

APPENDIX 1

OIL HANDLING FACILITIES OF PUGET SOUND

A. Introduction

The recommendations presented in Section III-C4 of this report are the culmination of an extensive study on oil handling facilities in the Puget Sound area. This appendix reports the details of that study. A preliminary set of criteria was formulated upon review of Coast Guard regulations, which are summarized in the next section. From these, a set of questions were drawn up to integrate into an onsite inspection tour. The results of this are shown in part C. The final portion of this appendix presents a comparative rating of selected oil handling facilities, defining both strong and weak points.

B. Oil Handling Facility Regulations

Rules and regulations which pertain to the handling of dangerous liquid cargoes by the onshore oil handling facility are defined in Title 33 of the Code of Federal Regulations.¹ These apply both when the facility is receiving oil for storage in their tanks or when distributing oil to a vessel. Enforcement of these rules falls under the jurisdiction of the U.S. Coast Guard. The significant points are summarized here. The onshore oil handling facility shall:

1. Continuously control and supervise the oil transfer.
2. Train the men who control and supervise the transfer operation.
3. Post warning signs.
4. Insure that no repair work is done to the transfer system or tanks during transfer.
5. Place adequate drip pans under hose connections.
6. Insure that couplings are leak free.
7. Insure that bolted couplings have sufficient bolts to prevent leaking.
8. Insure that the person on the vessel reports when he is ready to transfer oil.
9. Obtain a cargo information card.
10. Obtain a Declaration of Inspection.
11. Set up communications with the person on the vessel.
12. Stop transfer operations if:
 - a. severe electrical storms occur,
 - b. a fire breaks out,
 - c. a break occurs in the oil transfer system,
 - d. requested by the person on the vessel.

When the onshore facility delivers oil to a vessel the supervisor handling the onshore transfer operation is responsible for:

1. The operation of all oil valves.
2. Notifying the receiver of his intent to pump oil.
3. Slowly commencing the pumping operation.
4. Maintaining oil line or hose connections to prevent leaks.
5. Observing the operating pressure in the system.
6. Stopping the pumping quickly when requested by the receiver.

When the shoreside facility receives oil from a vessel the supervisor handling the onshore transfer operation is responsible for:

1. The operation of all oil valves.
2. Maintaining oil line or hose connections to prevent leaks.
3. Observing the oil flow rate to prevent overfill or overload of the transfer system, and
4. Not securing the system until the person on the pumping vessel has been notified.

When the transfer operation has been completed the onshore facility shall drain all hoses and secure all piping.

Oil handling equipment shall be maintained in good operating condition at all times:

1. The cargo hoses must not leak through the body of the hose due to pressure.
2. Test the oil pumping system once a year.
3. Calibrate the oil pump pressure gauges once a year.
4. Hydrostatically test the hoses and pipelines once a year to 1-1/2 times the maximum working pressure.
5. The cargo hoses shall not be used with pipelines whose maximum working pressure is greater than that of the hose.
6. The relief valve operation shall be checked at the time of each system hydrostatic test.
7. Record and make available, to the Captain of the Port, the date and result of test.
8. The escape pipelines from relief valves shall return the product to the supply or other receiver.
9. Mark all hoses and pipelines to tell their product at multiproduct facilities.

The person in charge should use his judgement in handling an emergency.

C. Oil Handling Facility Procedures and Equipment Status

In order to evaluate industry compliance to the Coast Guard regulations, on-site visitation to various oil handling facilities was conducted.

Cursory examination indicated over sixty facilities in the Puget Sound area

which had a storing capacity of more than 10,000 barrels. Because of time constraint, the following eleven sites were chosen, their selection being based on randomness and convenience:

- I. ARCO, Pier 11, Harbor Island
- II. ARCO Refinery, Cherry Point
- III. Manchester Navy Installation
- IV. Mobil Oil Refinery, Ferndale
- V. Phillips Petroleum, Pier 33, Seattle
- VI. Shell Oil Company, Pier 19, Harbor Island
- VII. Shell Oil Refinery, Anacortes
- VIII. Standard Oil of California, Pier 32, Seattle
- IX. Standard Oil of California, Point Wells, Richmond Beach
- X. Union Oil Dock, Pier 71, Elliott Bay
- XI. Union Oil Company Pier, Edmonds

To initiate the visits, a letter of introduction, shown in Figure 1-1, was forwarded to the facilities. Figure 1-2 presents a summary of the questionnaire used on the visits. It delineates the various aspects of the facility operations on which information was sought.

The remainder of this section presents responses of the eleven visits to the questionnaire. The numbered responses for each visit correspond to the topic numbers on the questionnaire.

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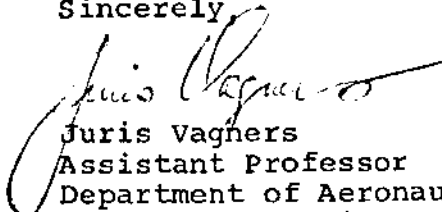
May 21, 1971

To Whom It May Concern:

The Ocean Engineering Systems Design class at the University of Washington is conducting a study of the methods and procedures to prevent oil spills on Puget Sound. As part of this study, it is necessary to visit various oil handling docks in the Puget Sound area and interview supervisory personnel to obtain information as to methods and procedures currently used to prevent oil spills and any recommendations or suggestions. The students involved in this series of interviews are:

Jacques Durringer
Charles Gundersen

Sincerely



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JV:nh

Figure 1-1
Letter of Introduction, On Site Visitation of Oil Handling Facilities

QUESTIONNAIRE

NAME OF DOCK:

1. CONSTRUCTION OF DOCK:
2. LIGHTING OF DOCK AND WATER:
3. PIPING SYSTEM AND STORAGE:
4. HOW MANY VALVES FROM DOCK TO TANK:
5. HOW MANY VALVES OF THE ABOVE ARE MANUAL, MOTORIZED, REMOTE CONTROL OPERATED AND HOW ARE THEY CONTROLLED:
6. HOW IS WASTE OIL TREATED:
 - a. On Grounds:
 - b. On Dock:
 - c. Ballast:
 - d. What Kind of Processing:
7. WHAT IS THE FUELING SYSTEM:
 - b. Check System:
8. FUEL MONITORING:
9. PIER SECURITY:
10. CLEANUP EQUIPMENT AND SYSTEMS:
11. COMMENTS:

