



Swanson River Field

Order By Consent - Background and Summary

October 20, 2009

**Scott Thorsell
Coordinator for
Abandonment &
Remediation**



Plant 10

January 26, 1972



Lead up to the Order by Consent (OBC):

- 1971, SCU 14-3 pit approved to take oily waste soils
- 1972, January – Plant 10 Explosion
- 1983-4 SCU 14-3 soils used for road maintenance and dust control (permitted unaware of PCBs)
- 1984, July USFWS soil sampling found PCBs and other COCs
- 1984 – Additional soil sampling by EPA and Chevron confirmed USFWS findings
- 1985, August 6 – OBC signed

1985 Order by Consent

- OBC administered by USFWS in coordination with BLM, ADEC and in consultation with EPA
- Findings:
 - Chevron USA, Inc.- current operator of SRU
 - 1984 USFWS and EPA documented PCBs and other COCs in soils (main production area & roads)
 - SCU 14-3 used as repository for oily wastes
 - Road maintenance in 1983 and 1984 spread PCBs
- Original Mandates:
 - Secure the SCU 14-3 oily waste storage area
 - Identify all potential areas of contamination
 - Specifically: P&S Yard, 1-33 TS, Plant area, SCU 14-3 storage area.
 - Initiate site investigation sampling plan
 - Develop mitigation and restoration plan
- OBC Amended five times between 1986 and 1991

OBC Required Actions

1985, Oct.- Nov.

- Site Characterization. E&E collects 1,100 samples
- Risk Assessment by E&E and Univ. of Arkansas

• 1986, March

- Feasibility Study - remedial alternatives assessment for PCBs and other COCs

• 1986, April

- Site Characterization Report
- Issue 1st RFP for PCB remediation

OBC Amendments Summary

- 1986, July 25. **Amendment 1**
 - Limited approval of the “Mitigation and Restoration Plan for PCB’s at [SRF]”
 - Extension of the time requirement to start cleanup of PCBs to December 1987
 - USFWS agreement to leave all material treated to acceptable levels on site
- 1986, Sept. 3. **Amendment 2**, PCB cleanup levels approved
 - 12 ppm in all areas except ...
 - 24 ppm in “pipeline area” and the SCU 14-3 pit
- 1986, Oct. 1. ARCO Alaska becomes field operator
- 1989, May. **Amendment 3**, Cleanup plan endorsed by Signatory Agency Coordination Committee (USFWS, BLM, ADEC, ARCO)
- 1990, July. **Amendment 4**,
 - Allow PCB soils to remain beneath Building A until field EOL
 - Require Plant Area groundwater monitoring (4 wells, semi-annual)
 - Extend Ogden incinerator operation from 1990 to **1992**
- 1991, March 22. **Amendment 5**, P&S Yard xylene spill site added
 - Establish soil and groundwater cleanup levels
 - Require groundwater remediation (air stripping unit)
 - Initially required air quality monitoring around stripping unit



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503

ORDER BY CONSENT MITIGATION PLAN - SWANSON RIVER OIL FIELD KENAI NATIONAL WILDLIFE REFUGE

Chevron USA Inc., Swanson River Field Unit Operator, here and after referred to as the Respondent, hereby agrees to fully comply with and execute this ORDER BY CONSENT.

The U.S. Fish and Wildlife Service will administer this ORDER in coordination with the Bureau of Land Management and the Alaska Department of Environmental Conservation, and in consultation with the Environmental Protection Agency, pursuant to:

1. Pertinent regulations of the United States Fish and Wildlife Service (FWS) and Bureau of Land Management (BLM) (43 CFR parts 3100 through 3160), the Unit Agreement for the Development and Operation of the Swanson River Unit Area No. 14-08-001-2969 (1956), lease terms and conditions, Special Use Permits, and the authorities thereunder;
2. State of Alaska Department of Environmental Conservation (ADEC), Alaska Administrative Code (AAC), 18 AAC 75.010(a), and the Alaska Statutes AS 46.03.100, AS 46.03.302, AS 46.03.710, AS 46.03.740, and AS 46.03.850;
3. Public Law 96-487 Alaska National Interest Lands Conservation Act (ANILCA) Title III - National Wildlife Refuge System, Section 303(4)(A)(B) and Title VII - National Wilderness Preservation System, Section 702(7);
4. Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA);
5. Federal Water Pollution Control Act (FWPCA), as amended; and
6. All other applicable State and Federal laws.

FINDINGS

1. The Respondent operates the Swanson River Field, an oil and gas production facility on Federal leases in the Kenai National Wildlife Refuge (Kenai NWR), Alaska. The BLM issues the oil and gas leases and regulates drilling and production operations. Use, conservation, and protection of the land, and environmental and biological resources within the Kenai NWR are under the jurisdiction of the FWS.
2. The facility (covering approximately 14 square miles) consists of an administration office and shop buildings, water wells, a compressor complex, storage sites, airfield, producing oil wells, gas injection facilities, oil collection and transferral facilities to pipelines, family residences and approximately 25 miles of unpaved roads.
3. Public vehicular entry to the Swanson River Field is restricted but public access by foot is authorized. Workers on the facility have free access to all areas within the unit boundary. The area is accessible to all wildlife.
4. On July 22, 1984, the FWS sampled soil from the Swanson River Field facility. It was found to be contaminated with polychlorinated biphenyl (PCB) and DDT; elevated levels of certain heavy metals were also found in some samples. Subsequent sampling and chemical analysis by the Environmental Protection Agency (EPA) and the Respondent substantiated some of the initial findings of the FWS. The types and concentrations of materials found (they are hereafter referred to as the "contaminants of concern") are shown on Table 1. The laboratory analysis findings of the EPA and Respondent are given in Tables 2 and 3, respectively.
5. The contaminants found are known to be persistent compounds which can accumulate in the food chains and in the environment, and can be toxic to aquatic organisms, wildlife, and man. Laboratory experiments with animals and bacteria along with limited epidemiological studies of humans suggest that the contaminants are potential carcinogens.
6. Oil-contaminated sand and gravel resulting from incidental oil leaks and/or spillages were deposited on the ground surface at a storage/disposal site referred to as SCU 14-3. SCU 14-3 was established in the early 1970's with the knowledge and consent of the Kenai NWR Manager. Since then, the Respondent has operated the SCU 14-3 site as a repository for oily wastes generated in the course of the production activities of the Field.
7. Pursuant to surface oiling permits obtained from the ADEC and approval from the Refuge Manager in 1983 and 1984, the Respondent used oily sand and gravel on certain roads and parking lots of the

facility to control fugitive dust. Prior to the sampling program referred to in Finding # 4, neither the Respondent nor the Refuge Manager had any knowledge that the sand and gravel from SCU 14-3 was contaminated with PCB's. The ADEC was not aware at any time that pit SCU 14-3 existed as a repository for oily sand and gravel.

ALLEGATIONS

The State of Alaska Department of Environmental Conservation (ADEC) alleges that:

1. The Respondent is responsible for (1) conducting road oiling activities, (2) operating an oil-contaminated soil storage and/or disposal facility known as SCU 14-3, and (3) operating oil production facilities, all of which are within an area located in the Kenai NWR, commonly referred to as the Swanson River Field;
2. During the surface oiling seasons of 1983 and 1984 near Sterling, Alaska; in the Third Judicial District of the State of Alaska, the Respondent applied PCB-contaminated soils to roads in the State of Alaska from a storage or disposal site known as SCU 14-3 in violation of the terms of Surface Oiling Permits issued by the ADEC, which, if true, constitutes a violation of 18 AAC 75.010(a);
3. For the past several years near Sterling, Alaska, in the Third Judicial District of the State of Alaska, the Respondent engaged in the disposal of oily sand and gravel material onto lands in the State of Alaska at a site referred to by the Respondent as SCU 14-3, without first obtaining a waste disposal permit, which, if true, constitutes a violation of AS 46.03.100;
4. For the past several years near Sterling, Alaska, in the Third Judicial District of the State of Alaska, the Respondent engaged in the disposal of oily sand and gravel onto lands in the State of Alaska at a site referred to by Respondent as SCU 14-3, thereby polluting the lands in the State of Alaska, which, if true, constitutes a violation of AS 46.03.710 and AS 46.03.740.

