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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

In the Matter of the LOUISIANA-PACIFIC CORPORATION 3701 Taylor Way Tacoma, Washington, Potentially Liable Person	)	NO. DE 90-S170 REMEDIAL ACTION ORDER

TO: Louisiana-Pacific Corporation
3701 Taylor way
Tacoma, Washington

I. JURISDICTION

This order is issued by the Washington State Department of Ecology (Ecology) pursuant to RCW 70.105D.050(1).

II. FINDINGS OF FACT

Based on currently known information, Ecology makes the following Findings of Fact:

1. Louisiana-Pacific Corporation presently owns an active log sort yard facility located at the head of Hylebos Waterway at 3701 Taylor Way, Tacoma, WA ("Louisiana-Pacific site" or "the site").

2. Slag, produced at the ASARCO facility in Tacoma, Washington was placed on the Louisiana-Pacific site as ballast.

3. The Department of Ecology ("Ecology") conducted a surface water investigation at the site between November 1983 and June 1984. The study found elevated levels of several metals in runoff from the Louisiana-Pacific site which discharged to the Hylebos Creek. Metals included arsenic, copper, lead, and zinc which were measured at levels up to

1,980, 410, 310, and 500 ug/1, respectively. Marine acute ambient water quality criteria for arsenic (trivalent), copper, lead, and zinc are 69, 3, 140, and 95 ug/1, respectively. The study concluded that the arsenic, copper, lead and zinc in runoff from the log sort yards studied were primarily from the slag present on the yards. (Norton, D. and A. Johnson, 1985. Completion Report On WQIS Project 1 for the Commencement Bay Nearshore/Tideflats Remedial Investigation; Assessment of Log Sort Yards as Sources of Metals to Commencement Bay Waterways. Washington Department of Ecology Memorandum, Olympia, Washington.)

4. An Ecology Order was issued on June 30, 1987, under Chapter 90.48 RCW which required a site investigation and was subsequently amended to also require a groundwater investigation and feasibility study. The site investigation was conducted by Louisiana-Pacific Corporation's contractor, CH2M Hill, in 1987. This study also found elevated levels of arsenic, copper, lead, and zinc in surface water runoff which was measured at concentrations up to 3,850, 1,030, 72, and 1,800 ug/1, respectively. Contaminant concentrations in on-site soil were also measured as part of this study. Concentrations of metals in soil were variable depending on sampling location. Arsenic, copper, lead, and zinc were measured at concentrations up to 508, 1,020, 505, and 1,160 mg/kg, respectively, in composite soil samples of the upper 5 feet. (CH2M Hill. 1987. Site Investigation Report. Bellevue, WA.)

5. The groundwater investigation was also conducted by Louisiana-Pacific Corporation's contractor, CH2M Hill, between 1988 and 1989. This investigation involved installation of three wells. Only two of the wells were sampled since one well was dry. Results from this groundwater investigation showed that concentrations of arsenic, copper, lead, and zinc in filtered groundwater samples were generally below marine chronic ambient water quality criteria. (CH2M Hill. 1988. Groundwater Investigation Report. Bellevue, WA.)

6. The Feasibility Study (FS), dated April 1989, was prepared by Louisiana-Pacific Corporation. Several cleanup alternatives for the site were examined in the FS. An Addendum to this FS, dated June 21, 1989, was prepared by Ecology. The Addendum contained Ecology's response to the FS; examined an additional cleanup alternative; and provided Ecology's preferred cleanup alternative and justification for this selection.

III. DETERMINATIONS

Based on the foregoing Findings of Fact, supporting information, and applicable statutes and regulations, Ecology makes the following Determinations:

1. The Louisiana-Pacific site is a "facility" as defined in RCW 70.105D.020(3).

2. Louisiana-Pacific Corporation is an "owner or operator" of the site as defined in RCW 70.105D.020(6).

3. Louisiana-Pacific Corporation owned the site at a time of disposal or release of hazardous substance(s) as defined in RCW 70.105D.020.

