ypothesis that the injury was likely a result of exposure to oil discharged from the *Selendang Ayu* could be rejected.

As described below, at each site close-up examinations of the biota and substrata were made at all accessible shore levels. This included wading into shallow subtidal areas where shoreline slope and wave conditions permitted. The field surveys were conducted around the daytime low tides. The surveys started at upper tidal levels of the shore during the falling tide and proceeded to the lowest intertidal levels as the tide receded. Most intertidal surveys were conducted on foot after landing from skiffs. Vertical rock faces emerging from deeper water were surveyed from skiffs positioned next to the rock face. Observations of shallow subtidal biota were accomplished by wading into these habitats or floating over them in the skiffs. Deeper subtidal biota were surveyed by divers and video cameras, as described in the subtidal section.

Observations were made directly in the habitat surveyed, not from a distance. Biota were examined within arm’s length.

In the field, biota were examined, the condition, degree and distribution of oiling, and any indications of impacts of oil on the biota were documented. These observations were made by field biologists familiar with the taxonomy, appearance, and ecology of these species, including the effects of natural factors on these biota.

Biota were specifically inspected for visible oiling, abnormal coloration, necrosis, empty shells, abnormal behavior, mortality, and any other indications of possible oil exposure and oil effects. In particular, biota more than seven months old, i.e. preceding the *Selendang Ayu* grounding and oil spill, were carefully examined.

Fronds of large algae were lifted as necessary to view biota and oil, if any, beneath the fronds.

On beaches and boulder shores, boulders and cobble were lifted and gravel excavated, to examine cryptic biota.

Documentation of the observations made during the survey was by field notes and digital photographs, primarily.

Photographs were taken as close as necessary to document the species present, the condition of the biota, and patterns of oiling, if oil was present. Most documentation photos covered an area of about 0.25-1 square meter. Photographs of larger areas were used to document habitat-scale features.

Locations of photographs were recorded using the combined software set of Ozi Explorer (www.oziexplorer.com) and Ozi Photo Tool (oziphototool.alistairdickie.com). This software combination linked the GPS tracks to the digital photographs. GPS waypoints were used to link observations made in field notes to specific shore locations .

9. Voucher specimens were taken as necessary.

Each day when field biologists returned to the F/V *Ocean Olympic*, project data manager Ian Zelo downloaded data from the GPS units and digital camera media using the Ozi Explorer and Ozi Photo Tool programs described above.

*Observations and Discussion:*Portions of 55 shoreline segments (Table 1) were surveyed according to the procedures described above. Photo-documentation was extensive, totaling approximately 13GB of digital photos.

Rocky shore biota On shores with substrata of physically stable bedrock and boulders, an established biota of perennial marine algae and marine invertebrates was found (Table 2). Shores along the northeastern portion of Spray Cape (SPR11-SPR14) are near the wreck of the *Selendang Ayu*. In these segments, splatters of oil remained high on the shore. Here Lindstrom reported that the kelps (*Laminaria longipes* and other species) were reduced to stipes--the main portions of the blades were absent. Also, grazer populations appeared to be reduced. Bedrock at lower tidal elevations and fronds of the perennial algae *Fucus, Mastocarpus, Petrocelis*, and *Laminaria* in the mid-intertidal zone were overgrown by ephemeral green algae (e.g., *Acrosiphonia Ulothrix,* and *Urospora*).

On other shores, both oiled and unoiled, the perennial species were of a size and condition that indicated they had been present before the *Selendang Ayu* oil spill—i.e., they had settled and grown before 8 December 2004. In close and careful examination of the perennial biota there were no indications of visible acute mortality or other adverse effects on these perennial biota, except for Spray Cape and HMP-11a which was exposed to remobilized oil from beach clean-up operations in June, 2005.

