PROPOSED CLEANUP PLAN - WRANGELL LUMBER MILL SITE

6.5-Mile Zimovia Highway
Wrangell, Alaska

April 2012

Prepared for

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PROPOSED CLEANUP PLAN - WRANGELL LUMBER MILL SITE

April 2012

PROPOSED SOIL CLEANUP & CLOSURE PLAN - WRANGELL LUMBER MILL SITE

April, 2012

I. OVERVIEW

The Wrangell Lumber sawmill began operations in the early-1970's, and gradually expanded its operations to become one of the largest sawmills in Southeast Alaska by the early-1990's. Alaska Pulp Corporation shut down the sawmill operations in 1995. The mill was reopened by Silver Bay Logging Inc. in 1998, and operations continued until 2007 when it closed for the final time. Since then the sawmill buildings and associated equipment have been removed and only the office, shop, fuel depot and 3 storage/warehouse buildings remain. Silver Bay Logging now is removing the remaining demolition debris, empty tanks and materials throughout the mill property in preparation for selling the property.

A Phase-I environmental evaluation of the Wrangell Lumber mill was completed in 2006 by Nortech Environmental Engineering & Industrial Hygiene Consultants (Nortech). That report was followed by a 2011 Phase-II Nortech assessment which further defined environmental cleanup areas. On 3/26/12 and at the request of Silver Bay Logging, Southeast Management Services of Juneau AK carried out a site inspection in preparation for drafting this cleanup plan.

This proposed cleanup plan has been developed on behalf of Silver Bay Logging, to address all environmental problem areas identified in the Phase-I and Phase-II reports. Proposed time schedules for contaminated soil excavations, recycling and/or disposal of materials, and bioremediation of excavated soils are presented in the following sections. The objective is to complete all cleanup activity during 2012, and excavations are proposed to begin in May 2012.

II. SITE DESCRIPTION

Figure 1 (page 2a) provides a map of the City of Wrangell vicinity and the Wrangell Lumber mill site, which is located 6.5 miles south of the city along the shore of Shoemaker Bay. Figure 2 (page 2b) provides a 1990's site plan of the Wrangell Lumber sawmill when it was in full operation. The entire mill site covers about 50 acres, of which 22 acres is paved with asphalt and drains into a large oil/water separator before discharging to Shoemaker Bay. Also shown on Figure 2 is the closed Mt. Seley woodwaste disposal site immediately north of the mill. Its 7-acre top surface was capped in 1991 with a 10"-18" thick layer of compacted clay and rock, that was topped with a 1'-2.5'-thick layer of protective 18"-minus shotrock.

Substantial environmental improvements were made during 1991-94 to enable the mill to comply with all Dept. of Environmental Conservation requirements. As a result, there were few environmental concerns when Alaska Pulp Corporation shut down the mill operations in 1995.

After the sawmill shut down in 2007, the large sawmill building, woodwaste boiler, powerhouse, emergency generator building, lumber processing facilities, planer facility and a large log bundle crane have been demolished or removed. Little remains except for their concrete foundations. Figure 3 (page 2c) provides an updated site plan of how the Wrangell Lumber mill site looks today and what remains:

1. The mill office, equipment repair shop, warehouse, and two storage buildings created out of the planer building,
2. The fuel depot, with its 20,000-gallon diesel and 2,000-gallon gasoline tanks,
3. A mostly empty 20,000-gallon generator fuel tank, and
4. The oil/water separator with its settling pond.

III. SITE EVALUATIONS

III.1. Nortech Phase-I Assessment

On 11/5/06, Nortech completed a Phase-I environmental assessment of the Wrangell Lumber sawmill facilities. The assessment included the results of a site visit on 8/2/06. Over 20 buildings were found on the property as shown in Figure 2, including a large Berger crane in the sort yard for lifting log bundles out of the water. The Mt. Seley site just north of the mill was being used for storing a substantial amount of logging equipment and empty fuel tanks from the Silver Bay Logging camps that had been shut down. The Nortech report concluded with identifying the following potential environmental concerns:

1. Oil staining of soil was found around all fittings and plumbing joints at the mill's main fuel depot, and that area would need to undergo site characterization for oil contamination and eventual cleanup action.
2. Numerous housekeeping items involving stored fuel tanks, drums, propane cylinders and lead acid batteries were observed that could become environmental liabilities, and therefore needed to be addressed and disposed of as soon as possible.
3. There was no SPCC plan available at the mill.

III.2. Nortech Phase-II Assessment

After the Wrangell Lumber mill shut down in 2007 and many of its buildings were removed, Nortech carried out a 9/13-14/11 site visit, took soil samples and finalized a Phase-II environmental assessment dated 12/5/11. The report covered all sites and issues described in the Phase-I report and included several additional mill sites, with the following results:

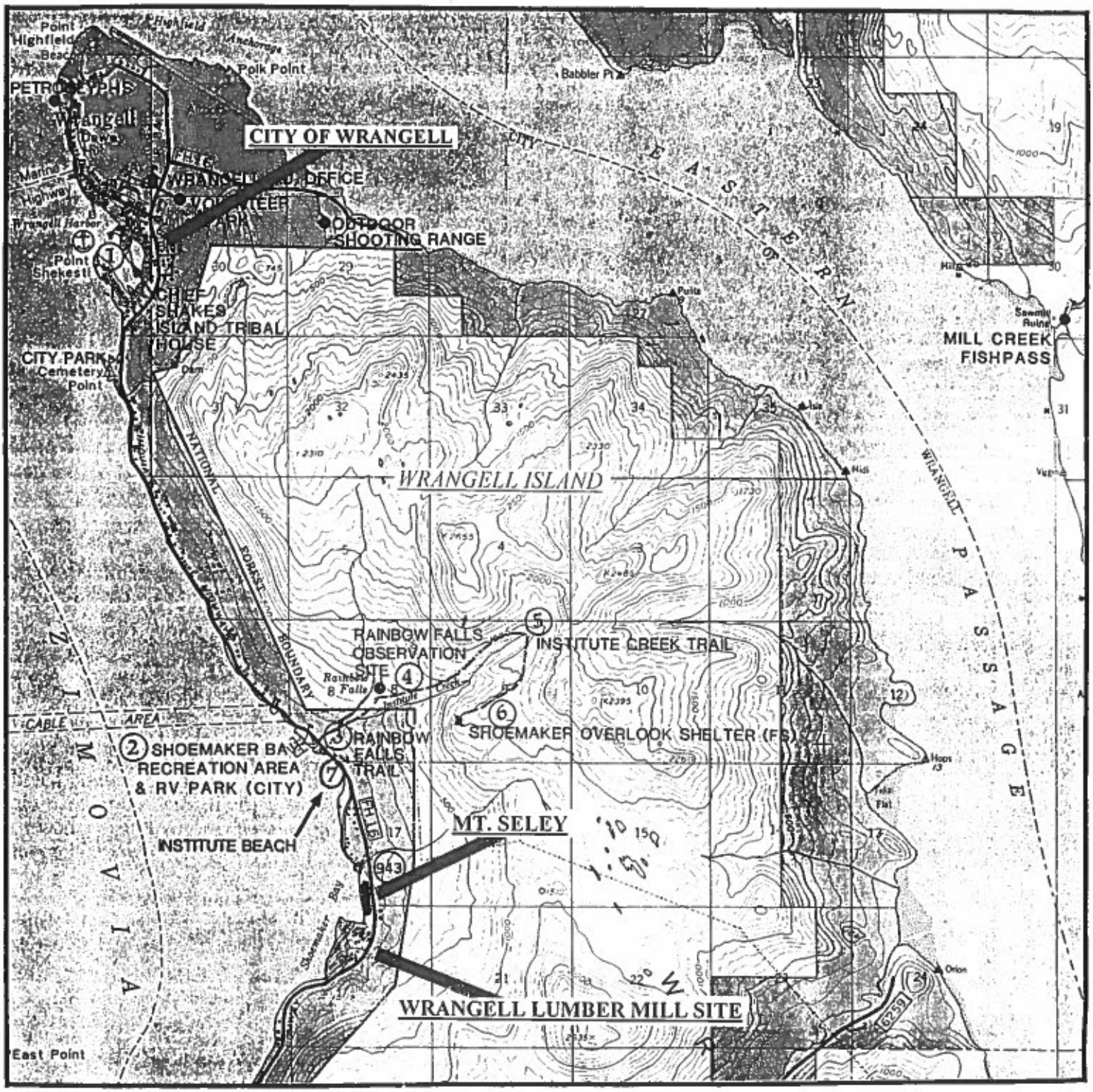
1. Office tank area. The empty fuel tank behind the office had been removed, and Sample #AV1 was taken where the tank's outlet had been located. Its GRO and RRO levels met all cleanup criteria, but the DRO level of 404 mg/kg was above the Method-2 criterion of 260 mg/kg.