4. The arsenic, copper, lead, and zinc found in surface water at the Louisiana-Pacific site are "hazardous substances" as defined in RCW 70.105D.020(5).

5. The presence of arsenic, copper, lead, and zinc in the surface water at the facility constitutes a "release" as defined in RCW 70.105D.020(10).

6. On July 7, 1989, Ecology notified Louisiana-Pacific Corporation of its status as a "potentially liable person" under RCW 70.105D.040, after notice and opportunity for comment.

7. Pursuant to RCW 70.105D.030(1) and RCW 70.105D.050, Ecology may require Louisiana-Pacific Corporation to investigate or conduct remedial actions with respect to the release or threatened release of hazardous substances.

From the foregoing, and in the best interests of the public, Ecology has determined that Louisiana-Pacific Corporation must take the remedial actions set forth below.

IV. ORDER

Based on the above Findings of Fact and Determinations, it is hereby Ordered that Louisiana-Pacific Corporation take the following remedial actions on the site:

1. Evaluate the expected effectiveness of capping as a cleanup technology for the Louisiana-Pacific site. Surface and groundwater monitoring data from the PORTAC log sort yard in Tacoma, WA shall be used in this evaluation. A final report shall be submitted to Ecology by July 9, 1990.

2. Conduct subgrade testing at the Louisiana-Pacific site using the Falling Weight Deflectometer method (ASTM D 4602-86). Testing shall be performed on-site under winter and summer conditions. The field testing shall be completed by July 9, 1990.

3. Perform a structural analysis using collected data and prepare a preliminary cap design (including pavement sections) for both winter and summer construction conditions. Effects of moisture, various thicknesses of log sort yard debri and changes in native subgrade strength shall be reflected in the preliminary design. Methods for rigid pavement design shall be used in the analysis.

4. Prepare a report that provides the field testing data from task 2, results of the structural analysis conducted as required by task 3, and preliminary design (including pavement sections) for winter and summer construction conditions. A draft report shall be submitted to Ecology by July 23, 1990. A final report shall be submitted to Ecology within three weeks of receipt of Ecology's comments on the draft report.

V. TERMS AND CONDITIONS OF ORDER

1. Public Notices. RCW 70.105D.030(2)(a) requires that, at a minimum, this Order be subject to concurrent public notice. Ecology shall be responsible for providing such public notice and reserves the right to modify or withdraw any provisions of this Order should public comment disclose facts or considerations which indicate to Ecology that the Order is inadequate or improper in any respect.

2. Remedial Action/Oversight Costs. Louisiana-Pacific shall pay to Ecology those costs incurred by the Department for investigation, remedial actions and orders, including costs incurred by Ecology in the oversight or administration of this Order. Louisiana-Pacific shall pay the aforementioned costs to the State Toxics Control Account within ninety (90) days of receiving a summary statement of Ecology's expenses.

3. Designated Project Coordinators. Within ten (10) days of the effective date of this Order, Louisiana-Pacific shall designate a project coordinator and notify Ecology of the project coordinator's identity, mailing address and telephone number. The project coordinator shall be responsible for overseeing the implementation of this Order. To the maximum extent possible, communications between Ecology and Louisiana-Pacific and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Order, shall be directed through their respective project coordinators. Should Louisiana-Pacific change its project coordinator, written notification shall be given to Ecology, in writing, at least ten (10) calendar days prior to the change.

Ecology's project coordinator for the site is:

Megan White
Department of Ecology
MS: LU-11
Olympia, WA 98504

4. Performance. All response work performed pursuant to this Order shall be under the direction and supervision, as necessary, of a professional engineer or certified hydrogeologist, or equivalent, with experience and expertise in hazardous waste site investigation and cleanup. Louisiana-Pacific shall notify Ecology as to the identity of such engineer(s) or hydrogeologist(s), and of any contractors

and subcontractors to be used in carrying out the terms of this Order, in advance of their involvement at the site.