Rocky shores were examined for the “green shore phenomena” caused by mortality of herbivores, which has been observed in other spills and in controlled field experiments removing herbivores. At all sites except Spray Cape, no clear indications of blooms of ephemeral algae that exceeded the normal spring blooms of algae found on these kinds of shores in the spring were found. Patterns of grazing marks, grazing patches, and herbivore distribution in these habitats indicated that *Littorina* *sitkana* and limpets (Lottiidae) were consuming the bloom-forming algae, forming cleared areas in the stands of the ephemeral algae. However, Lindstrom believes that the extent of growth of ephemeral green algae (*Acrosiphonia, Urospora, and Ulothrix)* at Spray Cape exceeded normal seasonal growth, especially where these green algae were growing as epiphytes on perennial algae in the mid-intertidal zone and on bedrock at lower tidal elevations. Lindstrom attributed the extent of this bloom to a general lack of grazers at these tidal elevations at this site. The cause for the observed lack of grazers cannot be attributed to oil exposure with the available information.

Beaches of cobble, gravel, sand. An abundant and diverse assemblage of cryptic beach invertebrates was observed beneath cobble, drift seaweeds and other beach wrack. These included talitrid amphipods (“beach hoppers”), centipedes, arachnids, and kelp flies. The talitrids were at densities of 1 to 10 per 100 cm2. In some cases, beach biota were within 10 cm of mats of buried oil, but no oil was found on the biota. In addition, on 19 June 2005, oiled wrack (accumulations of dead plant material) harboring amphipods living in direct contact with oil was observed on the beach at SKN-6. Although the amphipods did not appear oiled or to be experiencing acute effects from the oil, amphipods living in such close proximity to oil could serve as potential vectors of oil to higher trophic levels. Foxes were seen overturning rocks and wrack on beaches, apparently feeding on the beach invertebrates found there.

In the course of the surveys, large amounts of beach material were observed being removed from heavily oiled sections of beaches for disposal at waste sites. This material probably contained beach biota. For example, the excavating machinery at SKN-11 was removing the oiled cobble and gravel, placing it in “Super Sacks” for transport out of the area. Any biota in the beach material would have also been removed. Excavating machinery could have also crushed beach biota. In addition, oily debris was moved into piles and burned on some beaches which would have killed beach-wrack fauna and infauna in the vicinity of the fires. Many of the areas where burning of debris was conducted were in high wave energy areas with cobble and pebble sediments that are unstable and dynamic and may have less interstitial biota than areas with lower wave energy and finer sediments.

(http://www.dec.state.ak.us/spar/perp/response/sum\_fy05/041207201/041207201\_OiledDebrisBurns24May05.pdf)

Observations of remobilized oil and apparent impacts on rocky shore substrata and biota:

Beginning on 20 June 2005, new deposits of sticky brown oil were observed in some of the areas surveyed. The oil appeared to have been released from beach cleaning operations in adjacent shoreline segments. In some cases, excavations had been made into layers of oil buried in gravel-cobble beaches, and high tides had lifted oil out of the excavations. Segment HMP-12 was a pilot project for “berm relocation” and “surf-washing,” in which oiled beach material from a section of high beach was bulldozed into a lower intertidal area where wave action could remove the oil. Berm relocation was also used at segments SKN-05, SKN-06, and SKS-04. Table 3 summarizes currently available information from various sources on the response actions taken at each SCAT segment. Because there has not yet been a compiled and verified accounting of the actions taken at all segments, the information in Table 3 should be regarded as giving an approximate sense of what occurred, except descriptions of clean up at segments directly observed by the survey teams for this report.

On 20 June 2005, at the rocky point at HMP-11a, rainbow sheens of oil were observed on tide pools, including oil streaming from floating droplets of black oil. In the mid-tide zone sticky, brown oil was deposited on the rock surface and on attached biota. The fronds of *Palmaria* and holdfasts of *Alaria* in this zone were oiled. In the high intertidal zone and splash-zone, freshly deposited, shiny, sticky oil was also present on rock substrata and on the fronds of the red alga *Porphyra*. Fresh oil was also present on wrack at the higher high water level. The oil appeared to be remobilized from beach cleaning operations to the west of HMP-11a, in segments HMP-11b and HMP-12. Dry tilling to expose buried oil at HMP-12 for removal by natural factors is shown in the photo at the end of this document. (A list of all photos available on the Unified Command website can be found at:

http://www.dec.state.ak.us/spar/perp/response/sum\_fy05/041207201/041207201\_ph\_index.htm).