Figure 1-2

FACILITY VISITATION QUESTIONNAIRE

QUESTIONNAIRE RESPONSES

I. ARCO, Pier 11 -- Harbor Island

1. Timber pile with two approaches, 460' of berthing space.
2. Floodlights for the dock, floodlights under dock at the ends of the pier.
3. 2-10", 1-6", 4-8" and 3-4" going to 23 steel tanks with a total capacity of 617,800 barrels, have 100% retaining walls, but no retaining wall at the truck loading area, which is about 20' from water.
4. Five sets of valves: 1) header, 2) pier, 3) waterline fence, 4) pumping pit, and 5) tank. There are no check valves.
5. Dock valve is manually controlled. No motorized or remote control valves. There are some relief valves in the pumping pit. Pumps are controlled from dock, pumping pit and switchboard.
6. a. storm drains in the oil handling areas go to separator, others drain into sound;
b. drip pans and sawdust;
c. no provisions for oily water ballast;
d. oil from drains and tank pit goes to separator.
Oil is then stored in tanks and shipped out.
7. One man on dock controls the valve and pumps. There is no communications system.
There is no check system.
8. Fuel monitoring is done from barge and when full, the message is "yelled" to the man on shore.
9. Waterline fence, but is left open most of the time.
10. None at the moment (no need to have detailed current analysis).
11. Plan to buy a 14' Alumacraft work boat for cleanup purposes, plus 400-500' of Clearwater Inc. Boom and plan to install a drip trough on the dock. Also a log boom will be installed around the whole dock area.

II. ARCO Refinery -- Cherry Point (under construction)

1. Timber pile with concrete decking, built-in trough on dock for spilled oil leads into collecting tank. Berth for supertankers.
2. Information not available.
3. Information not available.
4. Approximately three to four sets of valves.
5. Valves on dock are solid "chiksans" (no hoses) and are completely motorized. All valves are motorized and can be remotely operated at a central computer.
6.
 - a. All water on the grounds is treated before discharge goes into separating ponds.
 - b. Sump-trough system.
 - c. Goes through their separator facilities.
 - d. Have a multiple treating system of ponds, gravity separators, biodegradation, etc.
7. One man on dock handling the "chiksans". The valves can be remotely controlled at dock or a computer room, more men on refinery grounds or dock as needed.
 - b. Information not available.
8. Fuel monitoring is done by flow meters and is computer operated.
9. Information not available.
10. Two purse seine workboats, 520' of Uniroyal boom, straw or sorbents will be available. A study of current conditions should be made to determine where the oil will go.
11. This installation is not finished. Some information is vague and other was not available at the present time.
Adverse weather conditions represent a hazard.

III. Manchester Navy Installation

1. Timber pile, 1000 ft. of berthing.
2. Lighting of dock and lighting of water area around the ship.
3. There are 2-18", 1-10", 1-6", 1-14", 3-8" pipelines. All tanks are underground and there is complete wall retainment along shoreline.
4. Large number of valves along dock to tank.
5. All valves are manually operated with men standing by at three valves during fueling. The oil is gravity fed.
6.
 - a. Goes to separator system and stored in tanks.
 - b. Drip pans.
 - c. Retaining tank.
 - d. Gravity separator.
7. Man on dock controls valve and other men are in charge of other valves on dock and shoreside.
 - b. There is a checkoff list for dock and instructions.
8. Fuel is monitored at the ship and at the pump house.
9. Complete Navy security.
10. Oily sorbent.
11. Comprehensive new cleanup system which includes boom installation under dock, 1000 ft. of Uniroyal boom, a navy skimmer, two work boats, currents study and new retaining walls. Also a waste oil incinerator system is being built.

IV. Mobil Oil Refinery -- Ferndale

1. Timber pile, asphalt surfaced. Capability for 800,000 lbs. tankers. Reconstructed due to weather damage.
2. Dock is lighted and some lights shine on water.
3. There are 3-20", 4-16", 1-10" and 1-6" pipeline, to 40 tanks (2,370,000 lbs. capability). Gravity fed. 100% retaining walls on tanks.
4. There are three valves: 1) header, 2) at the shoreline, and 3) at tank (left open all the time).
5. Two sets of manual valves and one remote operated. The valves at the shoreline can be shut off from the dock by a switch.
6.
 - a. No provisions.
 - b. Drip pans.
 - c. To holding tank, then processed.
 - d. Gravity separators, API separator, bio-treatment.
7. One man on dock and another on the shoreline. Communication by intercompany phone.
 - b. There is no check-off sheet or system.
8. From the tank, then communicated by telephone to dock. The oil is gravity fed, no pumps are used.
9. Security is adequate. Fences around installation.
10. Some hay. Some boom (not adequate for use on oil spills).
11. Currents are very strong. A study should be made of the currents and tides in the area.

V. Phillips Petroleum, Pier 33 -- Seattle

1. Dock is steel, timber decked. There is 650' of berthing space.
2. Lighted, but no lights shining on water.
3. There are 6-10" and 5-6" pipes. The tanks have 100% retaining wall.
4. There are three sets of valves between tank and dock, check and relief valves are at the pump.
5. All valves are manual. Oil is either gravity fed or pumped. One man shuts off the dock header valves.
6.
 - a. Storm drains in loading rack go to separator.
 - b. Drip pans.
 - c. No facilities.
 - d. Six gravity separators, but some of them not in use.
7. One person on dock and the other person where needed. There is a public address system around the plant.
 - b. There is no checkoff list.
8. Barge gauging and tank gauging.
9. No waterline fence. Outside fence locked at 12 p.m., opened at 6 a.m.
10. None - call M.O.P.S.²
11. Have a large unused separator system that can be used.

VI. Shell Oil Company, Pier 19 -- Harbor Island

1. Timber pile dock. 290' pier used for fueling Washington State Ferries. 340' berth for barges and tankers.
2. Well lighted, some lights can illuminate the water.
3. There are 2-2", 7-10", 2-8", and 5-6" pipes. Tanks are away from water line, pipelines run under roads and railroad tracks. Dike system holds 100%.
4. There are five sets of valves - 1) header, 2) warehouse (beginning of pier), 3) at manifold, 4) at dike wall, and 5) at tank there are relief valves, but no check valves.
5. Header valves are manually controlled. At manifold - motor operated valves, these are controlled from the fillstand. All others are manually controlled.
6.
 - a. Rain water on grounds flows into the bay. Oil spilled near fillstands goes to separator.
 - b. Drip pans for oil spilled from valves.
 - c. No facilities.
 - d. Gravity separators and the waste oil is burned in boilers.
7. One man on dock, one man on a line watch, and one man in the lab. Men are trained one year before working alone.