FIGURE 1:

VICINITY LOCATION: WRANGELL LUMBER MILLSITE & MT. SELEY

Wrangell, Alaska

NORTH



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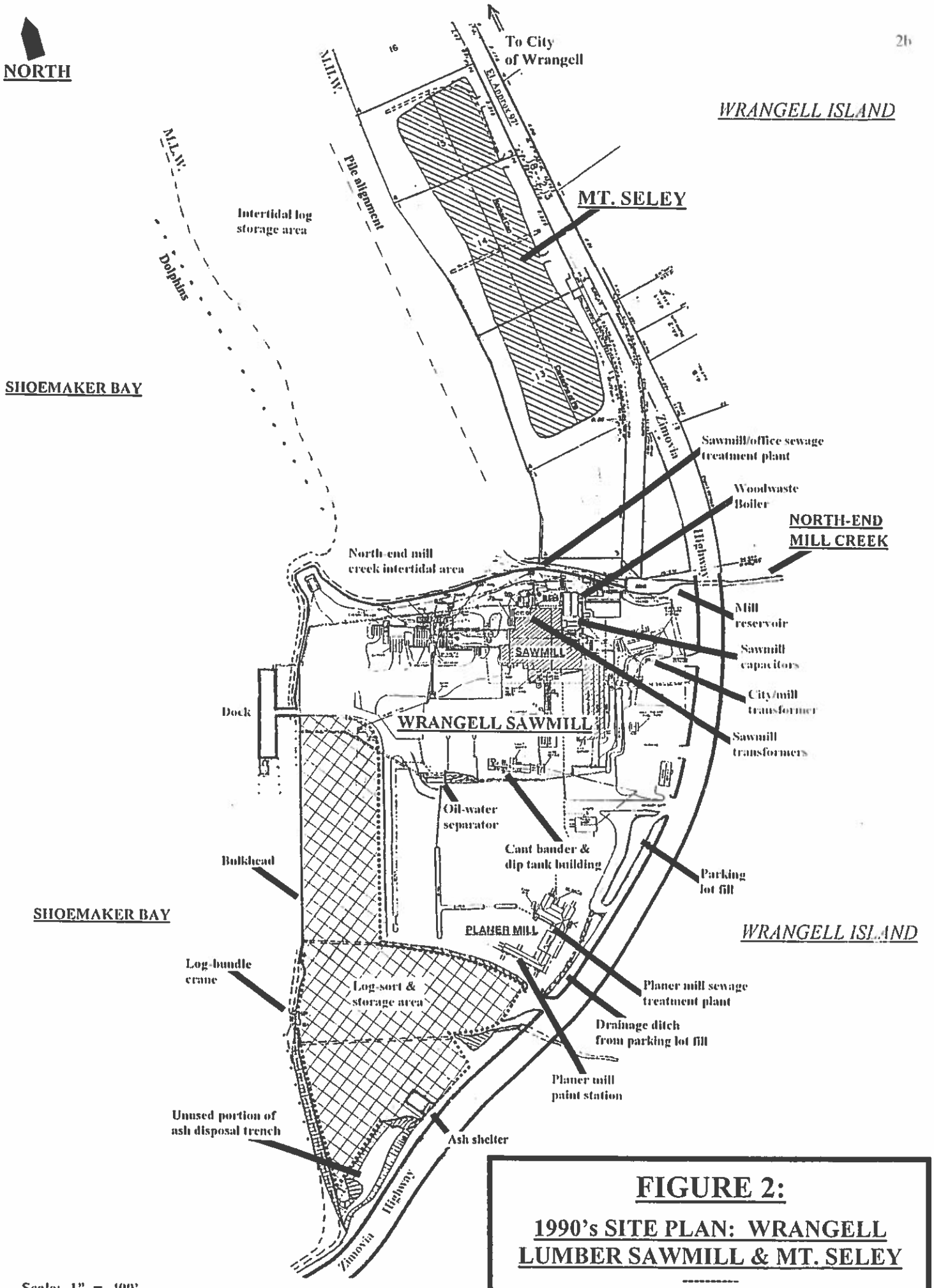


FIGURE 2:

1990's SITE PLAN: WRANGELL LUMBER SAWMILL & MT. SELEY

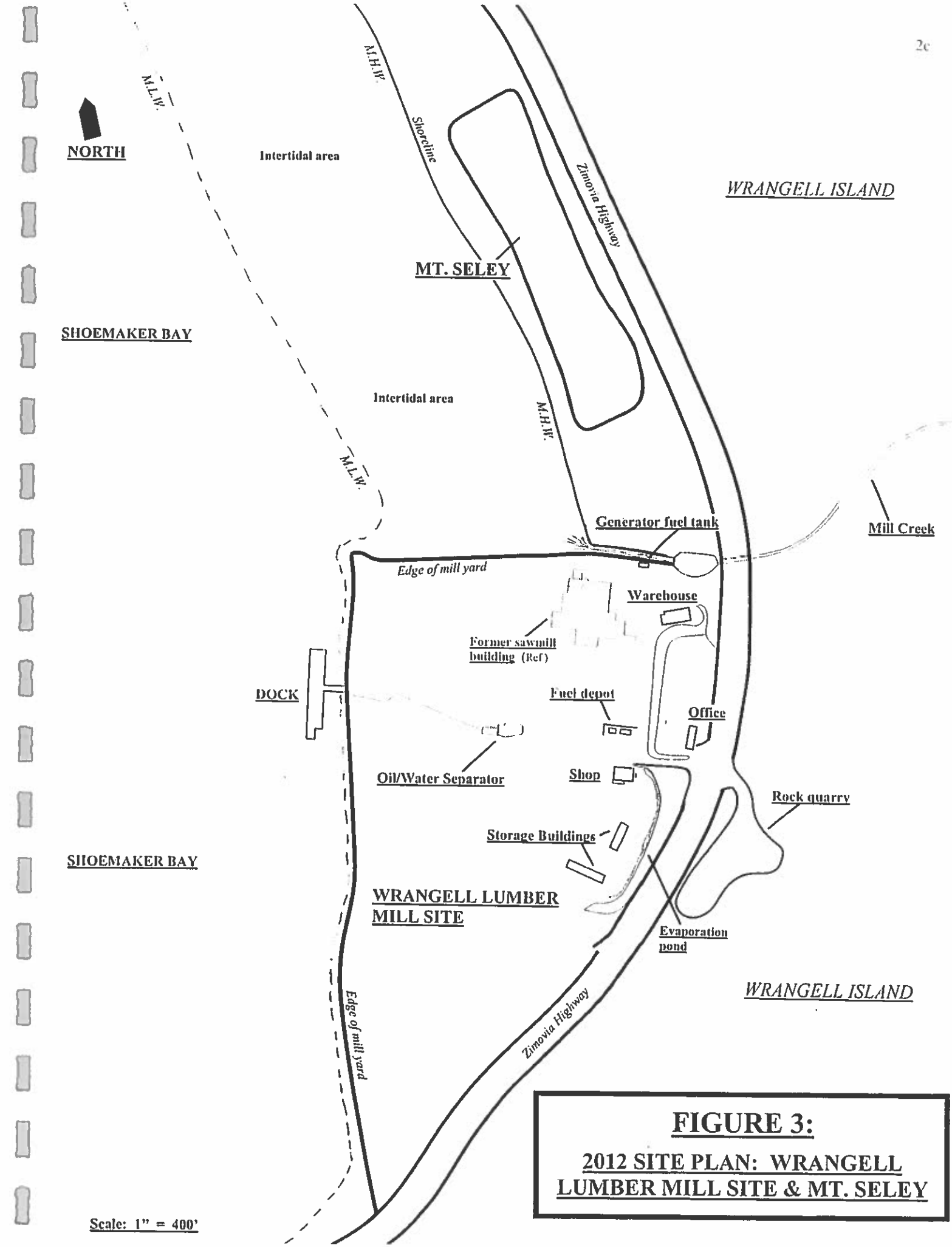


FIGURE 3:

2012 SITE PLAN: WRANGELL LUMBER MILL SITE & MT. SELEY

2. Generator fuel tank. Sample #GT2 was taken beneath the outlet pipe of the large generator fuel tank along the north edge of the mill site. Its DRO level was 1,420 mg/kg and above the Method-2 cleanup criteria.

3. Fuel tanks at the former generator building site. Three small empty fuel tanks were being stored on the mill's former emergency generator concrete pad, and sample #3T1 had very high DRO and RRO levels of 51,300 and 12,300 mg/kg.

4. Tank area behind the equipment shop. Sample #SGS was taken in the evaporation pond for the surface water drainage ditch behind the equipment shop. While its GRO, DRO and RRO levels all met cleanup criteria, 3 of the semivolatile (SVOC) substances (penzo(a)anthracene, benzo[b]fluoranthene and benzo[a]pyrene) were over their respective cleanup levels.

5. Fuel depot. Soil samples were taken from under the two fuel tank outlet pipes. Sample #TF2 under the gasoline tank outlet had low GRO, DRO and RRO levels of 1.3, 124 and 379 mg/kg respectively, all of which met the Method-2 cleanup criteria. Sample #TF3 taken beneath the diesel tank outlet met the GRO and RRO cleanup levels, but had a DRO level of 8,110 mg/kg that was above the Method-2 criteria.