Freshly remobilized oil was observed in the north part of Skan Bay during the calm weather of 22 June 2005. There were oil sheens on the water surface of the cove at SKN-10 and SKN-11. Oil sheens here ranged from silver through rainbow in color and some brown-black patches of oil were also observed on the water surface of the cove at these SCAT segments. Rainbow sheen covered about 50% of the water surface in the landward part of the cove—an area of several hundred square meters, occupying the landward end of the cove, and extending about 100 m from the beach at the head of the cove. Bands of floating black oil about 1 cm thick were accumulated against the floating fronds of the kelp *Alaria*—the fronds were acting like low-profile oil booms. The oiled *Alaria* bed was about 50 m by 100 m. An on-scene biological advisor for the clean-up said that high tides had washed oil from the excavations made to remove buried oil from the beach. Oil was buried in the berm of the beach at SKN-11 and the beach wrack was more than 80% oiled. A backhoe/front loader and two excavators were digging oiled sediment out of the beach, and the highest concentrations of oil in the water and on the shore were at the beach cleaning operations, diminishing with distance from the excavation sites. There were no booms in place to retain the oil when we made these observations, but (pom-pom) booms were placed along the beach later in the day. The rocky shoreline of SKN-10 projected seawards from the oiled beach at SKN-11, forming the south side of the oiled cove. Freshly deposited, sticky, oil was most evident in the upper intertidal zone of SKN-10, forming a band of oil- a “bath-tub ring” effect- on the rocks. The band was about 20 cm – 45 cm wide (vertical measure) and the coating of oil ranged in thickness from stain to about 5 mm. Shiny black oil was observed on barnacles, mussels, limpets (*Lottia* spp.), *Littorina* *sitkana*, and *Fucus*. At the beach end of the shore (nearest the remobilized oil), 100% of the *Porphyra* were coated with oil.

Upon returning to HMP-11a on 23 June 2005, it appeared that more than 90% of the red alga *Palmaria* had oil on their fronds. The typical color of this alga is dark purple-red to wine red, however, >90% of the oiled fronds (by surface area) were bleached to a light yellow-green color, some almost white, and the tips of the fronds were ragged. Less than 40% of the *Alaria* were oiled at the base. More than 80% of the normally bright green *Acrosiphonia* were also discolored (bleached tips and tan-brown coloration over >80% of the frond surface), although no oil was seen on the fronds of this alga. Submerged *Palmaria* at HMP-11a were also oiled and bleached. As documented in the field photos, all of these algae were common within their zones.

To evaluate effects of remobilized oil on the intertidal algae, HMP-13 was chosen as a “reference” site for HMP-11a. HMP-13 was the next rocky point to the west of HMP-11a, about 1 mile away. It faced the same direction and had similar wave exposure, but no remobilized oil was found there on