5. Access. Ecology or any Ecology authorized representative shall have the authority to enter and freely move about all property at the site at all reasonable times for the purposes of, inter alia: inspecting records, operation logs, and contracts related to the work being performed pursuant to this Order; reviewing the progress in carrying out the terms of this Order; conducting such tests or collecting samples as Ecology or the project coordinator may deem necessary; using a camera, sound recording, or other documentary type equipment to record work done pursuant to this Order; and verifying the data submitted to Ecology by Louisiana-Pacific. Ecology shall provide reasonable notice before entering property unless an emergency prevents notice. Ecology shall, upon request and if feasible, split any samples taken during an inspection unless Louisiana-Pacific fails to make available a representative for the purpose of splitting samples.

6. Retention of Records. Louisiana-Pacific shall preserve in a readily retrievable fashion, during the pendency of his Order and for ten (10) years from the date of completion of the work performed pursuant to this Order, all records, reports, documents, and underlying data in its possession relevant to this Order. Should any portion of the work performed hereunder be undertaken through contractors or agents of Louisiana-Pacific, a record retention requirement meeting the terms of this paragraph shall be included in Louisiana-Pacific's contract(s) with its contractors and/or agents.

7. Issue Resolution. Louisiana-Pacific may request that Ecology resolve factual or technical issues and questions which may arise during the implementation of this Order. Such request shall be in writing and directed to Ecology's designated project coordinator. Ecology resolution of such issues and/or questions shall be binding and final. Louisiana-Pacific is not relieved of any requirement of this Order during the pendency of an issue resolution request and remains responsible for timely compliance with the terms of the Order, unless otherwise provided by Ecology in writi-

8. Reservation of Rights. Ecology reserves all rights to amend or modify this Order, to issue additional orders or to take any other action(s) authorized by law.

9. Endangerment. In the event Ecology determines or concurs in a determination by another local, state, or federal agency that activities implementing or in compliance with this Order, or any other circumstances or activities, are creating or have the potential to create a danger to the health or welfare of the people on the site or in the surrounding area or to the environment, Ecology may order Louisiana-Pacific to stop further implementation of this Order for such period of time as Ecology directs.

10. Compliance with Other Applicable Laws. All actions carried out by Louisiana-Pacific pursuant to this Order shall be done in accordance with all applicable federal, state, and local requirements.

VI. SATISFACTION OF THIS ORDER

The provisions of this Order shall be deemed satisfied only upon Louisiana-Pacific's receipt of written notice from Ecology that Louisiana-Pacific has completed the remedial actions required by this Order, as amended or modified, and that all other provisions of this Order have been complied with.

VII. ENFORCEMENT

In the event Louisiana-Pacific refuses, without sufficient cause, to comply with any term of this Order, this Order may be enforced as follows:

1. The Attorney General may bring an action to enforce this Order in state or federal court.

2. In any such action, Louisiana-Pacific may be liable for up to three times the amount of any costs incurred by the State of Washington as a result of the refusal to comply.

3. Additionally, in any such action, Louisiana-Pacific may be liable for civil penalties of up to $25,000 per day for each day they refuse to comply.

4. Should Ecology conduct or provide for conducting the remedial action(s), the Attorney General will bring an action to recover all costs incurred by the state for such action.

5. This Order is not appealable to the Pollution Control Hearings Board and is reviewable only in accordance with RCW 70.105D.060.