CONCLUSIONS OF LAW, CODIFIED REGULATIONS, AGREEMENTS, AND STIPULATIONS

1. The Swanson River Oil Field is defined as a "facility" under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (42 U.S.C. 9601 et. seq.).
2. Polychlorinated biphenyl (PCB), which was released into the environment, is a "hazardous substance" pursuant to 42 U.S.C. 9601(14).
3. The PCB's found in the soil constitute a "hazardous substance release" into the environment pursuant to 42 U.S.C. 9601(22).

4. Any violation of Federal environmental law is, in effect, a violation of the lease terms and is subject to appropriate BLM enforcement action.
5. As operator of the Swanson River Field, the Respondent must comply with all statutes and regulations of the State of Alaska.

ORDER BY CONSENT

Based upon the findings and determinations set forth above, it is hereby ORDERED and DIRECTED as follows:

1. Commencement Time. The Respondent is obligated to obey, and to comply with, the terms and provisions of this ORDER as of the "Commencement Time," which date is specified on the signature page of this ORDER.
2. Providing Information to FWS. By not later than 15 days from the commencement time, the Respondent shall deliver in written form to the FWS at Anchorage, Alaska, certain information set out below. The information shall be sent to Robert E. Gilmore, FWS Regional Director, 1011 East Tudor Road, Anchorage, Alaska 99503. The Respondent may assert claims of confidentiality for certain information.
 - A. A narrative description of operation at the facility including any records of placement of oily sand and gravel within the Swanson River Field. In addition, the description should include any spills of hazardous substances as defined under Section 101(14) of CERCLA which have occurred in the Swanson River Field.
 - B. An inventory of any item that contains PCB fluids or materials. List by identification number and indicate item concentration, if possible.
 - C. An inventory identifying petroleum compounds (manufactured products) and hazardous substances (CERCLA) other than PCBs, which are utilized at this facility.
3. Daily Record of Activities. During the pendency of this ORDER the Respondent shall maintain a written record of daily activities under this ORDER. This record shall be available to the On-Scene Coordinator (OSC) upon request. The Respondent shall submit a written summary of its activities to the OSC on a monthly basis. The OSC will be Robert Delaney, Refuge Manager of the Kenai NWR.
4. Providing Site Security. Not later than six (6) calendar days after the commencement time, the Respondent shall begin to enclose the sump pit and stockpile of contaminated soil at the SCU 14-3 site with fencing approved by the OSC which will restrict access by both humans and wildlife. The stockpile will be covered with an OSC-approved impervious cover to prevent runoff and leaching. Key points will be posted as determined necessary by the OSC. The posting sign and location areas must meet OSC requirements. Similar site-security measures might also be imposed if results from area-wide sampling reveal additional contaminated sites.

5. Prohibitions. During the pendency of this ORDER, the Respondent shall not:

- A. Allow persons other than the Respondent, employees of the Respondent, and persons designated by the Respondent, FWS representatives, EPA representatives, BLM representatives, and ADEC officials to have access to areas of the facility where materials containing hazardous substances are located. All persons entering the Field shall notify the Respondent's Field Office.
- B. Transfer or move any PCB-contaminated soil and gravel or other contaminated material from its present location at the facility until authorized by the OSC.
- C. Allow or engage in activities which fail to comply with Title 15 U.S.C. 2601 et seq. (TSCA), 42 U.S.C. 6901 et seq. (RCRA), 42 U.S.C. 9601 et seq. (CERCLA); Title 40, Code of Federal Regulations, Parts 761, 263, and 265; Title 49 Code of Federal Regulations, Part 177; and Title 43 Code of Federal Regulations, Parts 3000, 3100, and 3160.
- D. Perform any activities related to this ORDER not authorized by the OSC or not previously authorized in writing by the FWS.

6. Safety. In carrying out the provisions of this ORDER, the Respondent shall provide for the immediate safety and health of workers and other authorized persons, as well as for protection of the environment and associated fish and wildlife.

MANDATORY REQUIREMENTS/COMPLIANCE SCHEDULE

The Respondent shall conduct each of the following activities within the specified period for compliance:

1. Within thirty (30) days of commencement time, designate, retain, and/or employ a person acceptable to the FWS who is qualified by education and experience to design, implement, and supervise all activities listed in this paragraph.
2. Within forty (40) days of commencement time, prepare and submit Sample Collection Plan which will meet the following goals:
 - A. Identify those areas within the Swanson River Field where remedial action is required; and
 - B. assess the impact, if any, that the contaminants of concern have had on fish or wildlife in the Refuge.

The Sample Collection Plan shall be prepared in accordance with the following guidelines:

- a. Soil and aquatic sediments: samples should be collected from locations within the facility where contaminants of concern may have been collected, stored, spilled, discharged, or applied, including:
 - 1) P&S Warehouse and Yard Area and associated drainage
 - 2) 1-33TS Area and associated drainage
 - 3) Compressor plant facility and associated drainage
 - 4) Areas upon which contaminated road surfacing material was applied for dust control and associated drainage
 - 5) Area and associated drainages surrounding the SCU 14-3 sump and stockpile
 - 6) Any other areas of concern designated by the OSC.
- b. Groundwater: samples should be collected from wells installed in the vicinity of SCU 14-3.
- c. Biota: samples from representative species (i.e., terrestrial avifauna and mammalian fauna living in close association with the ground and/or soil environment; selected fish, aquatic gastropods and bivalves) should be collected at locations selected on the basis of Figure 1.

Specific sampling locations shall be identified and justified in the Sample Collection Plan, and shall include a number of locations selected for the purpose of establishing background levels.

The Sample Collection Plan shall be submitted to FWS for approval.

3. Within forty-five (45) days of commencement time, prepare and submit a Sample Analysis Plan which shall include:
 - A. Standard analytical methods used by approved laboratories for determining the contaminants of concern in soil, suspended and deposited aquatic sediments, surface and ground waters and organs and tissues of selected terrestrial and aquatic organisms.
 - B. Analysis of not less than the following:

- a. "Natural Background" Sampling Sites
- 1) PCB, DDT, and Metabolites
 - 2) Metals:

| | |
|----------|---------|
| Arsenic | Lead |
| Cadmium | Mercury |
| Chromium | Nickel |
| Copper | Zinc |
- b. Swanson River Field Sampling Sites
- 1) PCBs (all arochlors)
DDT and Metabolites
 - 2) Metals
8 metals, same as for Natural Background
 - 3) 2, 3, 7, 8 tetrachlorodibenzodioxin; 2, 3, 6, 7
tetrachlorodibenzofuran
Five samples from segregated sites in the area around
the compressor plant.
- c. A laboratory selected by mutual consent will be used by the Respondent for conducting analysis of contaminants of concern. It is agreed that the FWS Patuxent Wildlife Research Center Laboratory will insure "Laboratory Quality Assurance" control of the approved laboratory. Quality control effort shall include but not be limited to a review and approval of laboratory analytical technique, sample checks, dual sampling (10% split sampling), sampling procedures and sample handling.
- D. All samples sent to the approved laboratory shall be analyzed for contaminants of concern on a dry weight basis for soil and sediment and on a wet weight basis for all biological samples. The analyses must be performed according to methods deemed satisfactory to the FWS. The results of these analyses shall be submitted to Howard Metsker, U.S. Fish and Wildlife Service, 1011 East Tudor Road, Anchorage, Alaska 99503.
- E. Analytical results must meet performance criteria acceptable to the FWS. Failure to meet these criteria can result in the Respondent having to reanalyze the samples or perform additional sampling.
- F. The Sample Analysis Plan shall be submitted to the FWS for approval.
- G. The Respondent shall conduct the required sampling as specified in the approved Sample Collection Plan.