|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Segment** | **Date** | **Segment** |
| 6/2/2005 | ALM 8 | 6/9/052 | UDE3 |
|  | ALM 7 |  | UDE1 |
|  | ALM 6 |  | VLC9 |
|  | ALM10 |  | VLC10 |
|  | CFS 19 |  |  |
|  | CFS 20 | 6/19/2005 | SKN 3 |
| 6/3/2005 | KMK 30 |  | SKN 4 |
|  | PMS 7 |  | SKN 7 |
|  | PMS 10 |  | SKN 6 |
| 6/4/2005 | SPR 11 |  | PMS 16 |
|  | SPR12 | 6/20/2005 | HMP 12 |
|  | SKS 4 |  | HMP 9 |
|  | SKS 6 |  | PTN 3 |
| 6/5/2005 | CNB9 |  | PTS 11 |
|  | CNB10 | 6/21/2005 | MKS 4 |
|  | PTN2 |  | MKS 5 |
|  | PTN3 |  | MKS 6 |
| 6/6/2005 | HMP7 |  | SPR 2 |
|  | HMP6 |  | SPR 3 |
|  | HMP10 |  | UDW 1 |
|  | HMP11 | 6/22/2005 | SKN 14 |
|  | HMP5 |  | SKN 10 |
| 6/7/2005 | SKN8 |  | SKN 11 |
|  | SKN9 |  | SKN 7 |
|  | SKN11 |  | PMS 20 |
|  | SKN12 | 6/23/2005 | HMP 11 |
|  | SKN14 |  | HMP 13 |
|  | SKN15 |  |  |
| 6/8/2005 | SKS 18 |  |  |
|  | SKS 14 |  |  |
|  | SKS 15 |  |  |
|  | SKS 16 |  |  |
|  | SKS 17 |  |  |

|  |  |
| --- | --- |
| **Invertebrates** | **Common name category** |
| *Henricia* | starfish |
| *Katharina* | chiton |
| *Littorina* *sitkana* | snail |
| *Lottia digitalis* | limpet |
| *Lottia pelta* | limpet |
| *Nucella emarginata* | snail |
| *Calliostoma ligatum.* | snail |
| *Balanus glandula* | barnacle |
| *Semibalanus cariosus* | barnacle |
| *Mytilus trossulus* | mussel |
|  |  |
| **Marine algae** |  |
| *Laminaria* | kelp |
| *Alaria* | kelp |
| *Cymathere* | kelp |
| *Fucus* | rockweed |
| *Hedophyllum* | kelp |
| *Neorhodomela larix* | red alga |
| *Petrocelis* | tar-spot alga |
| *Agarum (or* possibly *Thalassiophyllum)* | kelp |
| The individuals of these species were large enough that they were probably present in the spill area before 8 December 2004, when the *Selendang Ayu* wrecked at Spray Cape. | |

