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TABLE XXX Other Natural Resources and Archaeology: Summary of Results of Injury Assessment Studies Done After the Exxon Valdez Oil Spill (b)

RPWG draft 3/10/93

Resource	Description of Injury	Status of Recovery in December, 1992	Geographic Extent of Injury (a)				Comments/Discussion
			PWS	Kenai	Kodiak	Alaska Penin.	
Air	Air quality standards for aromatic hydrocarbons were exceeded at the spill site. Health and safety standards for permissible exposure levels were exceeded up to 400 times.	Recovered	YES	UNKNOWN	UNKNOWN	UNKNOWN	Impacts diminished as oil weathered and lighter fractions evaporated.
Sediments	Oil coated beaches and became buried in beach sediments. Oil laden sediments were transported off beaches and deposited on subtidal marine sediments.	Oil remains intertidally on rocks and beaches and buried beneath the surface at other beach locations.  Oil concentrations have increased in subtidal marine sediments and have spread to greater depths (to 20 meters) over time.	YES	YES	YES	YES	Unweathered buried oil will persist for many years in protected low-energy sites in Prince William Sound.
Water	State of Alaska water quality standards were not exceeded in open sea conditions. In small bays and near shore, hydrocarbon concentrations may have exceeded the 10 micrograms per liter standard immediately after the spill. Federal oil discharge standards of no visible sheen were exceeded.	Recovered	YES	UNKNOWN	UNKNOWN	UNKNOWN	Impacts were patchy and transient during the early stages of the spill.  Impacts diminished as oil weathered and lighter fractions evaporated.
Archaeologic sites/artifacts	Currently, 24 sites are known to have been adversely affected by oiling, clean-up activities, or looting and vandalism linked to the oil spill. 113 sites are estimated to have been similarly affected. Injuries attributed to looting and vandalism (linked to the oil spill) are still occurring.	Archaeological sites and artifacts cannot recover; they are finite non-renewable resources.	YES	YES	YES	YES	*Injury studies are not yet complete (January 1993).
Designated Wilderness Areas	Over 1,000 miles of wilderness coastline were affected by oil. Some oil remains embedded in the sediments of these areas.	Oil has degraded substantially in many areas but remains in others. Until oil is completely removed or degrades naturally, injury to wilderness areas will continue.	YES	YES	YES	YES	

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- (a) There may have been an unequal distribution of injury within each region, see map for location of regions;
- (b) This page has not yet been reviewed by the Chief Scientist;

TABLE XX Services: Summary of Results of Injury Assessment Studies Done After the Exxon Valdez Oil Spill

RPWG draft 3/10/93

Service	Description of Injury	Status of Recovery in December, 1992	Geographic Extent of Injury				Comments/Discussion
			PWS	Kenai	Kodiak	Alaska Penin.	
Passive Use	In 1991, over 90% of those surveyed (nation-wide) said they were aware of the Exxon Valdez oil spill. People report that values have been lost; their feelings about the spill area have changed. There is a wide-spread feeling that something has been lost.	Data is not available to determine the status of recovery.	YES	YES	YES	YES	Over 50% of those surveyed believed that the spill was the largest environmental accident caused by humans anywhere in the world. The median household willingness to pay for future prevention was \$31. Multiplying thus by the number of U.S. household results in a damage estimate of \$2.8 billion.  The study, <u>A Contingency Valuation Study of Lost Passive Use Values Resulting From the Exxon Valdez Oil Spill</u> , was developed between July 1989 and January 1991, at which time it was put into the field. Respondents were comprised of people in the lower 48 states.
Recreation (e.g., boating, camping, fishing, hunting)	The nature and extent of injury varied by user group and by area.  About a quarter of key informants interviewed reported no change in their recreation experience, but others reported avoidance of the spill area, reduced wildlife sightings, residual oil, and more people. They also reported changes in their perception of recreation opportunity in terms of increased vulnerability to future oil spills, erosion of wilderness, a sense of permanent change, concern about long-term ecological effects, and, in some, a sense of optimism. Overall, recreation use declined significantly in 1989. Between 1989 and 1990 a decline in sport fishing (number of anglers, fishing trips and fishing day) were recorded for PWS, Cook Inlet and the Kenai Peninsula. In 1992 an emergency order restricting cutthroat trout fishing was issued for western PWS due to low adult returns. Sport hunting of harlequin duck was affected by restrictions imposed in 1991 in response to damage assessment studies.	Declines in recreation activities reported in 1989 appear to have reversed, although there are no data to support or deny whether they have returned to prespill levels.  The 1992 sport fishing closure for cutthroat trout is expected to continue at least through 1993.  Harvest restrictions are expected to continue for harlequin duck through 1993.	YES	YES	YES	YES	