4. Within ninety (90) days of submission of final analytical results, the Respondent shall submit to the FWS and ADEC a Mitigation and Restoration Plan for the Swanson River Field. This plan shall be implemented as amended and approved by the FWS and ADEC. Respondent shall have the right to participate in all FWS and ADEC discussions concerning amendments and approval of the plan.
 - A. The mitigation and restoration plan must be based upon:
 - a. Assessment of the results from the sample collection and analysis specified in items 2 and 3.
 - b. An environmental quality standard for the protection of the Refuge based on a risk assessment to be performed by the Respondent and approved by the FWS and ADEC.
 - B. The mitigation and restoration plan requirements for the handling and disposal of contaminated material must include the following:
 - a. Within thirty (30) calendar days of the signing of this ORDER, the Respondent shall prepare for ADEC and FWS approval a plan for stabilizing and containing those areas presently known to contain over 50 ppm PCB, including the SCU 14-3 sump and stockpile. Said plan must provide measures for preventing any contaminants from migrating into surrounding soil or coming into contact with surface or ground waters. Following approval, this plan shall be executed expeditiously, but no later than December 31, 1985. Within 150 days of approval of the mitigation and restoration plan, but in no event later than December 31, 1986, the Respondent shall eliminate all material found to be contaminated over 50 ppm in the manner approved by the ADEC and FWS in the mitigation and restoration plan.
 - b. Other contaminated materials found to exceed the standards of this ORDER must be removed for containment in accordance with a schedule to be included in the Pollution Mitigation Plan.
 - C. Plans for removal and containment of any contaminated materials must be reviewed and approved by the FWS, in consultation with BLM, ADEC, and EPA, prior to such removal.
 - D. Storage and disposal will be in accordance with Federal and State laws and regulations. Plans for said storage and disposal shall be submitted to the FWS for review and approval.
5. Amendment of Annual Development Plan. The Respondent's complete plan, developed in response to this ORDER, shall be submitted to the FWS and BLM as an amendment to Chevron's Annual Plan of Development and Operation for the Swanson River Field.

6. Compliance With All Laws. In performing activity directed by this ORDER, the Respondent shall comply fully with all requirements of applicable Federal, State, and local laws. No provisions of this ORDER operate to excuse the Respondent from complying fully with all other environmental laws and regulations.

7. Miscellaneous.

- A. The provisions of this ORDER shall obligate this Respondent and all successors and assignees of the Respondent. If the Respondent transfers, sells, assigns, or leases this facility prior to its fulfillment of the provisions of this ORDER BY CONSENT, the Respondent must incorporate a copy of this ORDER into the documents of transfer, sale, assign or lease, and must provide in those documents that the new owners or lessees will take or lease subject to compliance with this ORDER BY CONSENT.
- B. This ORDER is entered into by the Respondent voluntarily for the purpose of avoiding unnecessary conflict or litigation over this matter. In consideration thereof, the FWS, BLM, and ADEC agree not to pursue any other civil, criminal, or administrative relief, including penalties, against the Respondent, or its successors or assignees, in connection with this matter so long as the provisions of this compliance ORDER BY CONSENT are met; except that the FWS, BLM, or ADEC shall be entitled to seek enforcement of this ORDER by a court of competent jurisdiction. Nothing in this ORDER shall be construed to any extent or for any purpose, however and whenever arising, as an admission of liability or violation, directly or indirectly, on the part of the Respondent, its successors, or assignees.
- C. No provision of this ORDER affects any right, claim for relief, or cause of action held by persons other than the Respondent, FWS, BLM, and ADEC.
- D. The provisions of this ORDER may only be modified or amended upon the express written consent of the Respondent, FWS, BLM, and ADEC.

This document will be recognized by the Respondent as a Compliance Order by Consent under Alaska Statutes 46.03.850 and under the jurisdiction of the State of Alaska.

8. Opportunity to Confer. The Respondent may at any time request to confer with the FWS concerning the terms and provisions of the foregoing ORDER. All requests to confer shall be confirmed in writing and justified. In any such conference held pursuant to a

request of the Respondent, attorneys and other representatives of the Respondent may be present and may present on behalf of the Respondent whatever objections, contentions, comments, or requests the Respondent may have. Requests for any such conferences should be addressed to:

Robert E. Gilmore, Regional Director
U.S. Fish and Wildlife Service, Region 7
1011 East Tudor Road
Anchorage, Alaska 99503
PH: (907) 786-3542

The Respondent acknowledges, by execution of this Consent Order, that it is waiving rights which would attach otherwise to the procedure for issuance of a compliance order under 18 AAC 95, including the right to an adjudicatory hearing and judicial review of the Alaska State Department of Environmental Conservation's findings in this matter, and that these rights are knowingly and voluntarily waived.

9. Cost Recovery. The Respondent shall be responsible for all appropriate costs authorized by the OSC in connection with the implementation of this ORDER. The OSC will provide the Respondent with an itemized accounting of all expenses authorized pursuant to this ORDER.
10. Organization of Response.
 - A. The organization chart (Figure 2) identifies the structure of the response team and interactive coordination between the OSC, Federal and State agencies, and the Respondent.
 - B. The Respondent has the first responsibility to take all appropriate action to remove the contamination and restore the environmental quality of the affected areas.
 - C. The FWS has the primary responsibility to insure that all response actions are performed in a manner least disturbing to the environmental and biological integrity of the surrounding refuge. All activities must be performed under the supervision and full approval of the OSC.
 - D. The FWS shall serve as the public relations coordinator in connection with this matter, and will respond to inquiries from the public on cleanup efforts. The Respondent shall have the right to review and comment upon any written statements which the FWS proposes to make to the public or news media.
 - E. Procedures and guidelines shall conform to the "National Oil and Hazardous Substances Contingency Plan" as amended.

Analytical Laboratory Results of the ...
 and Drainage below the Sump, taken by the First and Wildlife Service,
 July 22, 1984.

| Metals: | Road | SCU 14-3 Sump | | Drainage Below Sump | |
|-------------------|-----------------------|-----------------------|--------------------|-----------------------|--------------------|
| | Sediment 84-M-2350 | Sediment 84-M-2351 | Water 84-M-2353 | Sediment 84-M-2352 | Water 84-M-2354 |
| Lead | 48. | 26. | 0.17 | 8.2 | 0.020 |
| Copper | 29. | 21. | 0.003 | 19. | 0.002 |
| Zinc | 930. | 1,100. | 0.22 | 100. | -0- |
| Cadmium | 1.9 | 0.56 | -0- | -0- | -0- |
| Chromium | 47. | 270. | 0.081 | NA | -0- |
| Mercury | 0.78 | 0.16 | -0- | -0- | -0- |
| Arsenic | 5.9 | 5.0 | 0.017 | 4.7 | 0.001 |
| Selenium | -0- | -0- | -0- | -0- | -0- |
| Compound | | | | | |
| p,p'-DDE | -0- | -0- | | -0- | |
| p,p'-DDD | -0- | -0- | | -0- | |
| p,p'-DDT | 0.70 | 0.11 | | 0.14 | |
| Dieldrin | -0- | -0- | | -0- | |
| nonachlor epoxide | -0- | -0- | | -0- | |
| l-chlordane | -0- | -0- | | -0- | |
| cis-Chlordane | -0- | -0- | | -0- | |
| trans-nonachlor | -0- | -0- | | -0- | |
| Endrin | -0- | -0- | | -0- | |
| Ext. Toxaphene | -0- | -0- | | -0- | |
| Est. PCB | 35. | 10. | | -0- | |