| **SEGMENT NAME** | **WINTER OILING CAT.** | **SPRING OILING CAT.** | **SPRING**  **CLEAN-UP?** | **MANUAL CLEAN-UP** | **MECH. REMOVAL** | **MECH. TILL** | **BERM RELOC-ATION** | **OPEN BURN** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ALM03 | NOO | MODERATE | YES | X |  |  |  |  |
| ALM09 | NOO | MODERATE |  |  |  |  |  |  |
| AND01 | LIGHT | LIGHT | NFT |  |  |  |  |  |
| AND06 | LIGHT | LIGHT | YES | X |  |  |  |  |
| AND07 | NOO | HEAVY | NFT |  |  |  |  |  |
| AND08 | NOO | HEAVY | YES | X |  |  |  |  |
| ASP07 | NOO | LIGHT | YES | X |  |  |  |  |
| ASP14 | NOO | MODERATE | YES | X |  |  |  |  |
| ASP15 | NOO | LIGHT | YES | X |  |  |  |  |
| ASP16 | NOO | LIGHT | YES | X |  |  |  |  |
| BCK07 | NOO | HEAVY | YES | X |  |  |  |  |
| BCK09 | HEAVY | MODERATE | YES | X |  |  |  |  |
| BCK11 |  | HEAVY | YES | X |  |  |  |  |
| CBE21 | HEAVY | NOO | NFT |  |  |  |  |  |
| CNB01 | NOO | MODERATE | YES | X |  |  |  |  |
| CNB10 | NOO | LIGHT | YES | X |  |  |  |  |
| CNB11 | NOO | LIGHT | YES | X |  |  |  |  |
| CNB14 | NOO | LIGHT | YES | X |  |  |  |  |
| CNB15 | NOO | LIGHT | YES | X |  |  |  |  |
| CNB17 | NOO | MODERATE | YES | X |  |  |  |  |
| CNB19 | MODERATE | LIGHT | NFT |  |  |  |  |  |
| CNB20 | MODERATE | HEAVY | YES | X |  |  |  |  |
| CNB21 | HEAVY | HEAVY | YES | X |  |  |  |  |
| HMP02 | NOO | HEAVY | YES |  |  |  |  |  |
| HMP03 | NOO | HEAVY | YES |  |  |  |  |  |
| HMP05 | HEAVY | HEAVY | YES | X |  |  |  |  |
| HMP06 | HEAVY | HEAVY | YES | X |  |  |  |  |
| HMP07 | HEAVY | HEAVY | YES | X | X | X |  |  |
| HMP08 | HEAVY | LIGHT | YES | X |  |  |  |  |
| HMP10 | HEAVY | HEAVY | YES | X |  |  |  |  |
| HMP11 | HEAVY | HEAVY | YES | X | X | X |  | X |
| HMP12 | HEAVY | HEAVY | YES | X | X | X | X |  |
| HMP13 | HEAVY | HEAVY | YES | X |  |  |  |  |
| KFP01 | NOO | HEAVY | YES | X |  |  |  |  |
| KFP02 | NOO | HEAVY | YES | X |  |  |  |  |
| KFP03 | NOO | HEAVY | YES | X |  |  |  |  |
| KFP04 | NOO | VERY LIGHT | X | X |  |  |  |  |
| KFP05 | LIGHT | VERY LIGHT | NFT |  |  |  |  |  |
| KFP07 | LIGHT | VERY LIGHT | NFT |  |  |  |  |  |
| KFP08 | NOO | HEAVY | YES | X |  |  |  | X |
| KFP09 | MODERATE | HEAVY | YES | X |  |  |  |  |
| KFP10 | NOO | HEAVY | YES | X |  |  |  |  |
| KMK02 | NOO | HEAVY | YES | X |  |  |  |  |
| KMK06 | MODERATE | MODERATE |  |  |  |  |  |  |
| KMK07 | MODERATE | HEAVY | YES | X |  | X |  |  |
| KMK08 | HEAVY | NOO | NO |  |  |  |  |  |
| KMK09 | HEAVY | HEAVY | YES | X |  |  |  |  |
| KMK11 | HEAVY | LIGHT | YES | X |  |  |  |  |
| KMK15 | NOO | LIGHT | YES | X |  |  |  |  |
| KMK26 | NOO | HEAVY | YES | X |  |  |  |  |
| KMK27 | MODERATE | HEAVY | YES | X |  |  |  |  |
| KMK28 | HEAVY | HEAVY | YES | X |  |  |  |  |
| KMK29 | HEAVY | LIGHT | NFT |  |  |  |  |  |
| KMK30 | HEAVY | HEAVY | YES | X |  |  |  |  |
| KMK32 | NOO | MODERATE | YES | X |  |  |  |  |
| KSB01 | NOO | MODERATE | YES | X |  |  |  |  |
| KSB02 | MODERATE | HEAVY | YES | X |  |  |  |  |
| KSB03 | NOO | HEAVY | YES | X |  |  |  |  |
| KSB08 | MODERATE | MODERATE | YES | X |  |  |  |  |
| KSB10 | HEAVY | MODERATE | YES | X |  |  |  |  |
| KSB15 | NOO | LIGHT | YES | X |  |  |  |  |
| KTS19 |  | LIGHT | YES | X |  |  |  |  |
| MKS01 | HEAVY | HEAVY | YES | X | X | X |  | X |
| MKS02 | HEAVY | HEAVY | YES | X | X | X |  |  |
| MKS03 | HEAVY | LIGHT | YES | X |  |  |  |  |
| MKS04 | HEAVY | NOO | NFT |  |  |  |  |  |
| MKS05 | HEAVY | HEAVY | YES | X |  |  |  |  |
| MKS06 | HEAVY | HEAVY | YES | X |  |  |  |  |
| MKS07 | LIGHT | HEAVY | YES | X |  |  |  |  |
| MKS08 | LIGHT | NOO | NFT |  |  |  |  |  |
| MKS09 | HEAVY | HEAVY | YES | X |  |  |  |  |
| MKS10 | HEAVY | NOO | NFT |  |  |  |  |  |
| MKS11 | HEAVY | HEAVY | YES | X |  |  |  |  |
| MKS12 | NOO | HEAVY | YES | X |  |  |  |  |
| **MKS13** | NOO | HEAVY | NFT |  |  |  |  |  |