No check list. There are instruction sheets for men.
8. Fuel is monitored three ways: 1) flow meter on dock, 2) tank gauge, and 3) barge gauge.
9. There is no fence around pier area, facility fenced but not locked.
10. 300 ft. of boom 18" skirt, 17' Boston Whaler. Have the most comprehensive oil spill contingency plan of all places visited.
11. Have detailed instruction sheets for the three men in charge of fueling operation.

VII. Shell Oil Refinery -- Anacortes

1. Timber pile, 65' wide. Have adequate berth space for any size vessel.
2. Lighted, no direct lights shine on water but there are lights under the dock.
3. There are 1-16" crude, 1-16" and 5-12" pipelines to 54 tanks (3,390,000-barrel capacity). There is 100% dike system, tank area is removed from the water.
4. There are three important sets plus many others.
5. There are two motorized valves remotely controlled from dock or control house, with a fast shutoff system. The tank is manually closed except for fueling.
6.
 - a. Storm drainage goes to a settling pond.
 - b. Drip pans.
 - c. Goes into separator.
 - d. Gravity separators, and reprocessing of waste oils.
7. There is one man per ship on dock and another at the tank. The man on dock can shutoff the pumping and valves by push-button.
 - b. There is no checkoff list.
8. Fuel is monitored at control house continually while fueling.
9. Grounds are adequately fenced, only way in is by boat.
10. Two boats 14' and 16'. Hay is available. They do have a knowledge of current conditions in the area.
11. Hoses are X-rayed for inspection purposes.

VIII Standard Oil of California, Pier 32 -- Seattle

1. Timber pile, timber decked, 433 ft. of berthing space.
2. There is lighting on dock but no lighting of the water.
3. There are 3-10", 5-6", 5-8", and 3-4" pipelines. The lines are kept full. Tank dike wall contains 100% of the oil.
4. There are three sets of valves: 1) header valves, 2) block valves at dike, and 3) tank valves. There are no dock valves.
5. All valves are manual and are operated by one man.
6.
 - a. Storm drains in oil handling facilities go to the separator.
 - b. Drip pans on dock.
 - c. No facilities.
 - d. Gravity separators.
7.
 - a. Usually one man handles the fueling operation. He also does the fuel gauging. Fuel transfer is done by pumping.
No checkoff list or personnel instruction list.
8. Fuel is monitored by person on the dock, through barge gauge or tank gauge.
9. There are no gates in the vicinity of the dock area.
10. No cleanup equipment although relatively close to M.O.P.S.
11. No planned improvements.

IX. Standard Oil of California, Point Wells -- Richmond Beach

1. Timber pile, concrete paved. There 1,054' of usable berthing space.
2. Dock is lighted but there are no direct lights onto the water.
3. 14-12", 10-6" and 6-8" pipes going to tanks with storage of 1,926,000 bbls. Between tank and shoreline is a big manifold system and pumphouse. Some tanks do not have 100% retaining dikes.
4. There are many sets of valves, generally: 1) header, 2) shoreline, 3) manifold, 4) pump station and 5) tank.
5. Manual dock valves, one set of motor operated valves along pipes, the motor valves are air driven. These valves can be shut off at a control point. There are no check valves.
6.
 - a. Rain water goes to Sound.
 - b. Dock has drip trough and pans.
 - c. Ballast from ships goes to separator.
 - d. There are six small gravity separators and then to a holding tank.
7. One man per vessel at dock, one man at pumphouse, manifold and tank area. There is an interplant phone system.
There is no check system.
8. Tank gauging and barge gauging.
9. Outside fence locked at 4 p.m., no gate at approaches to dock.
10. 100 sacks of sorbent C on deck. No other cleanup equipment at the moment.
11. Planning to get 3000' of Bennett Boom³ and a 15'-20' work boat to deploy the boom. Tugs which the company owns can also be used for cleanup. Also completely modernizing their oil-water separator system, and storm drains will be hooked up to this.

X. Union Oil Dock, Pier 71 -- Elliott Bay

1. Timber pile L shaped pier. 450' berthing space for barges.
2. Dock is lighted. No lights shine on water.
3. There are 4-4", 4-6" and 4-8" pipes. Pipes are underground from tanks to dock. There is a 100% dike wall around tanks.
4. There are six sets of valves, two sets of valves on the pier, and four sets on the pipeline.
5. All valves are manual. Two valves on dock controlled by the man on dock and tank valves controlled by man at the tank farm.
6.
 - a. All oil spilled on grounds goes through separator system.
 - b. Drip pans.
 - c. No facilities.
 - d. There are three oil-water separator units, waste oil is burned at Edmonds facility.
7. There is one man in dock area and one man in tank farm. Communication via walkie-talkies. Dock valves can be shut off at two places; and tank can be shut off at the tank valve.

Yes, a checkoff list is used for dock and ship.
8. Fuel is monitored at the tank and at the barge.
9. Valves are locked. Dock is locked. Security check every hour.
10. None.
11. Men working with oil have safety meetings and training periods.

XI. Union Oil Company Pier, Edmonds

1. Timber pile, very old pier (1920). 276' of berthing space, 170' for barges.
2. Dock is lighted, but there are no lights shining on the water.
3. There are 3-12", 3-10", 1-8", 4-6" pipes from docks to 20 tanks (750,000 barrel capacity). The dike has 100% capacity. There are check valves on tanker risers.
4. There are four sets of valves: 1) at riser, 2) near pier end, 3) at bridge (bottom of the hill), and 4) at the tank there are check and relief valves installed.
5. All valves are manually operated. They are all closed when not in use and dock valves are locked with chain and lock.
6.
 - a. Rain water goes to Sound. Oil from oil handling areas into separator.
 - b. Drip pans.
 - c. Goes to separator.
 - d. Gravity separator. The waste oil is burned as fuel for their refinery.
7. One person on the dock is in charge of two valves and another is in charge of two more valves on shore. There is an inter-phone communications system, and horn signal.

Yes, there is an anti-pollution check list.
8. Fuel monitoring is done from tank gauge and barge gauge.
9. Dock is well locked and so are grounds.
10. No cleanup equipment.
11. Should have a detail study of the current conditions in the area.