NA = Not Analyzed

-0- = None Detected

PPM Dry Weight for Metals in Sediment

(PPM wet weight - for metals in water and for organochlorine compounds)

Table 2. Environmental Protection Agency Swanson River Field Analytical Results Summary, Chevron Split Samples Collected March 5, 1985

| Sample # | Location |
|----------------|--|
| 100676 - soil | 200 feet from lower housing road |
| 100677 - soil | Main intersection north of office to plant |
| 100678 - soil | West side maintenance shop |
| 100680 - soil | Junction from main road to compressor |
| 100681 - soil | Stockpile at SCU 14-3 |
| 100682 - soil | Collection pit |
| 100683 - soil | Gravel Pit |
| 100684 - soil | Landing strip |
| 100675 - water | Pumphouse water supply |
| 100679 - water | Control building - water fountain |

| | Mercury (ug/l) | silver (ug/l) | arsenic (ug/l) | barium (ug/l) | cadmium (ug/l) |
|--------|-------------------|------------------|-------------------|------------------|-------------------|
| 100676 | .05u | 0.1u | 9 | 1510 | 0.7 |
| 100677 | .05u | 0.1u | 20 | 1690 | 1.9 |
| 100678 | .05u | 0.1u | 154 | 2800 | 21.6 |
| 100680 | .05u | 0.2 | 7 | 2380 | 11.3 |
| 100681 | .05 | 0.1u | 10 | 2070 | 12.9 |
| 100682 | .05u | 0.1u | 201 | 340 | 7.1 |
| 100683 | .05u | 0.1u | 8 | 330 | 0.2 |
| 100684 | .05u | 0.1u | 14 | 1050 | 2.3 |
| 100675 | NSQ | 0.1u | 7 | 10u | 0.2 |
| 100679 | NSQ | 0.1u | 7 | 10u | 0.2 |

| | Chromium (ug/l) | lead (ug/l) | selenium (ug/l) | PCB (ug/kg) | DDT (ug/kg) |
|--------|--------------------|----------------|--------------------|----------------|----------------|
| 100676 | 1u | 1u | 1u | 140 (1248) | 3u |
| 100677 | 1u | 1 | 2 | 8600 (1248) | 200u |
| 100678 | 2 | 8 | 1 | 103 (1248) | 4u |
| 100680 | 19 | 61 | 2 | 57500 (1248) | 4000u |
| 100681 | 17 | 45 | 2 | 134000 (1248) | 3700u |
| 100682 | 388 | 2050 | 5 | 98800 (1248) | 7400u |
| 100683 | 1u | 1u | 2 | 104 (1248) | 0.5u |
| 100684 | 1 | 1u | 1 | 64 (1248) | 5u |
| 100675 | 7 | 1 | 3 | NSQ | NSQ |
| 100679 | 1 | 7 | 5 | NSQ | NSQ |

u = Detectable Units
 NSQ = Not Sufficient Quantity



Table 3. CHEVRON U.S.A. INC./SWANSON RIVER FIELD
 ANALYTICAL RESULTS SUMMARY
 EPA SPLIT SAMPLES COLLECTED 3/5/65

Analytical Approach: Samples were handled under chain of custody. The samples were split. One portion was submitted to EAL for PCB and DDT analyses using EPA Method 8080. The retain was analyzed by CRC for metals using EPA Method 1310 for extracting soils, EPA Method 3050 for acid digestion, and EPA Method 6010 for Inductively Coupled Plasma, except for arsenic, mercury and selenium that were analyzed by neutron activation analysis (NAA).

Summary of Results in ppm

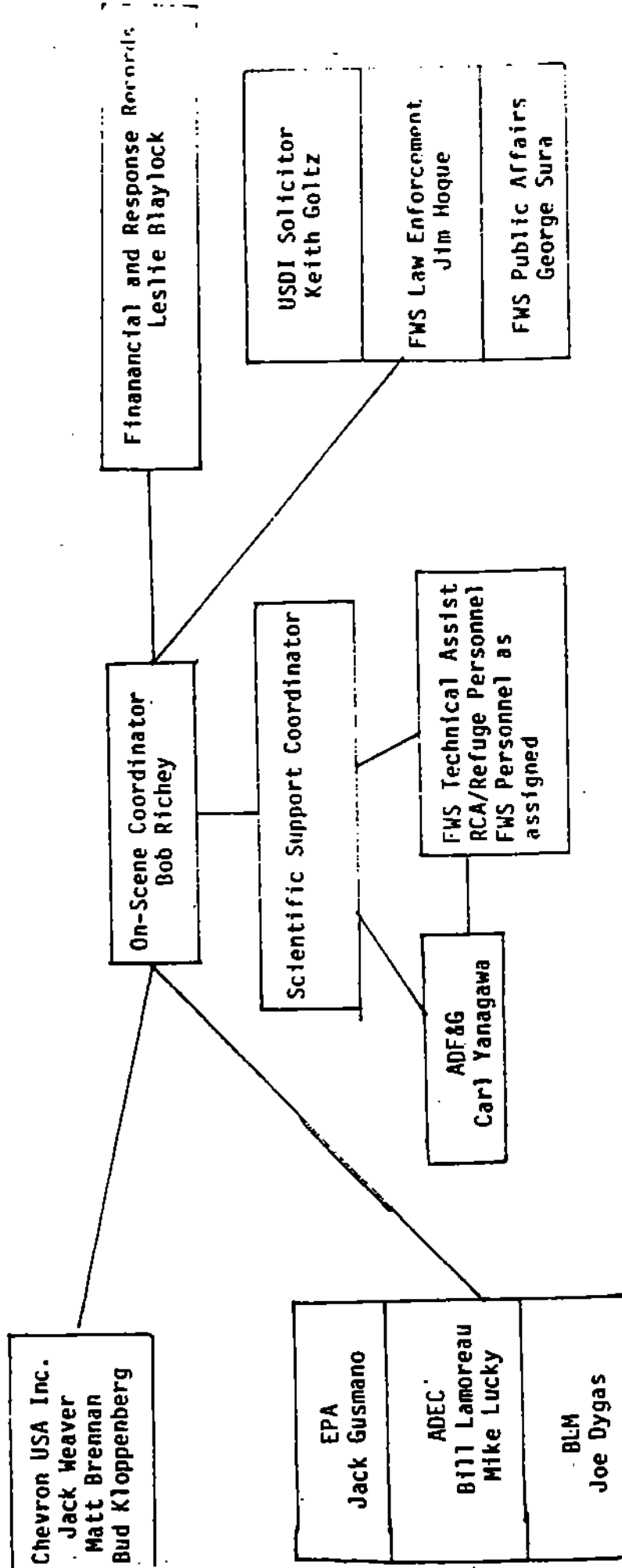
| Sample No. 100e- | Ba | Cd | Cr | Pb | Ag | As | Se | Hg | Note |
|---------------------|-------|------|------|-------|------|-------|------|-------|-------|
| 75 | 0.035 | <.01 | <.02 | <.25 | <.14 | .009 | <.02 | <.005 | Water |
| 76 | 3.58 | <.2 | <.4 | <5.0 | <2.8 | <.099 | <.4 | <.099 | Soil |
| 77 | 4.9 | <.2 | <.4 | <5.0 | <2.8 | <.1 | <.4 | <.1 | Soil |
| 78 | 17.69 | <.2 | <.4 | <5.0 | <2.8 | <.1 | <.4 | <.1 | Soil |
| 79 | 0.018 | <.01 | <.02 | <.25 | <.14 | .009 | <.02 | <.005 | Water |
| 80 | 35.17 | <.2 | 0.4 | <5.0 | <2.8 | 0.24 | <.4 | <.1 | Soil |
| 81 | 47.0 | 0.42 | 1.99 | <5.0 | <2.8 | 0.14 | <.4 | <.1 | Soil |
| 82 | 59.75 | 0.78 | 3.55 | 10.95 | <2.8 | 0.20 | <.4 | <.1 | Soil |
| 83 | 2.44 | .2 | <.4 | <5.0 | 2.8 | <.1 | <.4 | <.1 | Soil |
| 84 | 2.37 | <.2 | <.4 | <5.0 | <2.8 | 0.22 | <.4 | <.1 | Soil |
| 85 | 3.05 | <.5 | 0.66 | 17.7 | <.25 | 0.052 | <.01 | <.005 | Oil |
| 86 | 5.15 | <.5 | 2.07 | <5.4 | <.25 | 0.033 | <.01 | <.005 | Oil |
| 87 | 0.26 | <.5 | <.6 | <5.5 | <.25 | 0.006 | <.01 | <.005 | Oil |