6. Oil/water separator settling pond and discharge area. Two samples #SP2 and #SP3 were taken along the sides of the oil/water separator's settling pond. Both samples had high DRO levels of 1,790 and 3,350 mg/kg. Sample #SP3 also had a high RRO level of 15,600 mg/kg which was above the Method-2 criteria of 8,300 mg/kg. The oil/water separator discharge area could not be sampled as planned, because the tides were not low enough to expose the end of the separator's discharge culvert.

6. Overhead crane area. The large Berger log-bundle crane that had been in the mill's log storage area was now removed. Sample #CR1 was taken in its vicinity and met all cleanup criteria.

8. All areas involving storage of petroleum, oils or lubricants. Numerous drums, totes and smaller containers of petroleum, oil, lubricants and other materials were stockpiled along the equipment repair building. There also was a 500-gallon used oil tank in the vicinity. While no samples were taken, in part because the entire area was paved with asphalt, Nortech recommended better housekeeping and appropriate disposal or recycling of all containers as soon as possible.

9. Mt. Seley tank storage areas. 18 test pits were made across the Mt. Seley areas where the numerous fuel tanks had been stockpiled in 2006. All test pits were field-screened and three soil samples were sent to the lab for analysis. Sample #TP3 taken along the north edge of Mt. Seley had a DRO level of 3,470 mg/kg, but sample #TP1 taken about 50' away met all cleanup criteria.

   The other test pit sample analyzed by the lab was #TP8, taken along the east edge of Mt. Seley's cap and about halfway down the site. It met the GRO and RRO cleanup criteria, but its DRO level of 302 mg/kg was slightly above the Method-2 cleanup criteria of 260 mg/kg.

10. SPCC plan. There was no SPCC plan found for the mill site.

III.3. 3/26/12 Site Inspection

On 3/26/12, Tom Hanna of Southeast Management Services inspected the Wrangell Lumber mill facility, and was accompanied by Denise Elston of the Department of Environmental Conservation. A meeting first was held with Dick Bueller, owner of Silver Bay Logging, and two of his employees (Randy and Royce). All sites and potential environmental problem areas described in the Nortech Phase-II report then were inspected and evaluated for potential cleanup. The inspection results are summarized as follows, and photographs are included in Appendix A:

1. Office tank area. The former 750-gallon Jet-A fuel tank site behind the mill office (photos on page A2) was paved with asphalt, except for where the tank may have extended just beyond the west embankment. Any runoff from the tank would have drained in this direction, and Nortech's shallow sampling hole was found. The DRO level of 404 mg/kg was slightly over the Method-2 cleanup criteria, and there were no signs of significant contamination.

2. Generator fuel tank. The 20,000-gallon self-contained diesel generator tank was inspected (photos on page A3) and there was no apparent contamination along its west side or under the tank. There was a still-connected rubber hose to the tank's outlet pipe on the east side, where Nortech's shallow sampling hole was found which had a DRO level of 1,420 mg/kg. There were no signs of significant contamination.

3. Fuel depot. The 20,000-gallon diesel tank and 2,000-gallon gasoline tank at the Wrangell Lumber mill site's fuel depot are shown in the photos on page A4. Photo #6 shows the two fuel dispenser stations on the depot's oil-stained wood bulkhead. Dark oil-stained soils were readily apparent behind and around the diesel oil dispenser and its adjacent diesel tank fill pipe (Photo #7, page A8). Oil-stained soil also was observed beneath the diesel tank's pipe outlet (Photo #8), where Nortech's sample #TF3 had a high DRO level of 8,110 mg/kg.

   Soils beneath the gasoline tank outlet (Photo #9, page A6) had very little indication of contamination, and Nortech's sampling results for GRO and DRO also were low at 1.3 and 124 mg/kg. The adjacent site where the former 1,000-gallon highway diesel tank had been located (Photo #10, page A6) had no apparent signs of contamination.

4. Fuel tanks at the former emergency generator site. Three small empty fuel tanks were sitting on the former emergency generator concrete pad (photos on page A7). There were no indications of leakage from the tanks. However, the 9'-wide area between the former generator and transformer concrete pads had very dark-stained oily soil (photos on page A8), where Nortech found high DRO and RRO levels of 51,300 mg/kg and 12,300 mg/kg.

   Photo #15 (page A9) shows the transformer pad's catchment basin and discharge pipe, which discharged directly to the oil-stained area and was the likely source of the contamination. The same black-stained soil can be seen in the prior-year photos on pages A10-A11, which were taken on 9/26/96. At that time the dark-stained soils were tested only for PCB's (found to be non-detect at 33-66 ug/kg) because of some leakage from the 3 non-PCB transformers. The prior-year photos

on page A11 clearly show oil ponding on the concrete pad floor beneath the transformers, most of which eventually would have flowed to the catchment basin.

Two additional dark-stained areas were found 9' apart and 10' in from the transformer pad's north side. They were along a flat steel bar that was embedded into the concrete surface as shown on Photo #16 (page A9), where deteriorated concrete appeared to have allowed seepage under the concrete pad. These areas appeared to be about where the transformer roof supports had been located.

4. Tank area behind the equipment shop. The tank area behind the mill's equipment repair shop was paved and sloped to a poorly drained area of about 30'x10'-wide that was covered with a thin layer dark-stained mud & soil (Photo #21, page A12). A shallow 230'-long ditch then drained the shop's back area and connected to a 65'x12'-wide evaporation pond with a 1'-high wooden dam (photos on pages A12-A13). The pond's inlet was largely filled with sediment deposits, where Nortech's sampling detected 3 SVOC compounds to be above the cleanup criteria.

6. Oil/water separator settling pond area. Photos of he oil/water separator and its settling pond is provided on pages A14-A15. Mill personnel indicated that oil levels in the oil/water separator have been periodically checked and any oil found removed. They also stated that about 5 gallons of oil were removed when it was last checked in March.

   As shown in Photo #26, there was a 1'-1.5' thick rim of black-stained soil around the periphery of the settling pond, and Photo #27 also shows dark-stained bottom sediments along the pond's north side. Nortech's two samples had high DRO and RRO levels of up to 3,350 mg/kg and 15,600 mg/kg.

7. Surface-stained soil areas around mill property. Four blackish surface-stained areas were observed at various locations around the mill property, as shown in photos #28-#31 (pages A15-A17). The areas appeared to be little more than shallow contamination, which could and should be readily removed by scrapping with a backhoe bucket.

8. Mt. Seley. The Mt. Seley test pits created earlier by Nortech were inspected, and all were still open except for one filled-in pit. Photos #32 and #33 (pages A17-A18) show typical views of the 18 pits, of which one at the north end of Mt. Seley was never found. Nortech's sample at #TP3 had DRO and RRO levels of 3,470 mg/kg and 1,380 mg/kg. After returning to Juneau and further reviewing the Nortech sampling map, it appears that the filled-in excavation just beyond the open test pit shown in Photo #32 is the location of #TP3.

   Photo #33 shows the #TP8 test pit that was located about halfway down the Mt. Seley site, where the DRO and RRO levels were 302 mg/kg and 455 mg/kg.

9. Rock quarry bioremediation site selection. The Wrangell Lumber mill's rock quarry on the uphill side of Zimovia Highway (photos on pages A18-A19, see Figure 3 for location) was inspected for selecting a suitable site for bioremediation of the soon-to-be excavated soils. The site selected is shown in Photo #35, which will be cleared of rocks and debris and then leveled before excavations begin.

10. Oils, lubricants and other materials to be recycled or disposed. Photos on page A20 show the numerous barrels, totes and containers of petroleum, oils, lubricants

and other materials that will need to be inventoried and eventually recycled or disposed.

11. SPCC plan. A 1998-updated Stormwater Pollution Prevention Plan was found for the Wrangell Lumber mill, which identified all fuel tanks and fuel handling procedures. However, no corresponding SPCC plan could be located. Considering that the Wrangell Lumber mill site is in its final phases of demolition and the remaining 2 fuel tanks will be removed in about the next 6 months, the development of a SPCC plan for the mill now would serve no practical purpose. Consequently it is not being proposed as part of this cleanup plan.

IV. CLEANUP CRITERIA

The contaminants of concern are diesel range organics (DRO), residual range organics (RRO) for all cleanup sites at the Wrangell Lumber mill site, and semivolatile organics (SVOC) for the equipment shop drainage ditch and its evaporation pond. Because the entire mill site was built on filled tidelands and their immediately adjacent uplands, no useable groundwater aquifer is present. Therefore the Wrangell Lumber mill site's cleanup criteria are proposed to be set at the human health-related ingestion levels of 8,250 mg/kg for DRO, 8,300 mg/kg for RRO, and the SVOC levels listed in Table B1 of 18 AAC 75.341.

The Mt. Seley site represents a somewhat different situation from that of the mill site, in that Mt. Seley's capped fill is on an uphill slope from tidelands and there is an immediately adjacent private property to the north of Mt. Seley. Runoff from the north end of Mt. Seley might possibly affect what little groundwater that may be under the adjacent property. However, the Mt. Seley embankments do not have an impermeable clay layer. Much of the rainwater from the capped top of Mt. Seley flows to the upslope culvert inlets (refer to Figure 5) and discharges directly to tidelands. Consequently the small amount of water flowing over the north embankment would percolate into the underlying woodwaste fill, and any oils that might be present would be retained by the woodwaste's high organic content. As a result, the ingestion levels of 8,250 mg/kg for DRO and 8,300 mg/kg for RRO appear to be the appropriate cleanup criteria for the Mt. Seley site as well, and are proposed for the Mt. Seley cap.