Effective date of this Order: MAY 30, 1990

DATED this 30 day of May, 1990.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

By _____
Michael A. Wilson
Section Supervisor
Hazardous Waste Investigations
and Cleanup Program
Southwest Regional Office

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Exhibit A

FINAL CLEANUP ACTION PLAN
LOUISIANA-PACIFIC TACOMA LOG SORT YARD

October 1992

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1.0 INTRODUCTION

This cleanup action plan (CAP) is provided to describe the proposed remedial action for the Louisiana-Pacific (L-P) Tacoma log sort yard site (hereafter referred to as "the Site") located on the southeastern tip of the head of Hylebos Waterway turning basin in Tacoma, Washington (Figure 1). It has been prepared to satisfy the requirements of the Model Toxics Control Act (MTCA). This final CAP represents the incorporation of the information received during the public comment period on the draft CAP. Comments received and Ecology's response to those comments are included in the Responsiveness Summary (Attachment A). The purposes of this CAP are to: 1) describe the site, including a summary of its history and extent of contamination as presented in the Remedial Investigation (RI) and the Feasibility Study (FS); 2) identify the site specific cleanup standards; 3) summarize the remedial alternatives presented in the FS; and 4) identify and describe the selected alternative for site remediation.

Thorough descriptions of the Site and the remedial alternatives set forth are found in the RI (CH2M-Hill, 1987) and FS (L-P, 1989) for the Site. These studies were performed pursuant to Remedial Action Order No. DE 90-S170.

2.0 SITE DESCRIPTION

The L-P Tacoma log sort yard, located at 3701 Taylor Way, is an industrially zoned property on the Hylebos Waterway in Commencement Bay. Douglas fir and western hemlock logs are trucked into the sort yard, weighed, and unloaded into the scaling bays. After scaling, the logs are stacked on log decks designated for a specific grade and size of log. The area of the site used for log storage was expanded from about 3.5 acres in 1969 to the current area of approximately 18 acres.

The natural soils and dredged fill material at the Site are fine-grained silt and silty sand which are unstable under heavy loads, particularly during wet weather. Therefore, operation of the Site as a log sort yard required the use of ballast material to support the heavy machinery and log inventory on the site. In addition to other rock and gravel material, approximately 1800 tons of slag from the ASARCO smelter in Tacoma were used to ballast portions of the scaling bays and roadways in the late 1970s.

During normal log sort yard operations, wood waste (principally bark) is produced by loading, unloading and movement of logs within the yard. This wood accumulates on top of the natural soil, dredged fill material, and ballast. As a result of heavy vehicular traffic, some wood wastes have been mixed with surficial soils and slag ballast.

In the early 1980s, Ecology initiated preliminary investigations of water and sediment quality in Commencement Bay and its tributaries, including the Hylebos Waterway. Surface water samples collected by Ecology at the Site and other similar log sort yards in the Commencement Bay area were found to contain elevated concentrations of metals. Ecology believes that the metals are leached out of the slag by the acidic conditions attributed to biological decomposition products of the wood waste. The mechanical grinding of the slag by heavy vehicular traffic pulverized it and created smaller particles which increased the surface area of the slag available to leach metals.

Based on sampling conducted by Ecology, Ecology issued an order in June 1987 under Chapter 90.48 RCW which required L-P to conduct a site investigation. L-P complied with this order and submitted a site investigation report in October 1987. In March 1988, the order was amended to require a groundwater investigation. In July 1988, a second amendment to this order was issued which required completion of a FS and postponed the completion date associated with the groundwater investigation.

In September 1988, L-P submitted a draft FS to Ecology. A groundwater investigation report was submitted to Ecology in March 1989. A final FS was submitted in April 1989, followed by a supplement to the final FS submitted in May 1989.

Ecology issued an addendum to the final FS in June 1989. This addendum placed Ecology's remaining comments on the FS on record, and outlined Ecology's preferred remedial action.

2.1 Commencement Bay Superfund Site Considerations

In 1983, the Commencement Bay area was identified as a federal Superfund site. In the head of the Hylebos Waterway marine sediments were found to be contaminated with metals (Tetra Tech, 1985, 1988). The Record of Decision for the Commencement Bay Nearshore/Tideflats Superfund site (USEPA, 1989) identifies the L-P Site as a source of problem chemicals (arsenic, copper, zinc, lead) to the Head of Hylebos Waterway problem area.