Polychlorinated Biphenyls (as AR-1248) and P,P' DDT
 P,P'-DDT FCB as AR-1248

| Sample No. 100e- | P,P'-DDT | | | FCB as AR-1248 | | | Note |
|---------------------|----------|------|-------|----------------|------|-------------------|-------|
| | ug/L | mg/L | ug/kg | ug/L | mg/L | ug/kg | |
| 75 | <2 | --- | --- | <30 | --- | --- | Water |
| 76 | --- | --- | <10 | --- | --- | 290 | soil |
| 77 | --- | --- | <40 | --- | --- | 14 | soil |
| 78 | --- | --- | <90 | --- | --- | 170,000 4,900* | soil |
| 79 | <2 | --- | --- | <30 | --- | --- | Water |
| 80 | --- | --- | <100 | --- | --- | 33,000 | soil |
| 81 | --- | --- | <300 | --- | --- | 58,000 56,000* | soil |
| 82 | --- | --- | <400 | --- | --- | 82,000 | soil |
| 83 | --- | --- | 4 | --- | --- | <100 | soil |
| 84 | --- | --- | 5 | --- | --- | <300 | soil |
| 85 | --- | <2 | --- | --- | <12 | --- | oil |
| 86 | --- | <2 | --- | --- | <12 | --- | oil |
| 87 | --- | <2 | --- | --- | <12 | --- | oil |

Figure 2. DECONTAMINATION OF SWANSON RIVER FIELD
Kenai National Wildlife Refuge

Response Team Organization





IN REPLY REFER TO:
UES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503

cc: RLA
WAB
RURB

July 25, 1986

RECEIVED

Mr. J. L. Weaver, Area Operations Superintendent
Chevron U.S.A., Inc.
Production Department
P.O. Box 107839
Anchorage, AK 99510

JUL 25 1986

PRODUCTION
ANCHORAGE

Dear Mr. Weaver:

This is in reply to your letter of July 2, 1986, regarding the Mitigation and Restoration Plan and Compliance Order by Consent for the cleanup of polychlorinated biphenyls (PCB's) from the Swanson River field.

The U.S. Fish and Wildlife Service, Bureau of Land Management, Environmental Protection Agency and Alaska Department of Environmental Conservation agree that the use of a transportable circulating bed combustor is the preferred method of PCB disposal. We would also be agreeable to a time extension of cleanup of PCB's beyond the limits of the 1986 calendar cleanup provision indicated in the "Order by Consent." Chevron has indicated in the "Mitigation and Restoration Plan for PCB's at the Swanson River Field" that a 1987 (December) extension time requirement is necessary in order for the use of this equipment to be employed. The sanction of the time extension does not mean that we have approved a PCB cleanup level or other segments of the mitigation and Restoration Plan.

The U.S. Fish and Wildlife Service does agree to leave all treated material on site, provided that it falls within the levels ultimately agreed to by all consenting parties.

Sincerely,

Robert C. Simmons
Regional Director

Concur: *Beed Smith*
Regional Director, U.S. Bureau of Land Management

7/25/86
Date

Concur: *[Signature]*
Assistant Regional Administrator,
Environmental Protection Agency

7/25/86
Date

Concur:

Brett A. Samuelsen
Regional Supervisor, Alaska Department of
Environmental Conservation

July 25, 1986
Date

- cc: Mr. Howard Metsker, U.S. Fish and Wildlife Service - Anchorage, AK
Mr. Jonn Blankenship, U.S. Fish and Wildlife Service - Washington, D.C.
Mr. Daniel W. Doshier, U.S. Fish and Wildlife Service - Soldotna, AK
Mr. Robert Richey, U.S. Fish and Wildlife Service - Soldotna, AK
Mr. Jacques L. Gusmano, Environmental Protection Agency - Anchorage, AK
Mr. Bob Martin, Alaska Department of Environmental Conservation
Anchorage, AK
Mr. Joe Dygas, Bureau of Land Management - Anchorage, AK

Memorandum of Agreement for
Cleanup of Polychlorinated Biphenyls (PCB's) from
Swanson River Oil Field, Kenai National Wildlife Refuge
by Chevron U.S.A., Inc.

It is agreed that all PCB-contaminated areas will be cleaned to a level of 12 ppm or less with the exception of two areas: 1) the pipeline area, encompassing an area of approximately 30 feet by 150 feet, and 2) the SCU 14-3 pit site will be restored to a level of 24 ppm or less. For the remaining life of the field, Chevron will periodically monitor the SCU 14-3 pit site for possible PCB migration which has resulted from their previous activities at this site. If monitoring shows PCB contaminant migration, Chevron will be responsible for further remedial action at the SCU 14-3 pit site.

Concur: *Don H. [Signature]* 8/26/86
Regional Director, U.S. Fish and Wildlife Service Date

Concur: *Robert H. [Signature]* 8-27-86
Acting State Director, U.S. Bureau of Land Management Date

Concur: _____
Assistant Regional Administrator Environmental Protection Agency Date

Concur: *Bill H. [Signature]* 9-03-86
~~Commissioner~~ Alaska Department of Environmental Conservation Date

Concur: _____
~~General Manager~~ **AACO ALASKA**, Inc. Date
Unit Operator, Swanson River Field



United States Department of the Interior



IN REPLY REFER TO:

EC

FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503

MAY 12 1989

KUPARUK/COOK INLET

JUN 08 1989

PERMITS AND COMPLIANCE

Mr. J.A. Ives
Permits & Compliance Manager
Cook Inlet and Kuparuk Fields
ARCO Alaska, Inc.
P.O. Box 100360
Anchorage, Alaska 99510-0360

Dear Mr. Ives:

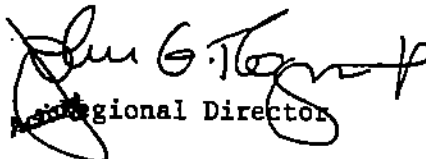
This responds to your April 26, 1989 letter to the U.S. Fish and Wildlife Service, concerning proposed polychlorinated biphenyl (PCB)/volatile organic compound cleanup at the P&S Yard in the Swanson River Oil Field. You propose to excavate the four areas of low-level (below 50 ppm) contamination and transport the material to an isolated portion of the existing PCB containment facility where it will be processed in the on-site incinerator. Your view is that the volatile aromatics still in the soil will be sufficiently aerated during excavation and handling such that they will pose no concerns during incineration.

The undersigned representatives of the Signatory Agency Coordination Committee endorse your cleanup plan of action with the following four conditions. I understand Mr. Jon Nelson of my staff has discussed these with you and you find them acceptable.