V. PROPOSED CLEANUP & SCHEDULE

V.1. Cleanup & Sampling Procedures

Silver Bay Logging will provide the equipment and resources necessary to prepare and excavate all contaminated soil cleanup areas, and bioremediate the excavated soil to meet cleanup criteria. Excavation will be scheduled as reasonably practical to coincide with dry weather, to minimize the potential of contending with water-saturated soils. Excavations will be carried out with a backhoe operated by Brett Woodbury of Wrangell. Southeast Management Services will oversee all excavations to assure that contaminated soils above cleanup criteria are successfully removed. Southeast Management Services also will carry out all soil sampling as described in Appendix B.

Estimated confirmation samples for each cleanup site and the bioremediation cell, as well as estimated quantities of soil removed, are presented in Table 1 below.

TABLE 1: Estimated Cleanup Sampling & Soil Excavation Volumes

Cleanup Site	Est. No. of Samples	Analysis Type						Est., Soil Excavated (cy.)
		GRO	DRO	RRO	BTEX	SVOC	PCB	
1. Jet-A tank	1	-	1	1	-	-	-	1
2. Generator tank	2	-	2	2	-	-	-	1 - 3
3. Transformer-generator pads	8	2	10	10	2	2	2	10-50
4. Ditch/Evaporation pond	3	-	4	4	-	2	-	3 - 5
5. Fuel depot	6	2	6	6	2	1	-	5-10
6. Oil/water separator	6	-	6	6	-	-	-	5-10
7. Mt. Selcy	6	-	6	6	-	-	-	2 - 6
8. Surface oil-stained areas	-	-	-	-	-	-	-	1 - 2
9. Bioremediation cell	15	-	25	25	-	-	-	-
Totals:	*47*	*4*	*60*	*60*	*4*	*5*	*2*	*28-87*

V.2. Cleanup Areas & Schedule

Figure 4 (page 7a) shows the proposed cleanup areas for the Wrangell Lumber mill site, six of which require excavation and the remaining two involve the inventorying, recycling and/or disposal of the mill's containerized oils, lubricants and other materials or chemicals. Figure 5 (page 7b) provides a site plan of the Mt. Selcy storage area, where excavations are proposed for the remaining two cleanup areas. All excavations are described in the following subsections.

V.2.a. Excavations in May 2012

Six of the eight cleanup sites requiring excavation are proposed to be completed during May 2012. The May excavations should be completed in about 3-4 days, and their locations are shown on Figure 4. The proposed excavations are expected to proceed as follows:

Cleanup Area #1 - *Office Jet-A tank site.* Less than 1 c.y. likely will be removed from this site, and taken to the bioremediation facility (see Section V.3) for treatment.

Cleanup Area #2 - *Generator tank site.* The fuel hose connected to the 20,000-gallon generator tank will be removed and the tank emptied of its roughly 1.5' of mixed water & fuel. The tank then will be moved out of the way and about 1-3 c.y. are estimated to be excavated.

Cleanup Area #3 - *Generator/transformer pad site.* The three small tanks on the emergency generator pad will be removed, along with all debris and brush piles in the vicinity. Excavation will begin by removing the contaminated soil between the two concrete pads, and then breaking out and removing about 10' from along the north side of the transformer concrete pad. Excavations will resume until the

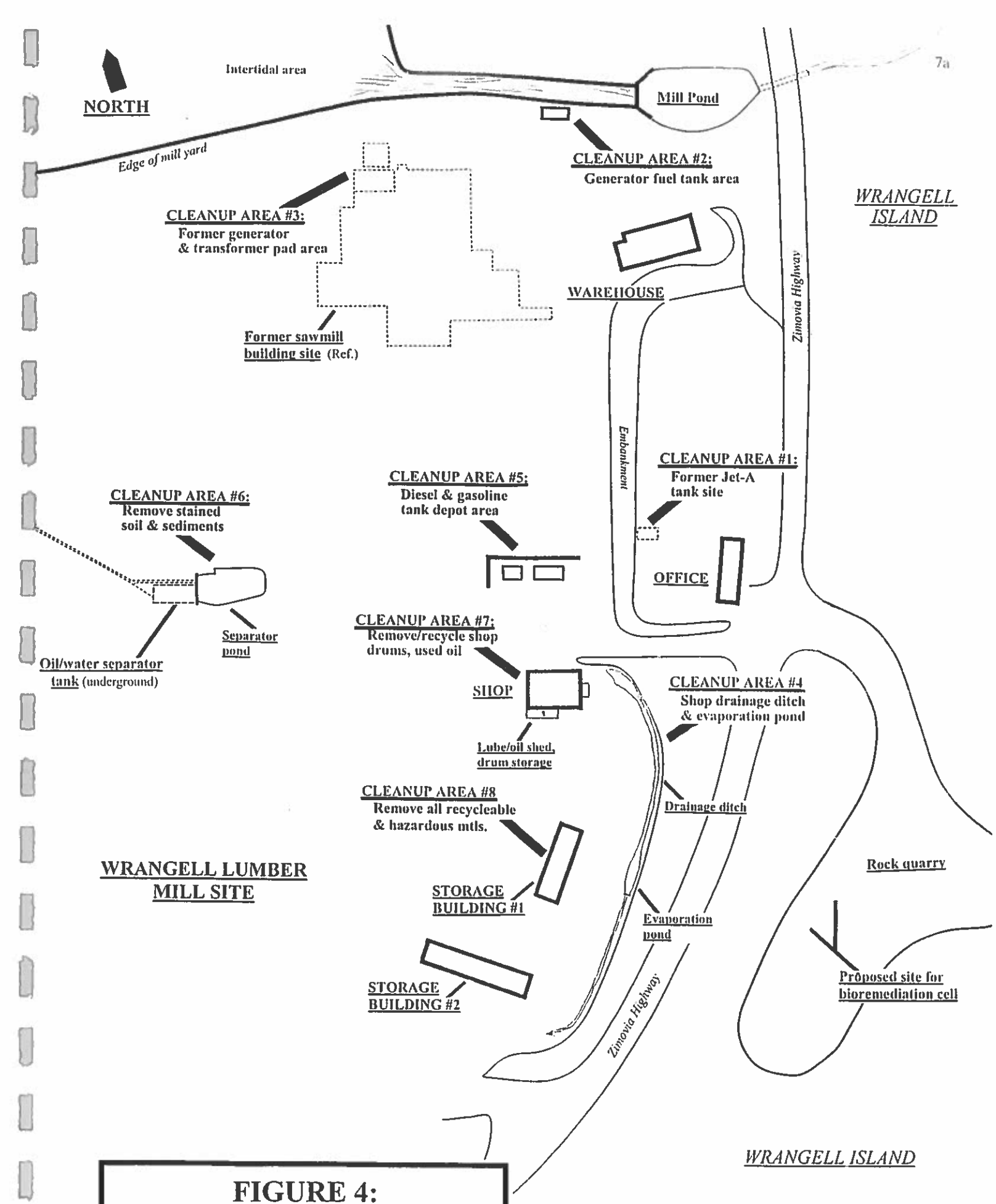


FIGURE 4:

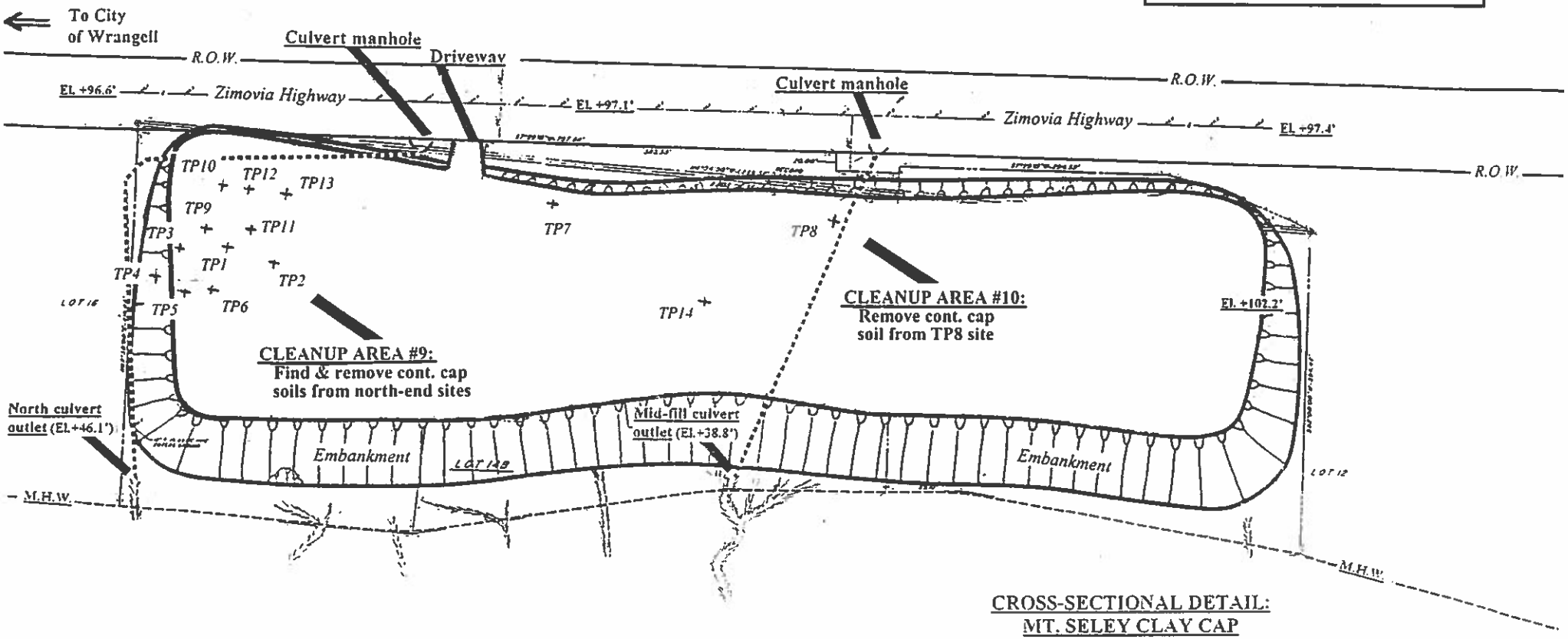
2012 CLEANUP AREAS - WRANGELL LUMBER MILL SITE