3.0 SITE CHARACTERIZATION

In February 1985, Ecology issued a report entitled, "Assessment of Log Sort Yards as Metals Sources to Commencement Bay Waterways, November 1983 - June 1984" (Norton and Johnson, 1985). This report contained storm water runoff data for numerous log sort yards, including the L-P Site. In October 1987, L-P submitted a site investigation report which documented investigative activities conducted to define the extent and magnitude of soil and surface water contamination present on-site. These two investigations documented metals contamination of storm water runoff

from the site and soils at the site. The primary metals of concern are arsenic, copper, lead and zinc.

3.1 Surface Water Quality

Surface water occurs on-site as a result of precipitation. Storm water runoff discharges off-site to Hylebos Creek and Hylebos Waterway via overland flow and ditches. The maximum concentrations of arsenic, copper, lead, and zinc measured in storm water runoff as part of the studies discussed above were 3850, 1030, 310, and 1800 ug/l (ppb), respectively. Arsenic, copper, and zinc concentrations in storm water runoff samples were consistently measured at concentrations above marine acute and chronic ambient water quality criteria. Ecology measured lead in storm water runoff samples at levels above the marine acute criterion in 1983. Samples collected by Ecology in 1984 and by L-P in 1987 showed lower lead concentrations (below acute criterion), but were still well above the marine chronic criterion. Maximum concentrations of contaminants found in the above studies are listed in Table 1.

3.2 Ground Water Quality

Site hydrogeology is characterized by a shallow unconfined aquifer in the upper fill material lying above an upper aquitard consisting of massive silt approximately 10 feet thick (CH2M-Hill, 1989). The thickness and permeability of this stratum apparently prevent the migration of metals from the upper fill material into the underlying intermediate aquifer. The shallow ground water at the Site is not a current or potential future source of drinking water due to tidal influence at the site and the water's natural salinity.

As part of the ground water investigation (CH2M-Hill, 1989), three monitoring wells were proposed. However, during installation of the proposed upgradient well, ground water was not encountered within 60 feet of the ground surface. Therefore a well was not installed at this location. Ground water elevations in the other two wells varied between 8 and 11 feet below ground surface (bgs). The ranges in concentrations of total arsenic, copper, lead, and zinc from these wells and the Marine Chronic Water Quality Criteria are shown in Table 1. While total copper concentrations measured in the ground water exceed the marine chronic criterion, concentrations of the more mobile dissolved species were undetected (< 3 ppb). It is Ecology's opinion that the ground water has not been a pathway for migration of the contaminants resultant from the slag present on the Site.

Table 1. Measured Levels of Contaminants of Concern at the L-P Site and Marine Chronic Criteria

Contaminant	Surface Water Maximum Measured, ug/l	Ground Water Range Measured, ug/l	Marine Acute[(a)] ug/l	Marine Chronic[(a)] ug/l
total arsenic	3850	4 to 7	69	36
dissolved arsenic	--	4 to 7		
total copper	1030	11 to 33	2.9	2.9
dissolved copper	--	< 3		
total lead	310	< 1	220	8.5
dissolved lead	--	< 1		
total zinc	1800	37 to 91	95	86
dissolved zinc	--	11 to 31		

Key: (a) U.S. EPA Water Quality Criteria

3.3 Soil Quality

Soil samples were collected by L-P as part of the site investigation. Composite samples collected over approximately 0 to 5 feet bgs were analyzed for arsenic, copper, lead, and zinc. The maximum concentrations measured were 508, 1020, 505, and 1160 mg/kg for arsenic, copper, lead, and zinc, respectively. In addition, Extraction Procedure Toxicity (EP Tox) analyses were conducted on 22 soil samples from the site. Of these samples, one sample had an EP Tox arsenic concentration of over 5 mg/l (5.8 mg/l) defining it as a Dangerous Waste under Chapter 173-303 WAC. Of the remaining samples, one sample had a concentration of 1.1 mg/l arsenic, with the rest measured at below 1 mg/l, 12 of which contained non-detectable arsenic concentrations.