| **MKS14** | NOO | HEAVY | NFT |  |  |  |  |  |
| **MKS15** | NOO | HEAVY | NFT |  |  |  |  |  |
| **MKS16** | NOO | HEAVY | NFT |  |  |  |  |  |
| **MKS17** | NOO | HEAVY | NFT |  |  |  |  |  |
| **MKS18** | NOO | HEAVY | NFT |  |  |  |  |  |
| NGE07 | LIGHT | LIGHT | YES | X |  |  |  |  |
| NGW01 | LIGHT | LIGHT | NFT |  |  |  |  |  |
| NGW02 | MODERATE | LIGHT | YES | X |  |  |  |  |
| NGW03 | MODERATE | LIGHT | YES | X |  |  |  |  |
| NGW04 | LIGHT | LIGHT | NFT |  |  |  |  |  |
| NGW05 | LIGHT | LIGHT | NFT |  |  |  |  |  |
| NGW06 | LIGHT | LIGHT | NFT |  |  |  |  |  |
| NGW07 | LIGHT | LIGHT |  |  |  |  |  |  |
| PMN02 | HEAVY | NOO | NFT |  |  |  |  |  |
| PMN10 | LIGHT | NOO | NFT |  |  |  |  |  |
| PMN12 | LIGHT | LIGHT | NFT |  |  |  |  |  |
| PMN13 | NOO | VERY LIGHT | NFT |  |  |  |  |  |
| PMN15 | NOO | MODERATE | YES | X |  |  |  |  |
| PMN16 | NOO | MODERATE | YES | X |  |  |  |  |
| PMN24 | LIGHT | NOO | NFT |  |  |  |  |  |
| PMN25 | LIGHT | NOO | NFT |  |  |  |  |  |
| PMN28 | NOO | HEAVY | YES | X |  |  |  |  |
| PMS05 | LIGHT | LIGHT |  |  |  |  |  |  |
| PMS06 | LIGHT | MODERATE | YES | X |  |  |  |  |
| PMS10 | MODERATE | MODERATE | YES | X |  |  |  |  |
| PMS11 | LIGHT | LIGHT |  |  |  |  |  |  |
| PTN01 | MODERATE | LIGHT | NFT |  |  |  |  |  |
| PTN02 | NOO | HEAVY | YES | X |  |  |  |  |
| PTN03 | HEAVY | HEAVY | YES | X |  |  |  |  |
| PTN04 | HEAVY | HEAVY | YES | X |  |  |  |  |
| PTN10 | LIGHT | HEAVY | YES | X |  |  |  |  |
| PTS01 | LIGHT | HEAVY | YES | X |  |  |  |  |
| PTS03 | LIGHT | NOO | NFT |  |  |  |  |  |
| PTS04 | LIGHT | NOO | NFT |  |  |  |  |  |
| PTS05 | MODERATE | MODERATE | NFT |  |  |  |  |  |
| PTS06 | NOO | NOO | NO |  |  |  |  |  |
| PTS07 | MODERATE | LIGHT | NFT |  |  |  |  |  |
| PTS08 | MODERATE | NOO | NFT |  |  |  |  |  |
| PTS10 |  | MODERATE | NFT |  |  |  |  |  |
| SKN04 | NOO | LIGHT | YES | X |  |  |  |  |
| SKN05 | HEAVY | HEAVY | YES | X |  | X | X | X |
| SKN06 | NOO | MODERATE | YES | X |  |  | X |  |
| SKN08 | HEAVY | MODERATE | YES | X |  |  |  | X |
| SKN11 | HEAVY | HEAVY | YES | X | X | X |  | X |
| SKN12 | LIGHT | HEAVY | YES | X |  |  |  |  |
| SKN13 | HEAVY | MODERATE | YES | X |  |  |  |  |
| SKN14 | HEAVY | HEAVY | YES | X |  |  |  |  |
| SKN15 | HEAVY | HEAVY | YES | X |  |  |  | X |
| SKS01 | NOO | HEAVY | YES | X |  |  |  |  |
| SKS02 | NOO | HEAVY | YES | X |  |  |  |  |
| SKS03 | NOO | HEAVY | YES | X |  |  |  |  |
| SKS04 | MODERATE | HEAVY | YES | X | X | X | X |  |
| SKS06 | HEAVY | HEAVY | YES | X |  |  |  |  |
| SKS10 | NOO | HEAVY | YES | X |  |  |  |  |
| SKS11 | NOO | HEAVY | YES | X |  |  |  |  |
| SKS12 | NOO | LIGHT | YES | X |  |  |  |  |
| SKS13 | NOO | MODERATE | YES | X |  |  |  |  |
| SKS14 | NOO | MODERATE | YES | X |  |  |  |  |
| SKS15 | NOO | HEAVY | YES | X |  |  |  |  |
| SKS16 | NOO | HEAVY | YES | X |  |  |  |  |
| SKS17 | NOO | MODERATE | YES | X |  |  |  |  |
| SKS18 | HEAVY | HEAVY | YES | X | X | X |  |  |
| SMB06 |  | HEAVY | YES | X |  |  |  |  |
| SPR01 | NOO | MODERATE | YES | X |  |  |  |  |
| SPR02 | HEAVY | MODERATE | YES | X |  |  |  |  |
| SPR03 | NOO | LIGHT | YES | X |  |  |  |  |
| SPR04 | HEAVY | MODERATE | YES | X |  |  |  |  |
| SPR05 | HEAVY | NOO | NFT |  |  |  |  |  |
| SPR07 |  | MODERATE | YES | X |  |  |  |  |
| SPR09 |  | MODERATE | YES | X |  |  |  |  |
| SPR10 |  | LIGHT | YES | X |  |  |  |  |
| SPR11 | LIGHT | HEAVY | YES | X |  |  |  |  |
| SPR12 |  | HEAVY | YES | X |  |  |  |  |
| UDE16 | LIGHT | LIGHT | YES | X |  |  |  |  |
| WDE03 | MODERATE |  |  |  |  |  |  |  |
| UDW01 | NOO | HEAVY | YES | X |  |  |  |  |
| UDW04 | NOO | LIGHT | YES | X |  |  |  |  |
| UNK03 |  | LIGHT | YES | X |  |  |  |  |
| VLC01 |  | HEAVY | YES | X |  |  |  |  |
| VLC10a |  | LIGHT | YES | X |  |  |  |  |