1. Each of the four PCB contaminated areas shall be excavated to remove contaminated soil until a polychlorinated biphenyl concentration less than 12 ppm remains in the soil. Release sampling for these areas shall be done using the same techniques as those for the other contaminated areas.
2. The contaminated soil shall be transported to the polychlorinated biphenyl soil containment facility and stored separate from the other soil in the facility.
3. The soils will be periodically sampled for the volatile organic compounds identified in the Ecology and Environment Inc., report titled "BTXE Site Investigation Data Presentation Report, Swanson River Oil Field Kenai Peninsula, Alaska," dated March 1989.
4. The polychlorinated biphenyl contaminated soils may be burned in the Ogden CBC incinerator when the concentrations of the volatile organic compounds are lower than those established for hazardous waste by the Resource Conservation and Recovery Act of 1976.


This agreement does not in any way change the original Order of Consent which took force on August 6, 1985, or release ARCO Alaska, Inc., from its responsibility in further remediation at the P&S Yard in the Swanson River Oil Field.

Sincerely,



Regional Director

Attachment

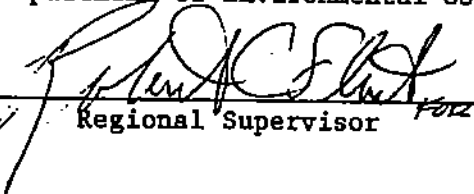
U.S. Department of the Interior, U.S. Fish and Wildlife Service

Concur:  Date: 12 May 89
Regional Director


U.S. Department of the Interior, Bureau of Land Management

Concur:  Date: 5-17-89
State Director

Alaska Department of Environmental Conservation

Concur:  Date: May 19, 1989
Regional Supervisor

ARCO Alaska Inc.

Concur:  Date: 5/31/89
Senior Vice President



United States Department of the Interior

TOP SECRET

IN REPLY REFER TO:
DAE

FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503

JUL 9 1990

William E. Wade
President, ARCO Alaska, Inc.
P.O. Box 100360
Anchorage, AK 99510-0360

Dear Mr. Wade:

Enclosed for your signature is Amendment Number 4 to the Order By Consent Mitigation Plan governing remediation of the polychlorinated biphenyls within the Swanson River Oil Field on the Kenai National Wildlife Refuge. On May 30, I sent each "Signatory Agency" a draft of the proposed amendment; only ARCO Alaska, Inc. responded substantively. After consulting with our Solicitor, we believe ARCO's proposed changes in the May 30 draft have merit and have incorporated all but one (monitor the test wells annually) into this final version. Mr. Jon Nelson of my staff last week explained the proposed changes to Mr. James A. Ives of your staff; he agreed with the rationale.

Briefly, the enclosed amendment includes the following stipulations and conditions:

1. Ninety (rather than 30) days to begin remediation after the Swanson River Oil Field is permanently shut down, or if contamination is found in any of the monitoring wells. The requirement to begin remediation under Building A if for any reason the field is shut down temporarily for more than 30 days is NOT a condition in this amendment.
2. A period of 120 days to complete the remediation once it begins.
3. Semi-annual sampling of the four monitoring wells. The draft amendment stipulated a quarterly timeframe; ARCO proposed a once a year frequency.
4. An extension of the current Circulating Bed Combustor operation from November 1, 1990 to September 30, 1992.

I ask that you sign the amendment and return it to me for further processing. You will receive a fully executed copy.

Sincerely,


Acting Regional Director

Enclosures

AMENDMENT NUMBER FOUR (4)
to the
ORDER BY CONSENT
MITIGATION PLAN - SWANSON RIVER OIL FIELD
KENAI NATION WILDLIFE REFUGE

This amendment to the above named ORDER BY CONSENT allows ARCO Alaska Inc. and any successors and assignees to leave Polychlorinated Biphenyl contaminated soil in place beneath Building A in the Swanson River oil field until the Swanson River oil field is permanently shut down or until Polychlorinated Biphenyl contamination is shown to have migrated into ground water or beyond Building A. "Permanent shut-down" is defined as field abandonment after all oil and gas production has ceased, and the compressor in Building A is no longer needed.

Mandatory Requirements/Compliance Schedule

1. Remediation of the contaminated soils beneath Building A in the Swanson River unit of the Kenai National Wildlife Refuge shall begin with 90 days after the Swanson River oil field is permanently shut down.
2. Remediation of the contaminated soils under Building A shall commence with 90 days if polychlorinated biphenyls are found in any of the samples from the four monitoring wells located around Building A.
3. Remediation shall be completed within 120 days after the commencement of cleanup activities following the permanent shut down of the Swanson River oil field.
4. Each of the four monitoring wells located around Building A shall be sampled on a semi-annual basis, beginning on June 1, 1990 and continuing until the contaminated soil is remediated.
 - a. The samples shall be analyzed for polychlorinated biphenyls using standard analytical methods used by approved laboratories for determining concentrations of polychlorinated biphenyls in water.
 - b. Reports of the analyses shall be submitted to the signatory agencies and the U.S. Environmental Protection Agency within 30 days of when samples are taken.

5. Cleanup extension request #2, dated June 1988, is hereby rescinded. The new cleanup date, based on the remaining amount of contaminated soil and the projected rate that the Circulating Bed Combustor Unit is able to treat soil, is extended from November 1, 1990 to September 30, 1992.

6. The provisions of the amendment to the ORDER shall obligate this Respondent and all successors and assignees of the Respondent. If the Respondent transfers, sells, assigns, or leases this facility prior to its fulfillment of the provisions of this amendment to the ORDER BY CONSENT, the respondent must incorporate a copy of this amendment to the ORDER into the documents of transfer, sale, assignment or lease, and must provide in those documents that the new owners or lessees will take or lease subject to compliance with this amendment to the ORDER BY CONSENT.

ARCO Alaska, Inc.
Post Office Box 100360
Anchorage, Alaska 99510-0360
Telephone 907 263 4307



James A. Ives
Manager, Permits and Compliance
Kuparuk/Cook Inlet

March 22, 1991

Mr. Everett Robinson Wilson
U.S. Fish and Wildlife Service
1011 E. Tudor Rd.
Anchorage, AK 99503

Re: Addendum to Amendment Number Five to The Order By Consent
Mitigation Plan - Swanson River Oil Field, Kenai National Wildlife Refuge

Dear Mr. Wilson:

Enclosed you will find the three fully executed copies of Amendment Number 5 to the Order By Consent, Mitigation Plan - Swanson River Oil Field. We have retained one executed original for our files. This amendment addresses the remediation of aromatic hydrocarbon contaminated soils and groundwater at the Pipe and Supply (P&S) Yard.

In addition, this letter is provided by ARCO Alaska, Inc. (AAI) to address the concerns about benzene contaminated groundwater discussed at the remediation project presentation to EPA, ADEC, BLM and USFWS at the U.S. Fish and Wildlife Service facility March 14, 1991.

The BTXE Site Investigation Data Presentation Report mentioned benzene in the groundwater, but Amendment Five does not reflect any such cleanup standard in the groundwater remediation requirements, paragraph 1. However, groundwater sampling for benzene is required in the amendment, paragraph 1b. AAI intends to monitor for benzene in addition to the other contaminants listed in Amendment 5, and will ensure that should benzene be present, the contaminate levels will meet MCL criteria before discharge water is allowed to be released down gradient of the collection gallery.

Should you have any questions in this matter, please contact me.