D. Evaluation of Oil Handling Facilities

To perform a comparative analysis on effectiveness of the various facilities, with regard to prevention and control of oil spills, some of the more important factors in dock oil handling facilities were selected to make a rating of these facilities. The sole purpose of this rating is to indicate some basic weaknesses of an existing oil handling dock and how it compares to others in the Puget Sound area. For analytical purposes, the following characteristics were selected. When possible, quantification is shown; otherwise, the evaluation was subjective:

1. Having a sheltered harbor facility without strong current or wave action. This is important because inclement weather on currents can make fuel transfers more hazardous and therefore increases the probability of an oil spill.
2. Lights shining on the water surface during the night operations to detect possible oil spills.
3. Construction of dock -
 - a. ability to withstand damage without oil leakage;
 - b. troughs, or other permanent installations that minimize the amount of oil lost during fueling operations.
4. Adequate retaining walls around the facility to prevent oil spilled on the grounds from reaching the water.
5. Adequate security system -
 - a. locked fence system;
 - b. locked valves on dock areas;
 - c. guard system.
6. Adequate number of valves along pipelines.
7. Adequate number of personnel involved during fueling.
8. Adequate monitoring of quantities being transferred.
9. A fast, shutoff system for the valves in case of emergency.
10. An anti-pollution checkoff list.
11. Type of communication system in the plant.
12. Oil spill cleanup equipment and system.

The rating system was subjective, but based on an adequate - not adequate evaluation of the above twelve characteristics. Table 1-1 is a summary of the findings. The system covers only some of the more

important aspects of prevention and control, and is not meant to be all-inclusive. The facilities are listed in order of fewest weaknesses, beginning with the best. Also shown are the number of inadequacies per facility.

TABLE 1-1. SUMMARY OF SURVEY (BY FACILITY)

<u>Facility</u>	<u>Inadequacies</u>
1. Arco Refinery	1
2. Manchester	3
3. Standard - Pt. Wells	4
4. Shell Refinery	4
5. Shell, Harbor Island	5
6. Union, Pier 71	4
7. Mobil Oil Refinery	5
8. Union, Edmonds	5
9. Arco, Harbor Island	8
10. Phillips, Pier 33	7
11. Standard, Pier 32	9

One other interesting comparison is the frequency of occurrence for inadequacies of each of the parameters. These are summarized below in Table 1-2. This listing is in the order of the characteristics described above.

TABLE 1-2: SUMMARY OF SURVEY (BY CHARACTERISTIC)

<u>Inadequacy</u>	<u>No. of Occurrences (11 maximum)</u>
Unsheltered harbor	6
No lighting on water surface adjacent to dock	6
Inadequate dock construction	9
Inadequate retaining walls	2
Inadequate security system	5
Shortage of valves along pipeline	4
Insufficient personnel for fueling	2
Inadequate monitoring of quantity of transferred fuel	2
Inadequate emergency shutoff system	6
No anti-pollution checkoff list	5
Inadequate inplant communication system	3
Insufficient oil spill cleanup system	5

The following is a detailed evaluation of each facility, noting pertinent comments to each of the designated characteristics, and the adequacy rating of each of these.

ARCO REFINERY, CHERRY POINT (under construction)

<u>Characteristic</u>	<u>Comment</u>	<u>Adequacy</u>
1	Unsheltered harbor	No
2	Not yet installed	**
3	Concrete pier with built-in troughs	Yes
4	Retaining walls adequate, no spill into water	Yes
5	Fence system, motorized "chiksans" are more tamper-proof than conventional valves. There is a guard system.	
6	At least 3 valves, computer operated	Good
7	Adequate number of men	Fair
8	Computer operated fuel flow	Good
9	Computer operated valve shutoff system also at dock	Yes
10	Not available yet	**
11	Intercom system	Yes
12	Cleanup system for current conditions	Fair*
TOTAL NUMBER INADEQUATE		One

* Should have larger and better suited booms and equipment due to current and weather conditions. Also a study of the current conditions should be made.

** Will be incorporated at a later date, since dock is not in operation.

MANCHESTER NAVY INSTALLATION

<u>Characteristic</u>	<u>Comment</u>	<u>Adequacy</u>
1	Partially sheltered	No
2	Light system on dock and into water	Yes
3	Construction is barely adequate and no trough system installed	No
4	Complete wall system and additional walls under construction. Tanks are underground.	Yes
5	Navy Security System	Yes
6	Six or more valves in pipeline	Good
7	Three or 4 men during fueling	Good
8	Fuel gauged at barge and tank	Fair
9	Enough men to shut off valves adequately in emergency situations	Yes
10	Checkoff list plus instruction sheets	Yes
11	No communication system on dock	No
12	Cleanup system (will be installed)	Good
	TOTAL NUMBER INADEQUATE	THREE

STANDARD OIL OF CALIFORNIA-PT. WELLS, RICHMOND BEACH

<u>Characteristic</u>	<u>Comment</u>	<u>Adequacy</u>
1	Unsheltered harbor	No
2	Lighted but no direct lights to water	No
3	Newly rebuilt dock, concrete, paved with troughs	Yes
4	Retaining walls adequate, some new walls being built for tanks	Yes
5	No locked gate at pier, valves not locked	No
6	At least five in pipeline	Good
7	Two men during fueling	Fair
8	Tank gauge and barge gauge	Fair
9	Fast shutoff system operated from dock or station	Yes
10	No checkoff list	No
11	Interplant communication system	Yes
12	New budget will include new booms, boats, etc. and good prevention program	Good
	TOTAL NUMBER INADEQUATE	FOUR

SHELL COMPANY REFINERY, ANACORTES

<u>Characteristic</u>	<u>Comment</u>	<u>Adequacy</u>
1	Partially sheltered facility	No
2	Lights on dock and some under dock barely adequate	No
3	Dock construction adequate but no provisions for spills on dock, nor troughs	No
4	Walls are adequate, facility is moved from shoreline	Yes
5	Security system is good	Yes
6	At least four sets of valves	Good
7	At least two men during fueling operations	Fair
8	Constant fuel monitoring and barge gauging	Good
9	Good, fast, shutoff system; operable from three different stations	Yes
10	No checklist, there is an instruction sheet	
11	Intercom system	Yes
12	Cleanup equipment available, no adequate boom	Fair
	TOTAL NUMBER INADEQUATE	FOUR

SHELL OIL COMPANY, PIER 19, HARBOR ISLAND

<u>Characteristic</u>	<u>Comment</u>	<u>Adequacy</u>
1	Sheltered harbor facility	Yes
2	New light system, but marginally lights up water surface	Yes
3	Dock construction adequate, but no provisions for spills on dock, no troughs	No
4	Adequate retaining walls on tanks, but spill near waterline might go into water	No
5	Valves are not locked, no fence around pier area	No
6	There are five sets of valves on the pipelines	Good
7	Three men involved during fueling	Good
8	Three ways to monitor fuel	Good
9	No fast shutoff system	No
10	No checkoff list, there is a good instruction sheet	No
11	Communication system between dock and tanks	Yes
12	One of the best cleanup systems and equipment of all facilities visited	Very Good*
	TOTAL NUMBER INADEQUATE	FIVE

* Because of the good cleanup system this facility was rated higher than others with a smaller number of deficiencies.