|  |  |
| --- | --- |
| **DATES** | **OBSERVATIONS** |
| 20-23 June 2005: | NOAA survey teams documented remobilized oil from beach cleaning operations in Skan Bay (SKN10-11) and probably from beach cleaning operations in Hump Back Bay (~HMP10-12). |
| August-September 2005 | Scott Arnold, Alaska Department of Health and Social Services, reported elevated levels of total PAHs in blue mussels from various locations in Skan Bay, but not in other nearby bays |
| ~September 2005: | Mark Carls reported increase of oil in PEMD samplers at Skan Bay (SKN-14). |
| 21 October 2005 | Unnamed observer in civilian aircraft reported what appeared to be a sheen around thevessel. Coast Guard reported oil from Selendang in water and onshore around wreck (Spray Cape) and Skan Bay. |
| 24 October 2005 | Coast Guard reported seeing sheen and emulsified oil coming from the stern of the *Selendang Ayu*. |
| 25 October 2005 | Coast Guard observed a rainbow sheen burping up from around 350 yards from the vessel. |
| 1 December 2005: | Coast Guard/ADEC reported sheening from the vessel (POLREP 104). |
| 1 December 2005 | Dan Magone reported oil on about 200 feet of shoreline near the Selendang; “grass has distinctive droopy look….” |
| 3 December 2005 | Dan Magone reported “ribbon of oil sheen” in inner bay of “Lower Skan Bay”. |
| Feb or March 2006(?) | Seaduck crews reported sticky oil blobs on beach and oiled scaup. |