Scale: 1" = 160'

NORTH

WRANGELL ISLAND

NOTE:
10/13/11 NORTECH test pit locations TP1 through TP14 are shown by small crosses. Three test pits were sampled, & DRO levels for TP3, TP8 &TP1 were 3,470, 308 & 149 mg/m^3



Intertidal area

Intertidal area

CROSS-SECTIONAL DETAIL:
MT. SELEY CLAY CAP

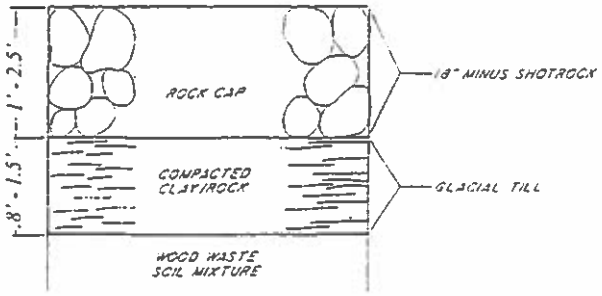


FIGURE 5:
MT. SELEY CLEANUP AREAS

Scale: 1" = 160'

SHOEMAKER BAY

contaminated soil has been removed from the entire south side of the site. Excavations then will be completed on the north side by first breaking out and removing as much of the emergency generator concrete pad as needed, and then excavating the remaining contaminated soil.

This cleanup area is expected to be the most difficult of the Wrangell Lumber cleanup sites. 10 - 50 c.y. are estimated to be removed, with confirmation sampling as shown in Table 1 (Section V.1).

Cleanup Area #4 - Shop drainage ditch & pond. Prior to beginning excavations, the 1'-high dam of the evaporation pond (see Photo #24, page A12) will be removed. The shallow dark-stained mud/soil behind the shop and along its 230-long drainage ditch will be scrapped and 2-3 confirmation samples taken along the ditchline. Sediments in the upper end of the drained pond will be removed and the site evaluated for DRO, RRO and SVOC. The ditchline will be sampled only for DRO and RRO.

Cleanup Area #6 - Oil/water separator pond. The dark-stained soil ring around the oil/water settling pond will be excavated, along with the bottom sediments deposited along the north side of the pond. 5-10 c.y. of contaminated soils & sediment are expected to be removed for treatment.

Cleanup Area #9 - North end of Mt. Seley. A portion of the Mt. Seley cap where Nortech's test pits #TP3, #TP4 & #TP9 are located (see Figure 5, page 7b) will have its top 1'-1.5' layer of clay/rock peeled off. The underlying clay/rock will be inspected for any visual indications of contamination, and any found will be removed for treatment. Contaminated soils or clay to be removed are estimated to be 2-5 c.y.

Cleanup Area #10 - Mt. Seley Test Pit #TP8. The top 1' or so of rock and clay will be removed from about a 10'x10' area around Nortech's #TP8 test pit to determine the potential extent of contamination. All visually contaminated soil will be removed, estimated to be about 1 c.y. or less, and then sampled for DRO/RRO.

V.2.b. Fuel Depot Excavation in Aug-Nov 2012

The Wrangell Lumber mill site's fuel depot (Cleanup Area #5 shown on Figure 4) is necessary for Silver Bay Logging's ongoing cleanup activity, and won't be removed until sometime in August-November. At that time the fuel depot's tanks will be run dry and then be removed. The piping, fuel dispensers and wood bulkhead will be removed, and contaminated soil excavations will occur immediately after that. About 5-10 c.y. are estimated to be removed for bioremediation treatment.

V.3. Recycling/Disposal of Used Oils, Other Materials & Hazardous Wastes

The City of Wrangell will be holding its voluntary household hazardous waste cleanup event in late May 2012, which will be overseen by Steve Haavig of Carson Dorn Inc. Immediately after that event, Mr. Haavig has agreed to extend his Wrangell trip to inspect and prepare paperwork for recycling and/or disposing of the mill site's remaining excess petroleum, oils and other

containerized materials. Recycling and/or disposal then will proceed as recommended by Mr. Haavig.

V. SOIL BIOREMEDIATION

Figure 4, page 7a, shows the Wrangell Lumber rock quarry on the uphill side of Zimovia Highway from the mill site, where the bioremediation facility will be located. The area for the bioremediation cell (see Figure 4, page 7a) will be cleared of the wood debris and large rock shown in Photo #35 (page A19). It then will be leveled to create a flat area of about 30-40' wide by 100' long, enough to lay out a bioremediation cell equivalent in area to 20'x80'. A lined water containment sump with submerged discharge will be constructed in the drainage ditch along the back side of the bioremediation cell (photo #36, page A19), to catch and treat any leachate draining in that direction. A similar containment sump will be constructed along the front east side of the bioremediation cell, with shallow surface water collection ditches scratched out of the quarry's rock floor to direct all surface water from the cell area towards the containment sump.

No bottom liner is proposed, in part because it would be almost impossible to keep intact and without creating holes when soil tilling takes place, but also because solid rock underlies the bioremediation area according to the Silver Bay Logging personnel. As a result, any rainwater falling on the bioremediation cell would quickly run off as surface water and would be unlikely to affect any potential groundwater aquifer. Finally and perhaps most importantly, there is no downslope or adjacent private property except for the mill site on the opposite side of the Zimovia Highway, where no useable groundwater aquifer exists on its tidelands fill in any event.

The initial excavated soils will be stockpiled at the bioremediation site until all of the May excavations have been completed. The soils then will be spread in an 18" layer to create the bioremediation cell, and samples will be taken to determine the appropriate amount of urea and fertilizer to be added. Once the sample results are back, the needed urea and fertilizer quantities will be thoroughly mixed with a backhoe. Turning over and tilling of the soil is proposed to be repeated about every two weeks to promote the bioremediation process and increase exposure to sunlight. Plastic sheeting of a minimum 6-mil thickness will be placed over the bioremediation cell during heavy rain periods, but will be left off for sunny or light rainfall days.

Confirmation sampling across the entire bioremediation cell is anticipated to take place in late fall for DRO and RRO.

VI. PROJECTED SCHEDULE & FINAL REPORT

Cleanup activity is expected to begin in the second or third week of May 2012. Excavations and confirmation sampling for all cleanup sites except for the fuel depot should be completed in 3-4 days, barring any unforeseen surprises. Because the fuel depot will continue in use until the mill site's cleanup is almost completed, its contaminated soil excavation will take place later in August-November of this year.

A final report will be submitted to the Dept. of Environmental Conservation before the end of 2012, to document all excavations and sampling results at the former Wrangell Lumber mill site. The report's objective will be to confirm that the Wrangell Lumber mill site cleanup areas have met all environmental cleanup criteria, including the bioremediation soil. If test results from the bioremediation cell have not met cleanup criteria by then, a separate report on the subsequent bioremediation activity and additional sampling to confirm compliance will be submitted the following year.

PROPOSED CLEANUP PLAN -
WRANGELL LUMBER MILL SITE

April 2012

APPENDIX A

3/26/12 & Prior-Year Inspection Photographs

Photo #1: 3/26/12 view looking north across the Wrangell Lumber mill's former helicopter landing area near the mill office, showing where the 750-gallon Jet-A fuel tank had been located.

Photo #2: 3/26/12 view along the downslope edge of where the former Wrangell Lumber Jet-A fuel tank had been located, and where NORTECH's 10/13-14/11 sample had a DRO level of 404 mg/kg.

Photo #3: 3/26/12 view looking northwest at Wrangell Lumber's 20,000-gallon former generator diesel oil tank, along the north side of the mill site. See photo below.