MOBIL OIL CO. REFINERY, FERNDALE

<u>Characteristic</u>	<u>Comment</u>	<u>Adequacy</u>
1	Extremely unsheltered harbor	No
2	There are adequate lights shining on dock and into water	Yes
3	Dock is not strong enough to withstand weather conditions without damage, there are no troughs	No
4	There are adequate retaining walls on the refinery tanks	Yes
5	No locked valves, no fence around dock area	No
6	Three sets of valves	Fair-Bad
7	Two men during fueling operations	Fair
8	Barge and tank fuel monitoring	Fair
9	There is a fast shutoff system	Yes
10	No checkoff list	No
11	There is a telephone communication system	Yes
12	Some cleanup equipment	Bad*
	TOTAL NUMBER INADEQUATE	FIVE

* Not enough to meet the current and weather conditions in the area.

UNION OIL COMPANY PIER, EDMONDS

<u>Characteristic</u>	<u>Comment</u>	<u>Adequacy</u>
1	Unsheltered facility	No
2	No lights shining on water surface	No
3	Dock is old and is not adequate, no troughs on dock	No
4	Retaining walls are adequate	Yes
5	Valves are not locked, but fence system is good	Yes
6	Four sets of valves	Fair
7	Two men during fueling	Fair
8	Tank and barge gauging	Fair
9	No fast shutoff system	No
10	Checkoff list available	Yes
11	Interphone system	Yes
12	No cleanup system	No
	TOTAL NUMBER INADEQUATE	FIVE

ARCO, PIER 11, HARBOR ISLAND

<u>Characteristic</u>	<u>Comment</u>	<u>Adequacy</u>
1	Sheltered harbor	Yes
2	There are adequate lights under dock that shine on water	Yes
3	Troughs and a permanent boom are going to be installed	Yes
4	Adequate retaining walls around tanks, but oil spilled on grounds will spill into the harbor	No
5	Valves are not locked, fence is left open	No
6	Five sets of valves*	Bad
7	One man during fueling operations	Bad
8	Fuel is monitored at barge only	Bad
9	No fast shutoff system	No
10	No checkoff list	No
11	No communication system	No
12	Cleanup system adequate	**Fair-Good
	TOTAL NUMBER INADEQUATE	EIGHT

* No relief valves, therefore valves are left partially open.

** Because of good cleanup system is rated ahead of Phillips Company dock.

PHILLIPS PETROLEUM COMPANY, PIER 33, SEATTLE

<u>Characteristic</u>	<u>Comment</u>	<u>Adequacy</u>
1	Sheltered harbor	Yes
2	No lights shining on water	No
3	Construction of dock adequate. There is no trough system	No
4	There are adequate retaining walls	Yes
5	The valves are locked, but no waterline fence	No
6	There are three sets of valves	Bad
7	Two men during fueling operations	Fair
8	Barge and tank gauging	Fair
9	No fast shutoff system	No
10	No checkoff list	No
11	P.A. system in plant	Yes
12	No cleanup system	No
	TOTAL NUMBER INADEQUATE	SEVEN

STANDARD OIL OF CALIFORNIA, Pier 32, SEATTLE

<u>Characteristic</u>	<u>Comment</u>	<u>Adequacy</u>
1	Sheltered harbor	Yes
2	No lights shining into the water	No
3	Dock construction adequate, but no troughs	No
4	There are adequate retaining walls	Yes
5	Valves not locked, gate not locked	No
6	Three sets of valves	Bad
7	One man during fueling operations	Bad
8	Barge and tank gauging	Fair
9	No fast shutoff system	No
10	No checkoff list	No
11	No communication system	No
12	No cleanup system	No
	TOTAL NUMBER INADEQUATE	NINE

E. Endnotes for Appendix 1

1. Code of Federal Regulations, Title 33. Navigation and Navigable Waters, 1 to 199, revised September, 1970. Part 126.
2. Marine Oil Pickup Service, a joint venture by Puget Sound Tug and Barge Company and Pacific Marine Services.
3. Manufactured by Bennett Pollution Controls, Ltd., Vancouver, B.C. See Appendix 5 for discussion of booms.

APPENDIX 2

STATE LAWS FOR OIL SPILLS PREVENTION AND CONTROL

A. Introduction

The Washington statute is of considerable importance in the regulation of oil spills. The basic statutory pattern is one of strict liability without regard to fault for damages arising from oil spills plus penalties for wrongful discharges of oil. The following is a summary of certain provisions of the statute followed by a brief commentary. This paper is limited to Washington jurisdiction. No consideration of conflicts of law, either state, federal, or foreign will be undertaken. Also considered herein are certain suggestions for reform of the Washington statute, especially by comparison to Maine statutes.

B. Summary of Washington Statute¹

1. Discharges of Oil Unlawful

RCW 90.48.320 made it unlawful to allow entry of oil into state waters regardless of whether the persons having control over the oil were at fault except when the entry of oil:

- a. was authorized by the pollution control commission, or
- b. was after a failure of the commission to act on a permit request, or
- c. was caused by -
 - i) an act of war or sabotage, or
 - ii) the negligence of the state or federal government.

2. Obligation to Collect-Dispersants Control

RCW 90.48.325 makes it the duty of any person owning or having control over oil entering state waters in violation of 90.48.320 to immediately collect and remove same. When collection and removal are not feasible such persons must contain, treat, and disperse the oil. This section makes the decision to use chemicals or dispersants strictly a matter that is within the discretion of the director (Director, Department of Ecology). While the statute is unclear as to whether a polluter may utilize dispersants or

chemicals before being instructed by the director, it is clear that he does so at his own risk. Any increased damages caused by the use of chemicals only expands civil liability.

3. State May Clean Up Oil Spills.

Under RCW 90.48.330, the state may take affirmative action to investigate and clean up a spill subject to the limitation that such action will be undertaken only to protect public interest or property.

4. Civil Liability for Cleanup Expenses Incurred by the State.

RCW 90.48.335 makes any person who fails to immediately collect the oil in accordance with RCW 90.48.325 civilly liable to the state for all the expenses incurred by the state in the cleanup of such oil spills.