Additional soil sampling was conducted by L-P in 1989 to determine the horizontal and vertical extent of soils which exceed the 5 mg/l EP Tox level. Soil sampling occurred in the area of the maximum EP Tox level determined in the site investigation. Ecology collected split samples during this effort. Concentrations of extractable arsenic in composite samples from 0 to 3 feet bgs varied from <0.02 to 2.1 mg/l, and concentrations in composite samples from 3 to 6 feet bgs were all below the detection limit. No samples with EP Tox extractable arsenic concentrations above 5 mg/l were found. It is Ecology's opinion that the

EP Tox values measured in samples from the Site were sufficiently below the 5 mg/l Dangerous Waste Criterion so as not to require retesting by the new Toxicity Characteristic Leaching Procedure (TCLP) extraction procedure.

4.0 SUMMARY OF REMEDIAL ALTERNATIVES

The MTCA requires as a minimum that all cleanup actions protect human health and the environment, comply with cleanup standards, comply with applicable state and federal laws, and provide for compliance monitoring. In addition, all cleanup actions must consider implementation time, cost effectiveness, permanent solutions, and resource recovery technologies to the maximum extent practicable.

Many potential remediation alternatives were screened in the FS process to select the most effective, implementable, and cost-effective alternatives for more detailed evaluation. Six alternatives for remediating potential human health and environmental risks associated with slag deposits and contaminated soil were chosen for detailed evaluation in the FS. Alternative 7 was set forth by Ecology as the agency's preferred alternative for remediation following review of the final FS submitted by L-P.

The following is a brief description of each of the alternatives:

Alternative 1

Surface water runoff would be collected from the site by a system of drains and treated by sedimentation and saltwater coagulation/flocculation of metals. Existing log deck scraping wastes would be disposed of at a non-RCRA facility.

Alternative 2

Surface water runoff would be collected as in Alternative 1, and treated by conventional coagulation/flocculation. Existing log deck scraping wastes would be disposed of at a non-RCRA facility.

Alternative 3

The entire site would be capped with concrete to prevent contact of runoff with slag material and reduce metals leaching.

Alternative 4

Contaminated soils and slag (arsenic >25 mg/kg) would be excavated and disposed of on-site in impermeable, capped and lined cells.

Alternative 5

Contaminated soils and slag would be excavated and disposed of off-site at a RCRA facility.

Alternative 6

Slag and soils would be excavated and disposed of off-site at a non-RCRA facility.

Alternative 7

Soil and slag exhibiting leaching of arsenic over the Dangerous Waste limit specified in Chapter 173-303 WAC would be excavated and disposed of at a RCRA landfill. The entire site would be capped with roller-compacted concrete (RCC) in a manner to withstand current and future site uses. The cap would be constructed with engineered joint seals to prevent infiltration into the underlying soil/slag and an aggressive maintenance program would be required to ensure that the seam seals remained in proper functioning condition. Runoff would be collected and treated by sedimentation and oil/water separation. Best Management Practices (BMPs) would be required, including: regular sweeping of bark and wood waste debris; cleaning and maintenance of the oil/water separator and sedimentation basin; cleaning of sediment accumulation in sumps and in depressions adjacent to sumps; and, removal of oil from sumps. Land use restrictions would be placed on the property deed to prohibit disturbance of the cap and exposure to contaminated soil/slag under the cap.