Sincerely,

J. A. Ives, C.E.P.

Enclosure:

**AMENDMENT NUMBER FIVE (5)
TO THE
ORDER BY CONSENT
MITIGATION PLAN-SWANSON RIVER OIL FIELD
KENAI NATIONAL WILDLIFE REFUGE**

This amendment to the above named ORDER BY CONSENT (hereinafter referred to as ORDER) directs ARCO Alaska Inc. (hereinafter referred to as RESPONDENT) and any successors and assignees to remediate, by air stripping technology, aromatic hydrocarbon contaminated soils and groundwater at the Pipe and Supply Yard, Swanson River Oil Field, Kenai National Wildlife Refuge (Figure 1).

MANDATORY REQUIREMENTS

1. Remediation of contaminated groundwater, as described in Ecology and Environment, Inc.'s report "Recommended Alternative for Groundwater Remediation," shall continue until the groundwater from the seeps located at the terminus of the east drainage meets the following criteria within a 90 percent confidence interval (Figure 2):

| Contaminant | Cleanup Concentration (mg/l) |
|--------------|---------------------------------|
| Toluene | 0.50 |
| Ethylbenzene | 0.48 |
| Xylene | 0.20 |

a. Water samples will be taken using U.S. Environmental Protection Agency approved methods for purgeable aromatic hydrocarbons.

b. Water samples will be analyzed for benzene, toluene, ethylbenzene and xylene using U.S. Environmental Protection Agency Method 5030 (Purge and Trap)/8020 - Aromatic Volatile Organics (GC/PID).

2. Remediation of contaminated soil shall continue until the soil samples from all areas of the Pipe and Supply Yard and the east drainage meet the following criteria within a 90 percent confidence interval:

| Contaminant | Cleanup Concentration (mg/kg) |
|--------------|----------------------------------|
| Benzene | 2.0 |
| Toluene | 4.5 |
| Ethylbenzene | 15.0 |
| Xylene | 1.5 |

a. Soil samples, used to determine when final remediation is completed, shall be taken in the Vadose Zone, and at the soil-groundwater interface.

b. Soil samples shall be taken from the grid system established by Environment and Ecology Inc. in 1989, and identified in "BTXE Site Investigation Data Presentation Report, Swanson River Oil Field, Kenai Peninsula, Alaska, March 1989." ~~Samples taken shall be adequate to~~

ensure that the remediated soil meets the criteria for Benzene, toluene, ethylbenzene and xylene established in this amendment to the ORDER. The proposed sampling scheme shall be presented to the Agencies for approval before it is executed.

c. Soil samples shall be analyzed for benzene, ethylbenzene, toluene and xylene using U.S. Environmental Protection Agency Method 5030 (Purge and Trap)/8020 - Aromatic Volatile Organics (GC/PID).

3. Air quality in the area surrounding the air stripping unit shall meet the standards established in the following table:

| Compound | 8-Hr. Time-Weighted ¹ Average Concentration | Ceiling ² Concentration | Agency |
|--------------|---|---------------------------------------|------------|
| Benzene | 0.1 ppm | 1 ppm | NIOSH |
| Ethylbenzene | 100 ppm | N/A ³ | OSHA |
| Toluene | 100 ppm | 200 ppm | NIOSH |
| Xylene | 100 ppm | 200 ppm | NIOSH/OSHA |

1. Samples taken over an 8-hour period may exceed this concentration, but the average time-weighted concentration for an 8-hour time period may not exceed the concentration.

2. No sample during the monitoring period may exceed this concentration.

3. "Not Available."

Air quality shall be monitored for benzene, ethylbenzene, toluene and xylene in an area determined by the U.S. Environmental Protection Agency Model PTPLU2, to have the maximum concentration of the constituents.

The air quality shall be monitored at three different times during the first year of operation. Monitoring shall take place:

1. Within one month of startup of the unit, but after stable operating conditions are established.
2. Six months after the initial sample.
3. One year after the initial sample.

If the established criteria are not exceeded during any of the sampling periods, further monitoring shall be waived. If any of the criteria are exceeded, the monitoring shall continue on a quarterly basis, until four consecutive monitoring periods are within the established criteria, after which the monitoring provision shall be waived.

4. A representative from the Kenai National Wildlife Refuge will be given the opportunity to be present or to designate an alternative agency representative to be present during final verification of water and soil sampling. The Refuge representative may, for good cause, at his/her discretion, require additional samples to be taken and/or other areas to be sampled.

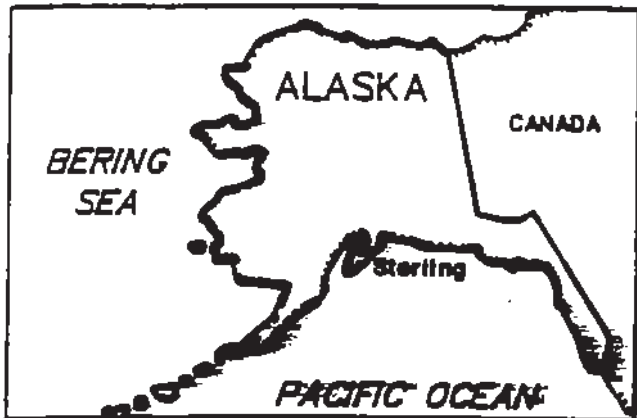
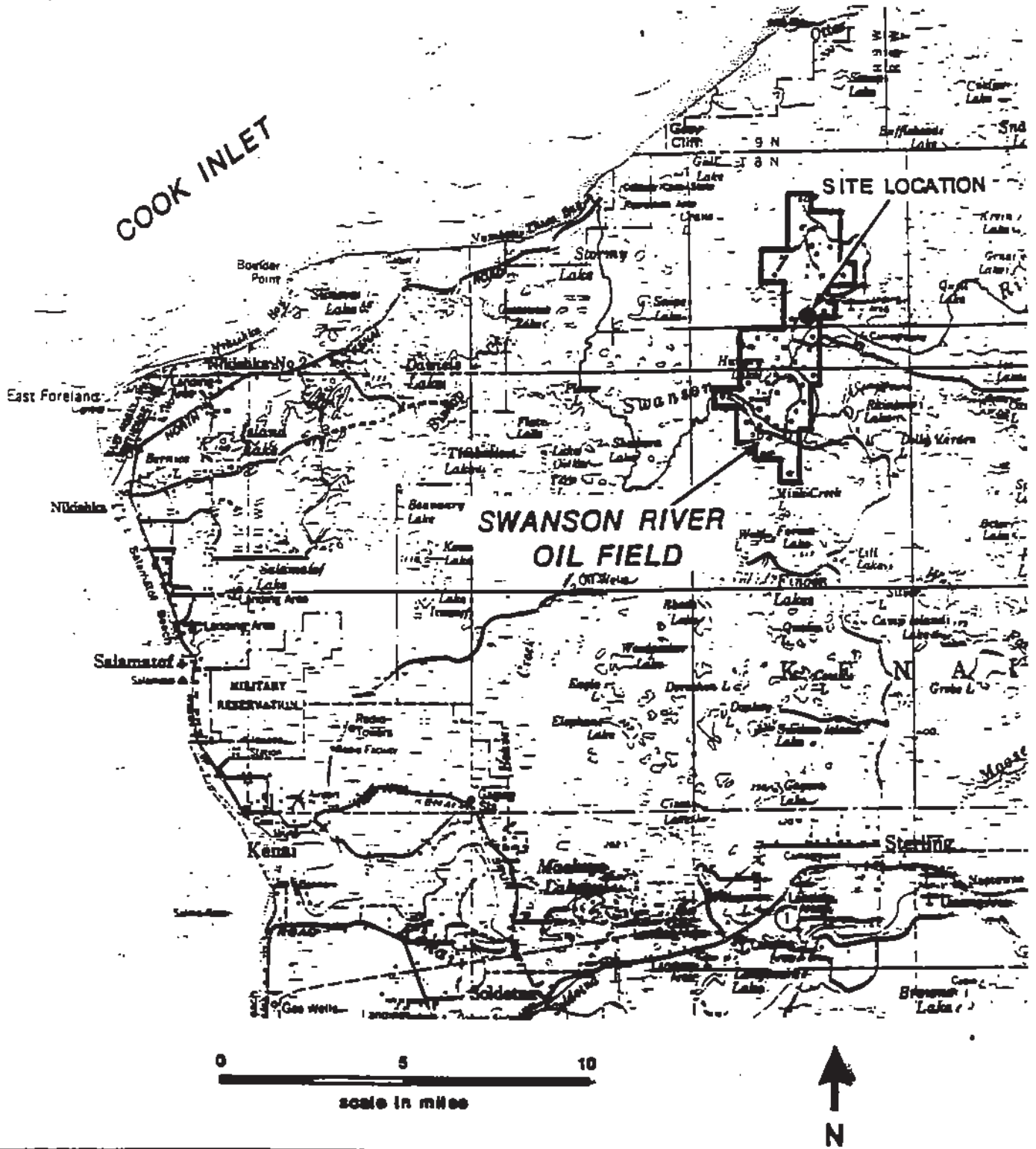
5. The provisions of this amendment shall be binding upon the RESPONDENT and all successors and assignees of the RESPONDENT. If the RESPONDENT transfers, sells, assigns, or leases the Swanson River Oil Field prior to its fulfillment of the provisions of this amendment to the ORDER, the RESPONDENT must incorporate a copy of this amendment to the ORDER into the documents of transfer, sale, assignment or lease, and must establish as a condition to the facility's transfer, sale or lease in those documents that the new owners or lessees will accede to the conditions of this amendment to the ORDER.