5. Strict Liability for Damages from Oil Spills.

RCW 90.48.336 makes any person owning or having control over oil which enters state water, "strictly liable, without regard to fault, for damages to persons or property, public or private caused by..." oil entering the waters of the state, in violation of 90.48.320. Section 336 goes on to relieve such persons of liability if such persons can prove that oil entered the waters of the state by causes set forth in RCW 90.48.320 (3).

6. Civil Liability of Third Parties.

RCW 90.48.338 gives the state a right of action for the necessary expenses in cleanup against third parties who caused an oil discharge. Also, persons liable for cleanup under 90.48.325 and .350 are extended assurance that they retain a right to recover expenses from persons actually causing discharges.

7. Expenses Due the State.

RCW 90.48.340 provides a procedure for investigation, recovery of expenses, and review of findings made by the director. The director has five years within which he must notify responsible persons with an appropriate order to pay the state after completion of the complained of activity. The order specifying the necessary expenses owed to the state must be contested within thirty days. The commission

may reduce or modify orders after further review. The attorney general, upon request of the director, will after thirty days of the first order specifying the necessary expenses owed the state or will after fifteen days following the final order (if modified), bring suit in behalf of the state to recover the amount of the final order. The section also includes investigatory expenses as a necessary expense due the state.

8. Permits.

RCW 90.48.343 requires that permits are to be given by the director prior to any discharge of oil into the water. Commercial discharges are in accordance with RCW 90.48.180. RCW 90.48.345 gives the commission rule-making powers to effectuate the policies of this act.

9. Penalties.

RCW 90.48.350 provides penalties for persons negligently or intentionally discharging oil, in addition to any other penalties provided by law. Penalties may be set up to \$20,000 for each violation. Every act of omission or commission which causes the violation is considered a separate violation under the act. The director of the commission has wide power to set the amount of penalties up to the \$20,000 limit for each violation. Persons have 15 days to contest penalty orders and the director has wide power to review such penalty orders; however, if payment is not made within thirty days of the final order, the attorney general, upon request of the director, will bring suit in the name of the state to recover such penalties.

10. Right of Entry.

RCW 90.48.355 provides the commission with the right of entry to search for and/or to investigate for possible violation subject to the limitation that trade secrets will not be divulged.

This right of entry will probably run afoul of the Supreme Court Decision in *See vs. Seattle* (387 U.S. 541(1967)), if search warrants are not issued prior to searches wherein consent is not

given by the party being inspected. Such warrants, however, would be issued by any court of competent jurisdiction on a proper showing of the reasons and purposes of such investigation. When there exists an apparent, visible, or demonstrable emergency, the necessity of warrant would, however, probably not inhere.

11. Notice of Spill Required

RCW 90.48.360 imposes upon the one owning or controlling oil a duty to give notice of any discharge of oil to the commission.

C. Reforms to Washington Statute as Suggested by Maine Oil Pollution Control Act

Maine has recently enacted laws which provide a significant development in the regulation of oil pollution. Maine's new laws will:²

- "1. Prohibit oil discharges into coastal waters or on their edges and into any waters which drain into them;
2. enable tankers, ships, refineries, terminals, and even oil spills and disaster-fighting to be regulated to a distance of 12 miles from shore;
3. empower the Environmental Improvement Commission to make emergency rules, good for 30 days, and extend the Governor's civil defense powers to imminent or fresh oil disasters;
4. Provide for damage claims against a new Maine Coastal Protection Fund of \$4 million and have arbitral hearings on these claims;
5. fund damage claims, or insurance against them by the state, commission and spill abatement expenses, and research projects up to \$100,000 each year approved by the legislature, out of a license fee of one-half cent on each barrel "transferred" at an oil terminal, and out of a \$4,000,000 bond issue;
6. punish oil polluters and scoff-laws by fines of \$100-\$5,000 per day of violation, and put the fines collected into the Maine Coastal Protection Fund;
7. require reimbursement for costs of abating pollution, give power to the Attorney General to be their ultimate collector, and limit discretionary waivers to cases of unforeseeable acts 'exclusively occasioned by the violence of nature without the interference of any human agency' and acts of government or of war;
8. empower the Environmental Improvement Commission to recommend control of air, water, and coastal flat pollution, as well

as 'other aspects of the natural environment,' to aim at preservation of their 'highest and best use;'

9. empower the Environmental Improvement Commission to forbid or condition any developer's commercial plan for any area over 20 acres or any parcel whose structures are to cover more than 60,000 square feet, or for any scheme whose waste disposal already requires a license, if necessary to prevent irreparable damage to the environment;
10. shift the burden of proof to the developer on the adequacy of his plans to fit in 'harmoniously,' so as to not adversely affect existing uses, scenery, resources, or property values, and to provide the finances and technical ability to control pollution commensurate with state standards;
11. force developers to notify the commission before construction and give the commission 14 days to approve the project or schedule a public hearing with at least ten days' newspaper notice;
12. prohibit dumping of waste from outside Maine 'in any structure or on any land within the state;'
13. add to the commission's powers the duty to take into account financial ability to control pollution according to state standards before allowing effluent discharges in general;
14. enable enforceable conservation restrictions to be placed on certain lands;
15. permit state water quality standards to preserve designated spawning beds in inland waters; and
16. specify criteria for loans to begin community plans for pollution abatement.

The anti-pollution plan also recommended that responsibilities now spread over 52 Maine agencies be combined into one agency called the Department of Natural Resources."

As noted in the above summary, Maine has taken a far more enlightened view of the need to assure that funding will be available for the control of oil pollution disaster.

Washington has presently defaulted to the discretion of oil companies the responsibility to assure that funding will be available to provide for oil pollution disasters. Thus, the citizens of Washington have been subjected to a scheme that cannot be extended beyond the oil companies' narrow self-interests. The notion that the oil companies will regulate their affairs in the public's best interest ignores the enormous problems already created by those very same companies.

The State of Washington must create, as the State of Maine has, an environmental defense fund. Any agreement between the oil companies to create a pool of resources for use after oil spills is inadequate. An oil industry fund could only be resorted to when the oil industry consented or when a fund member was liable. This gives the public no assurance that coverage will be extended to all oil spills. Based on past practice, it would seem foolish to rely on the enlightened view of the public interest not yet displayed by the industry. Indeed, the oil companies' self-interest is probably quite at odds with the public interest in the regulation of oil. It should be the policy of government to increase the cost of oil to encourage more efficient utilization of energy resources. Increasing the cost of oil would both reduce the present hazardous levels of oil consumption and encourage the development of efficient alternative sources of power. Any increased cost will create, however, what amounts to a monopoly profit. This profit should not create for the oil industry a fund which would expand its monopoly power. Any regulatory scheme providing for the public's welfare should not be controlled by the narrow self-interest of the oil industry, but should begin to provide the source of funds necessary to undo some of the great harm that has been created by society's addiction to an expanding dependency on oil resources.