Photo #4: 3/26/12 view of the mill's 20,000-gallon diesel generator tank's east end, where NORTECH's 10/13-14/11 soil sample #GT2 had a DRO level of 1,710 mg/kg.

Photo #5: 3/26/12 view looking northwest across Wrangell Lumber's fuel depot, which has a 20,000-gallon diesel oil tank and a 2,000-gallon gasoline tank (arrow) along its west end. See next 3 photos.

Photo #6: 3/26/12 view of the Wrangell Lumber fuel depot bulkhead, showing oil staining that is darkest around the diesel dispenser.

Photo #7: 3/26/12 closer view of the Wrangell Lumber fuel depot's diesel oil dispenser, showing black oil stains extending into the soil behind the bulkhead.

Photo #8: 3/26/12 view of the Wrangell Lumber fuel depot's 20,000-gallon diesel oil tank outlet, showing oil-stained soil where NORTECH sample #TF3 had a high DRO level of 8,110 mg/kg.

Photo #9: 3/26/12 view of the outlet fuel filter and piping from the Wrangell Lumber fuel depot's 2,000-gallon gasoline tank, where NORTECH's sample #TF2 had low levels of GRO at 1 mg/kg and DRO at 124 mg/kg.

Photo #10: 3/26/12 view looking northeast across the Wrangell Lumber fuel depot's former 1,000-gallon highway diesel tank, were no signs of oil-stained soil were found.

Photo #11: 3/26/12 view looking north-northeast at the 3 empty fuel tanks sitting on the Wrangell Lumber concrete pad for the former emergency generators. See Photos #12 - #20.

Photo #12: 3/26/12 view looking northeast across the concrete pad for the Wrangell Lumber sawmill building's transformers, showing the former emergency generator concrete pad's 3 empty tanks in the background.

Photo #13: 3/26/12 view looking northeast across the 9'-wide gap between the Wrangell Lumber sawmill's concrete pads for its former transformers (foreground), and the emergency generator building where 3 empty fuel tanks were being stored. Arrow points to the former transformer pad's surface water catchment drain.

Photo #14: 3/26/12 view looking northeast at the oil-contaminated soil just beyond the Wrangell Lumber sawmill's transformer concrete pad catchment drain. See next photo.

Photo #15: 3/26/12 view looking northeast at the Wrangell Lumber sawmill's transformer pad's catchment basin, showing its 2"-dia drain pipe (arrow). NORTECH's 10/13-14/11 sample #3T1 was taken just beyond the end of the pipe and had high DRO & RRO levels of 51,300 mg/kg & 12,300 mg/kg. See Photo #18.

Photo #16: 3/26/12 view looking southwest across the Wrangell Lumber sawmill's former transformer concrete pad, showing two dark oil-stained areas of deteriorated concrete (arrows) that extended beneath the metal bar embedded in the concrete. Compare w/next photo.

Photo #17: *Prior-year photo.* **9/26/96 photo looking southwest across the Wrangell Lumber sawmill building's concrete transformer pad, showing the 1,000-KVA transformers in place and the pad's vertical roof supports that rested directly on the metal bar embedded in the concrete.**

Photo #18: *Prior-year photo.* **Another 9/26/96 photo of the Wrangell Lumber sawmill building's concrete transformer pad, showing the 1,000-KVA transformers in place and the pad's vertical roof supports. The surface water catchment drain is in the far left corner of the photo (arrow).**

Photo #19: *Prior-year photo:* **9/26/96 view looking north across the catchment basin for the Wrangell Lumber sawmill's concrete transformer pad, showing its 2" drain pipe and where sample #W-7 (arrow) was taken along the edge of the nearby emergency generator building. See photo below.**

Photo #20: *Prior-year photo.* **9/26/96 view looking north across the 9' between the Wrangell Lumber sawmill's transformer catchment basin drain (lower arrow) and where sample #W-7 (upper arrow) was taken by the emergency generator building foundation, showing oil-contaminated soil. Sample #W-7 was evaluated only for PCB's, and no PCB's were detected at MDL's of 33-66 ug/kg.**

Photo #21: 3/26/12 view looking north at the surface-stained shallow ponding area just behind the Wrangell Lumber shop, where the drainage ditch to the evaporator pond begins. See next 3 photos.

Photo #22: 3/26/12 view looking south down the small drainage ditch that begins behind the Wrangell Lumber shop and flows about 260' to the evaporator pond (arrow). See next 2 photos.

Photo #23: 3/26/12 view looking up the small drainage ditch that flows from behind the Wrangell Lumber shop, just before discharging to the evaporator pond shown below.

Photo #24: 3/26/12 view of the Wrangell Lumber evaporator pond and its 1'-high wooden dam. NORTECH's sample #EP had low DRO and RRO levels, but had 4 PAH compounds above cleanup criteria.

Photo #25: 3/26/12 view looking west at the Wrangell Lumber oil/water separator pond, see next 2 photos.

Photo #26: 3/26/12 view looking southwest at the Wrangell Lumber mill's oil/water separator inlet (arrow) and its dam structure. An approximately 1'-thick black soil ring was observed along the sides of the pond, where NORTECH's sample #SP1 had high DRO and RRO levels of 3,350 mg/kg and 15,600 mg/kg.

Photo #27: 3/27/12 looking down at the Wrangell Lumber oil/water pond sediments, where a thin layer of black-stained soil was present.

Photo #28: 3/26/12 view looking southwest along the Wrangell lumber roadway just before the oil/water separator, showing a thin layer of black surface-stained soil.

Photo #29: 3/26/12 view of a small oil-stained surface area along the northeast corner of the Wrangell Lumber mill site, to be scrapped clean.

Photo #30: 3/26/12 view of another small oil-stained surface area along the north side of the Wrangell Lumber mill site, to scrapped and removed.

Photo #31: 3/26/12 view along the north edge of the Wrangell Lumber mill site, showing a relatively large area of surface-stained soil that will be scrapped and cleaned.

Photo #32: 3/26/12 view looking northwest at one of NORTECH's 10/13/11 exploratory excavations made in the north end of the Mt. Seley storage facility, showing the blue clay & rock making up the 2'-3' thick cap covering the top of the site.

Photo #33: 3/26/12 view looking northeast across the 10/13/12 NORTECH exploratory excavation along the east side of the Mt. Seley storage facility, where sample #TP8 had a slightly elevated DRO level of 302 mg/kg.

Photo #34: 3/26/12 view looking into the Wrangell Lumber rock quarry just above the mill and on the uphill side of Zimovia Highway. The proposed site for the soil bioremediation cell is just beyond the small alders on the right side of the photo. See next 2 photos.

Photo #35: 3/26/12 view along the west side of the Wrangell Lumber rock quarry, showing the area (between the arrows) that will be cleared, leveled and used for bioremediating the excavated soil.

Photo #36: 3/26/12 view looking southwest and down at the small gulley behind the Wrangell Lumber rock quarry where the bioremediation cell will be located, showing the drainage where a lined water sump will be constructed for containing and treating any seepage from the back side of the cell.

Photo #37: 3/26/12 view looking northwest at the Wrangell Lumber shop's south side, where the lube and hydraulic oil dispensers are located along with a shed for drums, which will be inventoried and evaluated for disposal or recycling as appropriate.

Photo #38: 3/26/12 view of Wrangell Lumber Storage Building #1 (formerly part of the planer building), where a number of barrels and 5-gallon container were present and will be inventoried for recycling or disposal.

PROPOSED CLEANUP PLAN - WRANGELL LUMBER MILL SITE

April 2012

APPENDIX B

Sampling & Analysis Quality Assurance Procedures

Soil Samples for Laboratory Analysis

Pages B2-B3

Screening Sampling & Analysis Procedures
For the PE-Photovac 2020 Photoionization Detector

Page B3

Sampling & Analysis Quality Assurance Procedures

Wrangell Lumber Mill Site Contaminated Soil Cleanup
Juneau, Alaska

A. Soil Samples for Laboratory Analysis

Sample taking for determining the oil contaminant levels in soils will follow the Underground Storage Tanks Procedures Manual (dated 11/7/02) to the extent it is applicable or practical, and sample analyses will follow the Alaska methods for petroleum hydrocarbons in Table 1 of that document as required by 18 AAC 75.355(d). Prior to sampling, a sketch of the site to be sampled including the sampling grid will be defined and each sampling point assigned its own identification number.

All samples taken for evaluation by a laboratory will be handled in the following manner to assure that no sample contamination occurs, all analyses are done in a proper manner and sample analyses are carried out by a qualified laboratory:

1. The laboratory for sample analyses is Analytical Resources, Inc. in Seattle, Washington.

2. Sample bottles will be obtained from Analytical Resources, Inc. in pre-made cooler sampling kits appropriate for the sampling to be accomplished and analyzed by Analytical Resources, Inc.

3. All field soil sampling will be carried out by Southeast Management Services, which will be responsible for custody and handling of the sample coolers and sample jars during the time they are away from the laboratory, including establishment of chain-of-custody paperwork and seals when the samples are sent back to the laboratory.

