area o	f Oiling MS		Square CV	Meters CT	A.
Α	0.12	0.	0.12	0.12	0.12	
В	1.5	0.	0.3	0.	0.	
С	0.32	0.	0.32	3.84	3.84	
D	0.6	0.	0.6	0.	0.	
E	36.	0.	36.	0.	0.	
F	252.	0.	252.	0.	0.	
G	0.54	0.	0.54	0.	0.	
Н	62.1	0.	62.1	0.	0.	
I	0.	0.	94.5	0.	0.	
J	7.2	0.	7.2	7.2	7.2	
TOTALS=	360.38	0.	453.68	11.16	11.16	, 0-

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows: continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT KN136A

						TREAT	MENT	1993	OILE	D SED	. Voi	(m3)	1992	OILE	SED.	VOL	. (m3)	1991	OI LED	SED.	VOL.	(m3)	WT.	ed OII	VOL.	& CHANC	E WT. 'e	d VOL.
Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	1992	1991	OP	HOR	MOR	LOR	OF/TR	OP 	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991	92 to 93	91 to 92	91 to 93_
ZA	1,2,4-10	PG-GSPt	UM	L		NO	MR,MT, Rs	0.0	0.5	0.0	0.9	3.0	0.0	3.2	1.3	0.0	0.0	14.1	6.6	4.1	4.4	2.2	3.8	25.9	117.8	-85.4	-78.0	-96.8
ZB	i i	BC-GSC	М	L		Rs,MR	Rs	?	?	?	?	?		0.0				0.0	l '		0.4			33.8			1587.5	
							TOTALS=			0.0		3.0	0.0	3.2	15.6	0.0	0.0	14.1	6.6	4.5	4.8	2.2			119.8		-50.2	

Loc. = location name of specific oiling area (subsite).

1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.

Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.

Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.

En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.

OILED-SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.

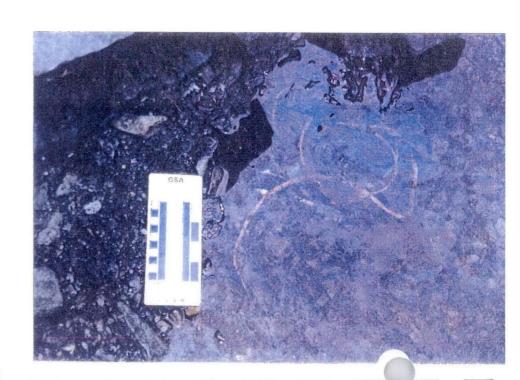
WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2

% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil.









OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 07:05

Location (segment #): KN136

Reason for taking photo: Cover with spruce needles. located in Area C

Taken by: L.J. Evans

Roll #: LJE001 Frame #: 028

BIT FVB 0.25 HANN 3

OFFICIAL PHOTOGRAPH ADEC

Reason for taking photo: Sheen on tidal pool in Area B

Roll #: LJE001 Frame #: 031

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 07:00

Location (segment #): KN136

Reason for taking photo: Pit 4

Taken by: L.J. Evans

Roll #: LJE001 Frame #: 027

- Jet ummi 21, 22, 22, 42

OFFICIAL PHOTOGRAPH

ADEC

Date: July 19, 1993 Time: 07:05

Location (segment #): KN136

Reason for taking photo: Closeup of cover/coat
with spruce needles, located in Area C









OFFICIAL PHOTOGRAPH ADEC

BRIDE CAS STOR ME

Date: July 19, 1993 Time: 07:22

Location (segment #): KN136

Reason for taking photo: Pit 8, asphalt

Taken by: L.J. Evans

HINNI COO THE MA

OFFICIAL PHOTOGRAPH ADEC

Roll #: __I_IEOO1 Frame #: __

Date: July 19, 1993 Time: 07:35

Location (segment #): KN136

Reason for taking photo: Overview of marshy area, facing a few degrees North of West

Taken by: L.J. Evans 96

Roll #: LJE001 Frame #: 036

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 07:15

Location (segment #): KN136

Reason for taking photo: Asphalt patch in Area D

Taken by: L.J. Evans P

Roll #: LJE001 Frame #: 032

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OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 07:34

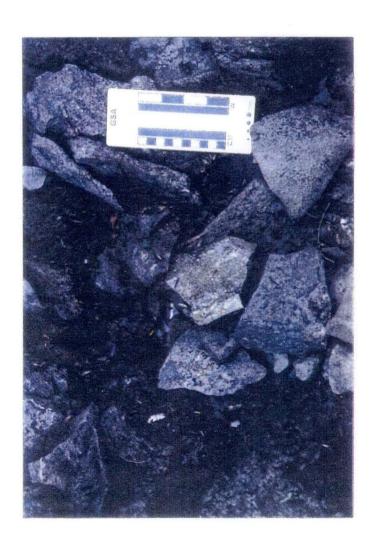
Location (segment #): KN136

Reason for taking photo: Overview of marshy area, facing West

Taken by: L.J. Evans 4: 035







OFFICIAL PHOTOGRAPH

1 71

ADEC

Date: July 18, 1993 Time: 19:47 (7:47 pm)

Location (segment #): KN136 Area F

Reason for taking photo: Tar patch in cobble and boulders

Taken by: L.J. Evans

Roll #: __LJE002 ___ Frame #: __002

OFFICIAL PHOTOGRAPH ADEC

	July				pm)
Reaso					le and
	by: L				

OFFICIAL PHOTOGRAPH

ADEC

Date: July 18, 1993 __Time: 19:54 (7:54 pm)

Location (segment #): ______KN136 Area I

Reason for taking photo: ______Tar and spruce needles in rocks

Taken by: L.J. Evans 4

Roll #: LJE002 Frame #: 003