TABLE XX Services: Summary of Results of Injury Assessment Studies Done After the *Exxon Valdez* Oil Spill

Service	Description of Injury	Status of Recovery in December, 1992	Geographic Extent of Injury				Comments/Discussion
			PWS	Kenai	Kodiak	Alaska Penin.	
Commercial Fishing	<p>During 1989, emergency commercial fishery closures were ordered in PWS, Cook Inlet, Kodiak and the Alaska Peninsula. This affected salmon, herring, crab, shrimp, rockfish and sablefish. The 1989 closures resulted in sockeye over-escapement in the Kenai River and in the Red Lake system (Kodiak Island).</p> <p>In 1990 a portion of PWS was closed to shrimp fishing.</p>	<p>Currently there are no oil spill-related commercial closures in effect.</p> <p>EVOS related sockeye over-escapement in the Kenai River and Red Lake system is anticipated to result in low adult returns in 1994 and 1995. These over-escapements may result in closure or harvest restrictions during these and perhaps in subsequent years.</p>	YES	YES	YES	YES	Injuries and recovery status of rockfish, pink salmon, shellfish and herring are uncertain. Therefore, future impacts on these fisheries is unknown.
Commercial Tourism	<p>Approximately 43% of the tourism businesses surveyed felt their businesses had been significantly or completely affected by the oil spill in summer 1989. The net loss in visitor spending in Southcentral and Southwest Alaska in 1989 was \$19 million.</p>	<p>By 1990 only 12% of the tourism businesses surveyed felt their businesses had been significantly or completely affected by the oil spill.</p>	YES	YES	YES	YES	

TABLE XX Services: Summary of Results of Injury Assessment Studies Done After the *Exxon Valdez* Oil Spill

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Subsistence	<p>Subsistence harvests of fish and wildlife in 9 of 15 villages surveyed declined from 4 - 78% in 1989 when compared to pre-spill averages. Approximately 7 of the 15 villages show continued declines in use in the period 1990-1991; this decline is particularly noticeable in the Prince William Sound villages of Chenega and Tatitlek.</p> <p>In 1989, chemical analysis indicated that most resources tested, including fish, marine mammals, deer, and ducks, were safe to eat, but that shellfish from oiled beaches should not be used.</p> <p>In addition, village residents believe that subsistence species continue to decline or have not recovered from the oil spill.</p>	<p>Many subsistence users believe that continued contamination to subsistence food sources is dangerous to their health.</p>	YES	YES	YES	NO	For detailed information on village subsistence use see table __, page__.

## Peer Review and Agency Comments on Draft Brochure

**Peer Review:** The Peer and technical review comments are the results of peer and technical review of the draft brochure. Four of the reviewers met together: Jack Kruse, University of Alaska; Bud Rice, NPS; Jon Issacs, Issacs and Assoc; and Marty Welbourn, DNR. Some of the comments were given in a meeting; others were taken from a draft they individually marked up. Delores Larsen, USFS, is in Juneau and gave her comments individually.

**Agency Review:** Comments were received from all agencies and from Dave Gibbons.

The comments are organized by General Comments, then by Brochure Section. Where appropriate, they are located by page and paragraph of the draft. Editorial comments are not listed. Finally, the table lists the comment's author, and whether it is a priority for discussion. The priority is only meant as a guide to discussion -- which ones are most important to discuss. Priorities are assigned to those that represent significant policy issues, or that represent conflicts of viewpoint that the RT must resolve.

Key to authors:

PR = Peer Review Group; DL = Delores Larsen; DG = Dave Gibbons; BS = Bob Spies

Agencies: DOI, NOAA, USFS, DNR, DEC, DF&G

### GENERAL COMMENTS

<u>Location</u>	<u>Comment</u>	<u>Author</u>	<u>Priority</u>
	Spill protection in all its aspects. Because it needs a general discussion, individual comments on this subject are not retyped below.	Many	Priority
	You will get more review by putting the meat of the matter closer to the front. The meat is the Alternatives & Comparison. Therefore put it on the centerfold. Put a summary of the injury up front (like the chart on page 12, only with a better title), and move the injury summary to the back of the alternatives.	PR	Priority
	"Services" is a content-free word. People don't really know what you mean. Change to human uses. (i.e., injured resources and uses, etc.)	PR	Priority
	Habitat Protection 1) doesn't connote buying land, and 2) it indicates that you are purchasing land for resources, not for people. In fact, it implies that you might buy it and keep people out. If you want to communicate better and indicate that you mean for people and resources. Change it to "Land acquisition and protection." That way, you get the protection, its clear you are buying land, and it implies that land for people is included. An explanation that purchase of land may include only lesser rights such as timber rights or conservation easements can be made in one of the first sentences.	PR	Priority
	Try to use more bullets, less text.	PR	