4. Sampling in the field will adhere to the following procedures, to assure that no contamination of samples occurs:

    a. Prior to sampling, sample jars will be identified and numbered according to the sampling grid established for the site.

    b. For each individual soil or water sample, a new set of disposable latex gloves will be put on by the sampler just prior to sampling.

    c. Blue-ice packs will be in the Analytical Resources, Inc. cooler when samples are inside, to maintain sample storage temperatures to as near freezing as possible throughout the time that samples are stored or in transit within the cooler.

    d. For each individual soil sample, a new and clean plastic spoon will be used to place soil samples into the sample jar. Care will be taken to assure that any soils that may

have been in direct contact with the apparatus used to dig the sampling hole are not placed into the sampling bottle. As soon as each sampling jar is filled with a representative sampling of soil, the lid will be tightly screwed onto the top and the jar then carefully placed into the cooler and the cooler closed.

e. At the end of sampling, all of the sample jars will be carefully arranged and padded with packing material to assure safe transport back to Juneau. Once the cooler and its sampling jars arrive in Juneau in the direct custody of Southeast Management Services, each sample jar will be checked to make certain that all sample characterization data and labeling are completed and correct. After that, the sample containers will be carefully repacked and freshly-chilled blue-ice packets placed in each cooler prior to final taping for shipment to Analytical Resources, Inc.

g. Once taped and the chain-of-custody attached, the sample coolers will be shipped via DHL to Analytical Resources, Inc. with the chain-of-custody paperwork signed over to DHL and placed in its own clear envelope along the top of the cooler so that it will not be missed.

B. Screening Sampling & Analysis Procedures For the PE-Photovac 2020 Photoionization Detector

A hand-held PE-Photovac Model 2020 photoionization detector ('PID') will be used during the excavation to assist in locating and guiding the excavation of oil-contaminated soils at the Wrangell Lumber Mill Site. The PE-Photovac Model 2020 PID is a hand-held portable instrument which measures the presence of photoionizable chemicals in air in part-per-million levels, and incorporates a pump that continuously draws in a small quantity of air across a 10.6-eV UV lamp that generates photons to ionize specific molecules in the gas stream. While the main gases in ambient air require a high energy level to be ionized, most hydrocarbon vapors are readily ionized and thereby detected by the instrument.

RESUME OF

SOUTHEAST MANAGEMENT SERVICES

Thomas R. Hanna
1061 Mendenhall Peninsula Road
Juneau, Alaska 99801

I. SUMMARY OF ALASKAN WORK EXPERIENCE

Southeast Management Services was started in late-1984, through which environmental consultation & compliance services are provided to Alaskan industry. From 1981 through mid-1986 Mr. Hanna was affiliated with Quadra Engineering Inc. of Juneau, Alaska. From 1971 to 1981 he was with the Alaska Department of Environmental Conservation, where he developed and supervised the State's Air Quality Control Program. During 1979-1981 he also was responsible for the Department's statewide solid waste, hazardous waste, litter reduction and resource recovery programs.

II. EDUCATION

40-hr	Hazardous Waste Operations per 29CFR1910.120, 1993 to present
M.S.	Environmental Engineering, University of Washington, 1970
B.S.	Mechanical Engineering, San Jose State University, 1966

III. OVERVIEW OF WORK EXPERIENCE, 1981 TO PRESENT:

A. Southeast Management Services (1984 - Present):

- ***Contaminated Site Cleanups*** - Contaminated site cleanup activities have included site assessments, preparation of site cleanup plans, oversight and field sampling to assure completion of site cleanup, bioremediation treatment of soil to meet cleanup criteria, preparation of final cleanup reports and coordination with regulatory agencies to obtain closeout of the cleanup actions.
- ***Solid Waste Disposal Site Design, Site Closures & Permitting*** - Solid waste disposal site activities have included the design & drafting of site disposal plans & preparation of permit applications, coordinating with environmental agencies to insure permit issuance, providing environmental regulatory compliance support to facility operators, conducting field compliance inspections and sampling, and preparing site closure and post-closure reports.
- ***Air & Water Quality*** - Air and water quality work activities (1984-2000) included (1) preparation of Prevention of Significant (PSD) permit & Title-V air quality permit applications, including working with the environmental agencies to insure permit issuance, (2) environmental support to insure facility regulatory compliance, and (3) evaluations of regulations & regulatory compliance. Air quality work experience details are not included in this resume, but can be provided upon request

B. Quadra Engineering (1981 - 1987):

Carried out engineering, planning, design & construction management activities on a wide variety of projects from 1981 to 1987.

IV. OIL-CONTAMINATED SOIL SITE CLEANUPS

- ***Shee Atika Inc.*** 2001-present) -

  1. Completed an evaluation of potential soil contamination at its Charcoal and Alice Island properties near the Sitka Airport. Drafted and coordinated approval of a voluntary cleanup plan (VCP) with ADEC. Oversaw the 2001 soil cleanup & drafted a final cleanup report that resulted in an ADEC 'no further action" for a portion of the Charcoal Island property. Established criteria to set up bioremediation cells to treat the oil-contaminated soil, carried out sampling to confirm cleanup criteria were met, and coordinated with ADEC to close out the cells.

  2. Oversaw the 2002 cleanup and removal of 500 c.y. of oil-contaminated soil from Lot 1 at 315 Lincoln Street in downtown Sitka, defined criteria and oversaw the setup of 4 bioremediation cells, including their final sampling to confirm that ADEC cleanup criteria were met. Drafted final cleanup and bioremediation treatment reports & coordinated with ADEC to close out all aspects of the cleanup.

- ***University of Alaska*** (2001-present) -

  1. 2001 – 2007: Conducted an initial site inspection and provided environmental evaluation recommendations for the Icy Bay-West logging camp shop & fuel depot facilities, drafted a proposed site evaluation plan and carried out soil sampling of all Icy bay-West logging camp facilities, compiled a site evaluation report that resulted in oil-contaminated soil cleanup actions by the camp operators. Provided technical consultation services to the University of Alaska until the cleanup actions were completed, compiled a comprehensive summary report of environmental cleanup activity that took place at the Icy Bay-West logging facilities.

  2. 2008: Currently providing environmental oversight on behalf of the University to assure there are no remaining contaminated areas as logging camp facility operations are closed out in Icy Bay.

- ***Atikon Forest Products*** (1998-2007) -

  1. Completed a 1998 evaluation of soil contamination and solid waste disposal compliance at the Cube Cove logging camp, which identified numerous oil-contaminated sites throughout the camp and resulted in cleanup action by the camp operator (Silver Bay Logging, Inc.).

  2. Coordinated with a Silver Bay Logging environmental consultant (DMC Technologies) to complete bioremediation of the 10,000+ c.y. of oil-contaminated soil at the former Cube Cove logging camp bioremediation, compiled the final cleanup report (2 volumes) for the 1998-2002 oil-contaminated soil cleanup activity at the Cube Cove logging camp for review and approval by ADEC, resulting in complete closeout of this cleanup site.

- ***Alaska Pulp Corporation (APC), Logging Camps*** (1991-2006) -

  1. Rowan Bay (1991-95) - Drafted a comprehensive hazardous waste camp cleanup plan & coordinated the agency approvals. Project manager for clean-closing a 5-acre site involving cleanup of 206,000 c.y. of oil-&-lead-contaminated soil & carrying out groundwater monitoring to complete federal RCRA litigation. Drafted the camp's SPCC Plan, Spill Response Plan & conducted post-closure inspections.

  2. Corner Bay (1994-2001) - Drafted a 1994 environmental camp assessment and cleanup plan, coordinated its approval and provided cleanup oversight. Drafted the excavated soils' bioremediation plan & oversaw the soil bioremediation process to completion. Drafted the 1994 closure plan for an adjacent solid waste disposal site, conducted annual inspections and completed the site's post-closure report. Completed its deed notification requirements to close out ADEC's permit file.

  3. Freshwater Bay (1994-96) - Conducted a 1994 close-out inspection of the camp, drafted an oily-soils cleanup plan and provided completion oversight of all cleanup activities, drafted the bioremediation plan for the excavated soils & provided oversight completion to close out the site & obtain an ADEC 'no further action' letter.

4. Hanus Bay (1995) - Provided excavation oversight of a quarry thought to have unauthorized solid wastes. Completed a soil and water sampling evaluation report that documented that no unauthorized solid wastes or contaminated soil were found.

5. Environmental summary of APC logging camps & LTF sites (2001-2002) - Compiled a detailed review of environmental cleanup status of all 87 former APC logging camps and LTF sites.

6. Final evaluations & cleanups of former APC logging camps (2002-2005) - Project Manager for the environmental review of all former APC logging camps, followed by site cleanup where needed, as part of a cooperative RCRA cleanup action with the U.S. Forest Service. Supervised and worked with other consultant personnel in the completion of 33 separate logging camp site evaluations and 17 contaminated site cleanups, resulting in "no further cleanup action" letters from both the U.S. Forest Service and ADEC that provided environmental closure to all sites. Two cleanup sites included soil bioremediation cells that successfully treated the oil-contaminated soil to meet cleanup criteria.