6. The RESPONDANT will obtain a State of Alaska industrial wastewater discharge permit for discharge of water from the groundwater remediation process.

7. Upon the RESPONDANT'S notification of completion of the remediation project and agency review of final verification sampling results, the concurring agencies will certify, in writing, the completion of this project and satisfaction of this portion of the amended ORDER.

Figure 1.

Location of the Swanson River Oil Field and the Pipe and Supply Yard Within the Field. Map taken from "BTXE Site Investigation Data Presentation Report Swanson River Oil Field Kenai Peninsula, Alaska", March, 1989. Ecology and Environment, Inc.

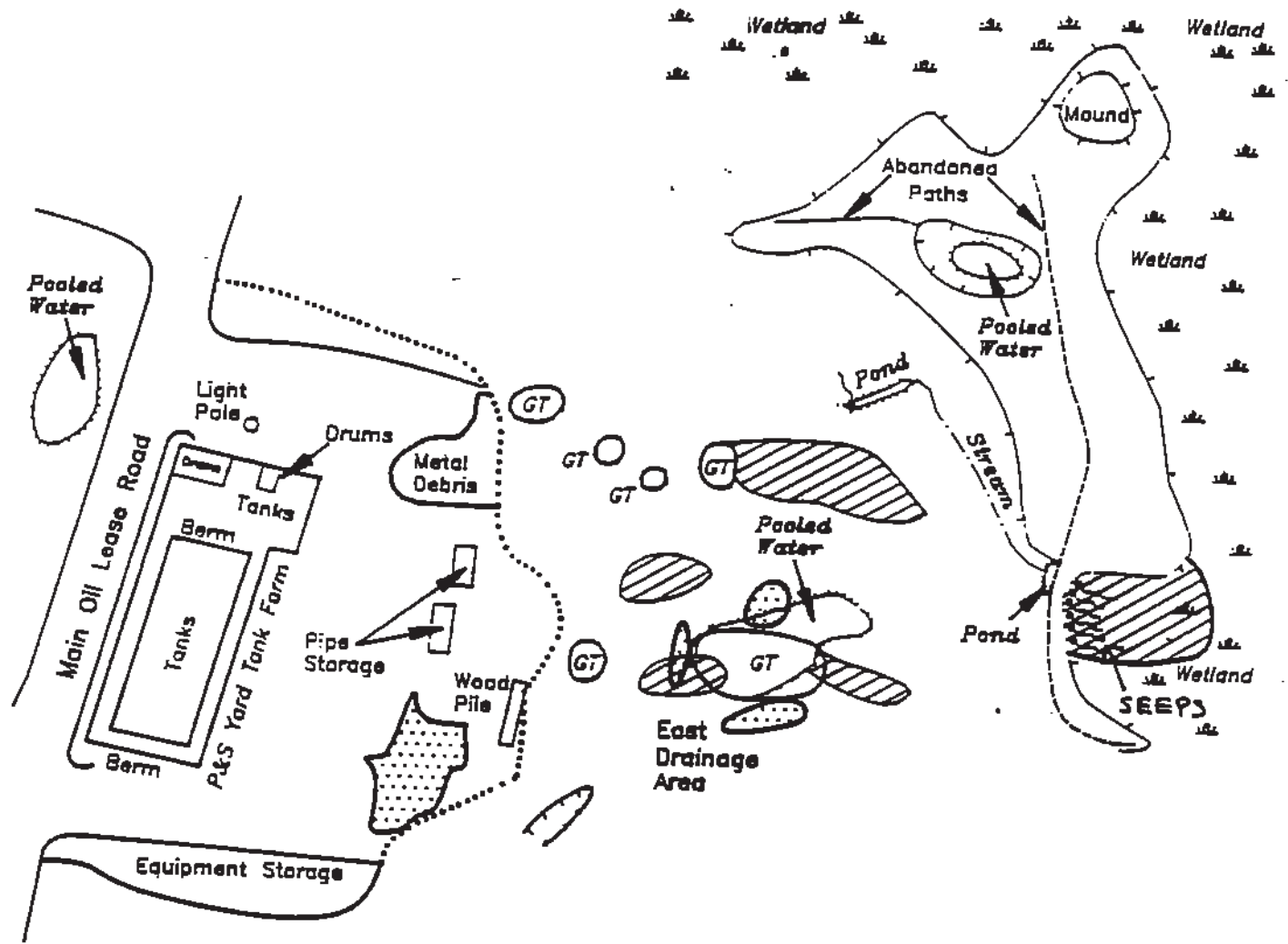


| | |
|-----------------------------|--------------------|
| ecology & environment, inc. | |
| Job: AC 5088 | BTXE STUDY |
| Drawn by: B.T. | Date: Jan. 9, 1980 |








FIGURE 1
LOCATION MAP
SWANSON RIVER OIL FIELD
Sterling, AK

Figure 2.

Location of important features within the Pipe and Supply Yard Study Area. Map taken from "BTXE Site Investigation Data Presentation Report Swanson River Oil Field Kenai Peninsula, Alaska" March, 1989. Ecology and Environment Inc.



LEGEND

-  Stressed vegetation
-  PCB contaminated area
-  Depressed area
-  Rise in slope
-  Geophysical target
-  P&S Yard gravel pad boundary
-  Groundwater seep

| | |
|-----------------------------|---------------------|
| ecology & environment, inc. | |
| Job: AC 5095 | BTXE STUDY |
| Drawn by: D. P. | Date: Feb. 22, 1989 |

FIGURE 2
P&S YARD STUDY AREA
SIMPSON RIVER OIL FIELD
Stedding, AK.

Concur: *Phu G. Thompson*
Regional Director, U.S. Fish and Wildlife
Service, Region 7

2/13/91
Date

Concur: *J. J. Lauer*
State Director, Bureau of Land Management

2/8/91
Date

Concur: *Richard B. Smith*
Alaska Department of Environmental
Conservation

3/7/91
Date

Concur: *John J. ...*
Senior Vice President, ARCO Alaska, Inc. *DMM*

3/25/91
Date