| **SEGMENT** | **SEGMENT LENGTH (km)** | **OILED LENGTH (km)** | **FINAL STATUS** | **DATE of STATUS DETERMINATION** |
| --- | --- | --- | --- | --- |
| BCK11 | 0.951 | 0.08 | End Point Reached | 6/8/06 |
| HMP06 | 0.463 | 0.08 | Natural Recovery | 6/6/06 |
| HMP11b | 0.300 | 0.12 | End Point Reached | 6/6/06 |
| KFP01 | 1.494 | 0.635 | Natural Recovery | 6/13/06 |
| KFP02 | 0.536 | 0.38 | End Point Reached | 6/12/06 |
| KFP03 | 0.239 | 0.03 | End Point Reached | 6/12/06 |
| KFP10a | 1.102 | 0.36 | End Point Reached | 6/12/06 |
| KMK26 | 0.265 | 0.02 | End Point Reached | 6/4/06 |
| KMK30 | 1.839 | 0.04 | End Point Reached | 6/4/06 |
| MKS13 | 1.507 | 0.02 | End Point Reached | 6/4/06 |
| MKS14 | 0.688 | 0.14 | Natural Recovery | 6/4/06 |
| MKS16 | 0.681 | 0.265 | Natural Recovery | 6/4/06 |
| MKS17 | 1.294 | 0.08 | End Point Reached | 6/4/06 |
| SKN05 | 0.676 | 0.6 | End Point Reached | 6/5/06 |
| SKN06 | 1.854 | 0.02 | End Point Reached | 6/5/06 |
| SKN08 | 0.128 | 0.082 | End Point Reached | 6/5/06 |
| SKN11 | 0.210 | 0.24 | End Point Reached | 6/5/06q |
| SKN12 | 1.172 | 0.025 | End Point Reached | 6/5/06 |
| SKN15 | 2.610 | 2.073 | Natural Recovery | 6/12/06 |
| SKS03 | 0.865 | 0.122 | Natural Recovery | 6/8/06 |
| SKS04 | 0.235 | 0.235 | End Point Reached | 6/8/06 |
| SKS06 | 0.439 | 0.04 | End Point Reached | 6/8/06 |
| SKS11c | 0.045 | 0.08 | End Point Reached | 6/12/06 |
| SKS18d,e,g | 3.610 | 0.354 | End Point Reached | 6/12/06 |
| SPR11a | 1.210 | 0.1 | Natural Recovery | 6/8/06 |
| SPR12 | 0.593 | 0.2 | End Point Reached | 6/8/06 |

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|  | **Incident Command Segment Code** | **General Location Name** | **Site of Auke Bay Hydrocarbon Monitoring Stations** |
| 1. | MKS 5 | Makushin Bay South (Glacier Valley Creek) | X |
| 2. | HMP 9 | Humpback Bay |  |
| 3. | HMP12 | Humpback Bay |  |
| 4. | PTN 3 | Portage Bay North |  |
| 5. | PTS 10 | Portage Bay South |  |
| 6. | SKN 4 | Skan North | X |
| 7. | SKN 14 | Skan North | X |
| 8. | SPR 3 | Spray Cape |  |
| 9. | PMN 20/21 | Pumicestone North | X |
| 10. | PMS 16 | Pumicestone South | X |