- ***Silver Bay Logging Inc.*** (1997-2002) -

1. Completed a proposed cleanup plan for identified soil contaminated sites at the Cube Cove logging camp and coordinated its approval with ADEC. Directed and oversaw the oil-contaminated soil cleanup activity during 1998-2002, worked with Silver Bay's environmental consultant in 2004 to assure the completion of all remaining Cube Cove cleanup sites including bioremediation treatment of contaminated soil. Drafted a comprehensive cleanup report of all Cube Cove cleanup activity that was submitted to and approved by ADEC, resulting in a 'no further cleanup action' letter from the agency.

2. Provided environmental oversight in the cleanup of a 9/4/97 oil spill at the Cube Cove Logging Camp.

3. Drafted and obtained ADEC's approval of the oil-contaminated soil cleanup plan for the Afognak Island logging camp, oversaw the oil-contaminated soil cleanup activity in 2001, compiled the final cleanup-completion report & coordinated with ADEC to close out the site.

- ***Rayonier International Forest Products*** (2001-2003) -

1. Completed a site characterization of potential soil contamination of its former camp and log transfer facilities at Smith Cove on Prince of Wales Island, developed the cleanup plan and oversaw the excavation of all oil-contaminated sites at Smith Cove, defined criteria for establishing a bioremediation cell for soil treatment at nearby Kasaan Bay, compiled final cleanup completion reports & coordinated with ADEC to close out the Smith Cove cleanup sites & soil bioremediation cell at Kasaan Bay.

2. Made a review of prior environmental cleanup and spill activities at the Hobart Bay logging camp facilities that included a recommended site characterization evaluation of its 1993 oil spill area. Carried out soil & water sampling of the camp's 1993 oil spill area.

- ***Citifor Inc.*** (1998-2002) - Completed an evaluation of potential soil contamination at its Two-Moon Bay Logging Camp and Fish Bay logging landing (near Valdez), drafted the cleanup plan and oversaw the 1999 soil cleanup at Two Moon Bay and Fish Bay, and compiled the final cleanup report for ADEC approval. Carried out a cleanup completion sampling program and submitted a summary report that led to an ADEC 'no further action' determination for the Two Moon Bay campsite, and coordinated with ADEC to close out the Fish Bay logging landing site.

- ***Timber Trading Co.*** (1998-2001) - Developed the cleanup plan and provided environmental oversight in the excavation of oil-contaminated soils at the Montague Island logging camp. Drafted the final cleanup report and coordinated its approval by ADEC. Coordinated with ADEC to close out the camp's two solid waste disposal permit files.

- ***Ketchikan Pulp Company*** (1996-2000) - Drafted the Corps of Army Engineers application & EPA's NPDES application for closing a major (400,000 c.y.+) woodwaste disposal site. Obtained the permit approvals & provided environmental oversight for the project's successful closure including drafting of a final summary report.

- ***Koncor Forest Products*** (2000) - Conducted an evaluation of the Afognak logging camp facilities for potential oil contaminated soil, compiled the final evaluation report with recommended cleanup actions by the operator.
- ***Alaska Pulp Corporation, Sitka Pulp Mill*** (1999) - Evaluated the status of 3 bioremediation cells with 670 c.y. of oil-contaminated soil, submitted cleanup completion recommendations to ADEC, oversaw the completion of the bioremediation activity to meet cleanup criteria, drafted a final cleanup report that resulted in closing out the cells with ADEC.
- ***Alaska Forest Association*** (1997) - Drafted the cleanup plan & directed the lead-contaminated soil & battery removal at the remote Manty Mountain radio-relay station, Prince of Wales Island. Drafted the final cleanup report that resulted in closing out the site with ADEC.

V. WOODWASTE DISPOSAL SITES

- ***Alaska Pulp Corporation, Sitka Pulp Mill*** (1984-99) –
  1. During 1998-99, evaluated the closure status of the mill's solid waste disposal site (which included substantial quantities of woodwaste, boiler ash & other mill solid waste), made post-closure cleanup recommendations & coordinated all approvals with ADEC and ADOT. Oversaw the site's post-closure improvements project & drafted the project's completion report that was accepted by ADEC and the Sitka Borough for ADEC permit closeout.
  2. Coordinated w/ADEC & USFS to inspect & evaluate 13 former APC logging camp solid waste disposal sites (including woodwaste disposal site), conducted post-closure inspections and completed post-closure reports for all sites that resulted in the close-out of their ADEC permit files.
- ***Ketchikan Pulp Company*** (1996-2000) -
  1. Drafted the Corps of Army Engineers application & EPA's NPDES application for closing a major (400,000+ c.y.) woodwaste disposal site near Metlakatla. Obtained the permit approvals & provided environmental oversight for the project's successful closure including drafting of a final summary report (1996-2000).
  2. During 1996-97 conducted site inspections, quarterly water quality sampling & drafted the first annual water quality report to the Corps of Army Engineers for the Wrangell Golf Course project, to which KPC provided and placed woodwaste fill via barge shipment.
- ***Atikon Forest Products*** (1998-2008) -

  Drafted the 1998 permit application for the Cube Cove logging camp's 225,000-cy woodwaste disposal permit, compiled a 2004 post-closure inspection report and oversaw the completion of post-closure improvements, conducted post-closure inspection & coordinated with ADEC to close out all Cube Cove solid waste disposal permits.
- ***Citifor Inc.*** (1998-2002)

  Inspected three woodwaste disposal sites at Two Moon Bay and Fish Bay (in the Prince William Sound area), drafted their closure reports and coordinated their approvals with ADEC. Made post-closure inspections including water sampling of the 2-Moon Bay sites, and compiled post-closure inspection reports to close out their ADEC permit files.

VI. WORK SPECIFIC TO THE WRANGELL AREA

- ***Alaska Pulp Corporation, Wrangell Sawmill*** (1989-1997) -
  1. Developed the mill's boiler air quality & ash disposal permit applications & obtained the permits in 1989-92. Developed quality assurance and monitoring plans & provided environmental compliance consultation until mill shutdown in 1994.

2. Coordinated the design and environmental permit approvals for two large woodwaste disposal projects which created a track site and rifle range expansion for the Wrangell community. Compiled closure and post-closure reports & coordinated w/ADEC to close out permits (1991-95).

3. Completed a 1992 evaluation of the mill's hazardous waste generation and disposal practices & provided oversight in establishing the mill's hazardous waste control program.

4. Drafted the mill's Stormwater Pollution Prevention Plan and updated its fuel facility Spill Prevention & Countermeasure Control Plan.

5. Completed the design and coordinated the 1993-94 review and approval by regulatory agencies of the wetlands permit application for the sawmill's 20-acre on-land log storage facility (located just north of the sawmill & known as "Zimovia-87").

6. Developed the design and wetlands permit application for a 9-hole golf course at Wrangell using wood-byproduct fill. Coordinated with regulatory agencies to obtain project approval, conducted site inspections, water monitoring and drafted the Phase-1 completion report.

7. Provided oversight for closing a large noncompliant woodwaste disposal site ('Mount Selcy', located just north of the sawmill), coordinated all closure activities w/ADEC including post-closure inspections & submittal of closure and post-closure reports to ADEC (1990-94).

8. Drafted final closure and post-closure reports and coordinated w/ADEC to close out all solid waste disposal permits associated with the Wrangell sawmill.

9. Conducted 1995-97 evaluations of the Wrangell sawmill's Shoemaker Bay tidelands, coordinated with the Alaska Dept. of Environmental Conservation to reclassify the area to be a non-problem for purposes of the Clean Water Act's Section 303(d) listing.

10. Completed a 9-11/96 evaluation to address 13 environmental areas including a survey of the sawmill's waterfront, potential soil-contamination sites, sewage treatment & ash disposal compliance issues, & cleanup of an intertidal log storage area. The evaluation included an underwater camera inspection of tidelands along the front of the former downtown mill dock.

- *Silver Bay Logging Inc., Wrangell Sawmill* (1998) - Drafted and coordinated the ADEC and Corps of Army Engineers permit approvals of the solid waste management permit application for a 10-acre intertidal woodwaste fill adjacent to the Wrangell sawmill in 1998.

VII. ALASKA DEPT. OF ENVIRONMENTAL CONSERVATION - 1971 TO 1981

- **Chief of the Air and Solid Waste Management Section, 1979 to 1981.**

  Responsible for the state environmental programs in air quality control, solid waste management, hazardous waste control, resource recovery and litter reduction. Responsibilities included all aspects of program development and management, policies and procedures, regulations and public hearings, work schedules, research, planning and budgets. Was intimately involved in developing legislative enabling authority for litter & resource recovery, and hazardous waste control programs.

- **Supervisor of the State Air Quality Control Program, 1971 to 1979.**

  Initiated the program, developed statewide regulations, guided the development of a statewide pollutant source inventory and ambient air monitoring network, compliance actions and enforcement procedures. Oversaw completion of the State's first Air Quality Plan and its comprehensive revision in 1979 to comply with new federal requirements. Was instrumental in establishing motor vehicle emission control efforts in Fairbanks and Anchorage, including technical ambient air and vehicle emission studies to identify and define the problem. Supervised the development of air quality transportation modeling procedures specifically suited to Anchorage and Fairbanks cold weather climates. Member of the Anchorage Air Quality Policy Committee that adopted Anchorage's first Air Quality Transportation Plan in 1979.