The Maine statute for providing a fund should be a pattern for the State of Washington:

"§551. Maine Coastal Protection Fund

The Maine Coastal Protection Fund is established to be used by the commission as a nonlapsing, revolving fund for carrying out the purposes of this subchapter. The fund shall be limited to the sum of \$4,000,000. To this sum shall be credited all license fees, penalties, and other fees and charges related to this subchapter, and to this shall be charged any and all expenses of the commission related to this subchapter, including administrative expenses, costs of removal of discharges of pollutants, and third party damages covered by this subchapter.

Mones in the fund, not needed currently to meet the obligations of the commission in the exercise of its responsibilities under this subchapter, shall be deposited with the Treasurer of State to the credit of the fund, and may be invested in such manner as is provided for by statute. Interest received on such investment shall be credited to the Maine Coastal Protection Fund.

1. Research and development. The Legislature may allocate not more than \$100,000 per annum of the amount then currently in the fund to be devoted to research and development in the causes, effects and removal of pollution caused by oil, petroleum products and their by-products on the marine environment. Such allocations shall be made in accordance with the provisions of section 555.

2. Third party damages. Any person claiming to have suffered damages to real estate or personal property or loss of income directly or indirectly as a result of a discharge of oil, petroleum products or their by-products prohibited by section 543 may apply within 6 months after the occurrence of such discharge to the commission stating the amount of damage he claims to have suffered as a result of such discharge. The commission shall prescribe appropriate forms and details for such applications. The commission may, upon petition, and for good cause shown, waive the months limitation for filing damage claims.

A. If the claimant, the commission and the person causing the discharge can agree to the damage claim, the commission shall certify the amount of the claim and the name of the claimant to the Treasurer of State and the Treasurer of State shall pay the same from the Maine Coastal Petroleum Fund.

B. If the claimant, the commission and the person causing the discharge cannot agree as to the amount of the damage claim, the claim shall forthwith be transmitted for action to the Board of Arbitration as provided in this subchapter.

C. Third party damage claims shall be stated in their entirety in one application. Damages omitted from any claim at the time the award is made shall be deemed waived.

D. Damage claims arising under the provisions of this subchapter shall be recoverable only in the manner provided under this subchapter, it being the intent of the Legislature that the remedies provided in this subchapter are exclusive.

3. Board of Arbitration. The Board of Arbitration shall consist of 3 persons, one to be chosen by the person determined in the first instance by the commission to have caused the discharge, one to be chosen by the commission to represent the public interest and one person chosen by the first 2 appointed members to serve as a neutral arbitrator. The neutral arbitrator shall serve as chairman. If the 2 arbitrators fail to agree upon, select and name the neutral arbitrator within 10 days after their appointment then the commission shall request the American Arbitration Association to utilize its procedures for the selection of the neutral arbitrator.

A. No member of the commission shall serve as an arbitrator.

B. Arbitrators shall be named by their principals within 10 days after the commission receives notice of claims arising from a discharge prohibited by section 543. If either party shall fail

to select its arbitrator within the said 10 days the other party shall request the American Arbitration Association to utilize its procedures for the selection of such arbitrator and the 2 arbitrators shall proceed to select the neutral arbitrator as provided in this section.

C. One Board of Arbitrators shall be established for and hear and determine all claims arising from or related to a common single discharge.

D. Hearings before Boards of Arbitrators shall be informal, and the rules of evidence prevailing in judicial proceedings shall not be binding. The board shall have the power to administer oaths and to require by subpoena the attendance and testimony of witnesses, the production of books, records and other evidence relative or pertinent to the issues represented to them for determination.

E. Determinations made by a majority of the board shall be final, and such determinations may be subject to review by a Justice of the Superior Court but only as to matters relating to abuse of discretion by the board.

F. Representation on the Board of Arbitration shall not be deemed an admission of liability for the discharge.

4. Funding.

A. Annual license fees shall be determined on the basis of 1/2 cent per barrel of oil, petroleum products or their by-products transferred by the applicant during the licensing period and shall be paid monthly on the basis of records certified to the commission. License fees shall be paid to the commission and upon receipt by it credited to the Maine Coastal Protection Fund.

B. Whenever the balance in the fund has reached the limit provided under this subchapter license fees shall be proportionately reduced to cover only administrative expenses and sums allocated to research and development.

5. Disbursements from fund. Moneys in the Maine Coastal Protection Fund shall be disbursed for the following purposes and no others:

A. Administrative expenses, personnel expenses and equipment costs of the commission related to the enforcement of this subchapter.

B. All costs involved in the abatement of pollution related to the discharge of oil, petroleum products and their by-products covered by this subchapter.

C. Sums allocated to research and development in accordance with this section.

D. Payment of 3rd party claims awarded in accordance with this section.

E. Payment of costs of arbitration and arbitrators.

F. Payment of costs of insurance by the State to extend or implement the benefits of the fund.

6. Reimbursements to Maine Coastal Protection Fund. The commission shall recover to the use of the fund all sums expended therefrom, including overdrafts, for the following purposes: provided that

recoveries resulting from damage due to an oil pollution disaster declared by the Governor pursuant to section 547 shall be apportioned between the Maine Coastal Protection Fund and the General Fund so as to repay the full costs to the General Fund of any bonds issued as a result of such disaster.

A. Costs incurred by the fund in the abatement of a prohibited discharge including 3rd party claims when the person permitting the same shall have failed to promptly report the discharge as required by rules and regulations of the commission, and such costs where the person permitting the prohibited discharge is not a licensee.

B. In the case of a licensee promptly reporting a discharge as required by this article, costs involved in the abatement of any single prohibited discharge including 3rd party claims in excess of \$15,000, over and above payments received under any federal program.

C. Requests for reimbursement to the fund for the above costs if not paid within 30 days of demand shall be turned over to the Attorney General for collection.

7. Waiver of reimbursement. Upon petition of the person determined to be liable for reimbursement to the fund for abatement costs under subsection 6, the commission may, after hearing, waive the right to reimbursement to the fund if the commission finds that the occurrence was the result of any of the following:

A. An act of war.

B. An act of government, either State, Federal or municipal.

C. An act of God, which shall mean an unforeseeable act exclusively occasioned by the violence of nature without the interference of any human agency.

Upon such finding by the commission immediate credit therefore shall be entered for the party involved. The findings of the commission shall be conclusive as it is the legislative intent that waiver provided in this subsection is a privilege conferred not a right granted."

Also to be noted is that the Maine legislature has given the governor emergency power to deal with eminent or existent oil disasters. Such power would be too late if granted after the fact.

The Washington legislature recently gave special emergency powers to the governor in riot situations (RCW 43.06.210 and .220). It would seem appropriate for the same concern for public welfare to manifest itself when the potential harm in an oil disaster could mean the destruction of Puget Sound or perhaps some part of the Columbia River.

D. Further Comments on the Washington Statute

1. Uncertain Extent of Strict Liability

In addition to the problems created by the omission of funding, discussed in section II above, it should be noted that RCW 90.48.336 creates strict liability for damages if oil enters state waters in violation of section 320. But section 336 goes on to specifically relieve civil liability only when the immunities of subparagraph (3) of section 320 can be proved. One might conclude that omission of the immunities of subparagraphs (1) and (2) was intended and that the legislature intended to retain strict civil liability of polluters even when such polluters had obtained prior authorization under subparagraphs (1) and (2). The rationale for such a construction would be threefold:

- a. Polluters would not be encouraged to exert wrongful influence on state officials to immunize themselves from the expected consequence of their enterprise.
- b. When an emergency dictates authorization to discharge oil the public should not be robbed of its right to indemnification caused by an industrial emergency.
- c. When authorizations are given, following proof of their environmental safety, the burden of monitoring their continued safety should be retained with the polluter.

Whether or not the above construction is adopted by the courts, however, the immunities created by the statute are inconsistent with and unnecessary to the statutory scheme of strict liability. The statute has created what amounts to an insurers' duty which imposes on the oil industry the obligation to indemnify the public for the expected hazards of their enterprise. The narrow immunities created by section 320 and 336 do not, however, preclude liability for the numerous other causes of oil spills which also do not involve negligence or fault. Some fund must be created to indemnify all the other faultless discharges, and the special immunities in all likelihood do not significantly diminish the total insurance cost to the industry.

If the benefits gained by the exceptions do not balance the problems created by the confusion, uncertainty, and litigation that results from the immunities, then the immunities should be removed.

The problem could easily be resolved by:

- a. omitting the immunities created by section 336, and
- b. establishing a publicly regulated fund that insures uniform distribution of economic risk, protects the small businessman, and assures continuing protection of the public interest (see discussion in section II above).

An alternate construction would absolve polluters from strict liability if any governmental approval was obtained and would make no distinction between subparagraph (3) immunities and subparagraph (2) immunities. This construction, however, seems to be at odds with the Environmental Policy Act of 1971.

Further examples of the uncertainty bred by section 336 are:

- a. The definition of sabotage: RCW 9.05.060 describes criminal sabotage as a felony:
9.05.060 Sabotage defined—Penalty. Whoever, with intent that his act shall, or with reason to believe that it may, injure, interfere with, or obstruct any agricultural, stockraising, lumbering, mining, quarrying, fishing, manufacturing, transportation, mercantile or building enterprise wherein persons are employed for wage, shall wilfully injure or destroy, or attempt or threaten to injure or destroy, any property whatsoever, or shall wilfully derange, or attempt or threaten to derange, any mechanism or appliance, shall be guilty of a felony.

In *State vs. McLennon* 116 Wash. 612 (1921) the Washington court indicated that sabotage was not expressly defined by 9.05.060. The meaning therefore is uncertain and will in all likelihood remain so.

- b. What constitutes governmental negligence is perhaps even more uncertain and will in the end be defined by the court as a factual question based on the merits of each case, or at the very least will be determined only after considerable litigation.

The courts also will be faced with question of whether the negligence immunized includes official action or discretionary decisions.

2. Collection and Containment after an Oil Spill.

Additionally it should be noted that the liability of members of the oil industry to take affirmative action under RCW 90.48.325 in order to contain existing oil spills is limited to persons owning or having control of the oil. However, there may be doubt as to the liability or statutory duty to collect oil in all cases because of the immunities created in RCW 98.48.320. The common law imposes no liability for inaction when there is no duty of care. Therefore, when there has been an oil spill an affirmative duty should be created in persons engaged in the oil business to take all reasonable action with the facilities at their disposal to collect and contain oil spills no matter who is at fault or liable. The risk of inaction by failure to collect or prevent the discharge of oil is clearly on the owner or persons having control over the oil; however, when liable persons are unable to control the oil spill the risks to the environment do not justify the retention of the archaic immunity created by the common law. This view would be consistent with the balance of the act which makes the owner/polluter strictly liable.

The problem created by the present statute is the lack of financial assurance that expenses incurred during collection will be indemnified. This problem must be met by further legislation. (See discussion in section B.)

E. Summary

The scope of RCW 90.48.320 through 90.48.360 is pervasive. The entry of oil into state waters is made unlawful per se. The scope of the legislative purpose under the act is amplified by the Environmental Policy Act of 1971. Inherent in the statutes is the purpose of preserving the environment. It must be concluded that the Director of the Department of Ecology will make rules under 90.48.343 and 350 to assure that all discharges of oil, from whatever source, will be subjected to scrutiny and proper regulation.

The oil spill problem, however, is merely peripheral compared to the problem of inherently wasteful levels of oil consumption which now seems near to creating an environmental disaster. Prudent conservation requires that the levels of oil consumption be reduced. The classic method of reducing consumption is through price increases. It is unlawful under the nation's anti-trust laws to allow an oligopoly to reap a monopoly profit. Therefore, it is essential that any fund created to indemnify oil spills be created by a tax. The alternative to a tax is the accumulation of a cash reserve by the industry from monopoly profits which will be used to insure itself. Such an industrial fund, however, will only extend the oligopolistic power of the oil industry and will give the same industry that has encouraged the dangerously wasteful levels of oil consumption in the past, the power of the purse strings over the most viable source of financing the repair of the damage done.

The single clear question remains for the legislature to face. The bold policies of the Environmental Policy Act of 1971 will not be implemented without funds. The oil industry will be expected to resist bitterly any attempt to restrain its present source of profit, but the Maine Statute could guide the adoption of a more forward looking approach to funding the regulation of industry.

Endnotes for Appendix 2

1. Washington Water Pollution Control Laws, (Chapter 90.48 RCW), Washington Department of Ecology.
2. Marine Law Review, #23, 1971.