5.0 CLEANUP STANDARDS

Cleanup standards were developed for this site based on Chapter 173-340 WAC. The use of Method A industrial soil cleanup standards per WAC 173-340-745 is justified for the following reasons: the L-P Site cleanup may be defined as a routine cleanup per WAC 173-340-130; the Site is located in a heavily industrial area, adjacent to other industrial properties; the Site is zoned for industrial use; and, deed restrictions will limit the use of the site to industrial activities in the future.
Soil cleanup levels have been determined for arsenic and lead. Copper and zinc were evaluated and determined not to be present on-site at concentrations which would present a human health (direct contact) hazard. Ground water cleanup standards were set for arsenic, copper, lead, and zinc. The cleanup standards for soil and ground water are presented in Table 2.

Table 2. Cleanup Standards

Site Cleanup Standards			
Contaminant	Ground Water (ug/l)[a],[f]	Soil (mg/kg)[d]	Surface Water[e]
Arsenic	36	200[c]	*
Copper	2.9 (10[b])		*
Lead	8.5 (10[b])	1000[c]	*
Zinc	86		*

Key:
(a) U.S. EPA Water Quality Criteria - Marine Chronic Criteria
(b) Practical Quantification Limit (PQL). Ecologyrecognizes that the PQL may be higher than the cleanupstandard for a given parameter. In these cases, thecleanup standard may be considered to be attained if the parameter is undetected at the PQL and the conditions outlined in WAC 173-340-707 are met.
(c) MTCA Method A Cleanup Levels - Industrial Soil per WAC 173-340-745
(d) "100 X ground water" has not been set for soil cleanup levels due to the low ground water concentrations of the compounds listed below
(e) No surface water cleanup standards have been set for this site since the proposed remedial action should eliminate surface water as a contaminant pathway; however, surface water will be monitored for the same parameters as ground water, as indicated by the symbol *, to ensure the efficacy of the cleanup. These data will be evaluated by Ecology to determine whether an individual NPDES permit is required.
(f) Natural background values may be substituted as cleanup objectives by Ecology if the requirements of WAC 173-340-708 (11) are satisfied.

In addition to protection of human health from the direct contact exposure pathway, contaminant concentrations remaining in soil after the cleanup is completed must also support maintenance of acceptable ground water quality (see standards in Table 2).

The aquifer underlying the L-P site cannot be used for drinking water due to salinity. However, the site is immediately adjacent to the Hylebos Waterway and Hylebos Creek. Ground water present on-site discharges to this waterway and creek. Therefore, ground water discharge must be of a quality which will maintain acceptable sediment and water column quality. Hylebos Waterway sediment cleanup objectives are set forth in the

Commencement Bay Nearshore/Tideflats Record of Decision (USEPA, 1989). It is expected that discharge of ground water contaminant concentrations below marine chronic ambient water quality criteria will result in sediment and surface water concentrations at or below acceptable levels as discussed above. Therefore, ground water standards for this site are the marine chronic ambient water quality criteria.

5.1 Points of Compliance/Compliance Monitoring

Given that the selected cleanup alternative involves containment of hazardous substances on-site, requirements of WAC 173-340-740(6)(d) must be met including carrying out a compliance monitoring program to ensure the long-term integrity of the containment system, and other requirements for containment technologies in WAC 173-340-360(8) are met. The cleanup standard set forth above applies for any soil left uncontained by the selected cleanup alternative.

The point of compliance for ground water cleanup standards is at the edge of the facility property line. For any areas where the property line extends into the waterway, the compliance point will be as close as practicable to the land/water interface between ground water and surface water or as provided in Chapter 173-340 WAC. All wells will sample the uppermost aquifer system. Specific well placements, designs, and monitoring methodologies will be developed during the remedial design phase.

Monitoring of storm water runoff for the metals of concern will be conducted at the post-remediation point(s) of surface water discharge.

6.0 SELECTED CLEANUP ACTION

While a number of alternatives examined in the FS should positively impact the quality of surface runoff, ground water, and soil conditions on the site, it is Ecology's opinion that Alternative 7, as amended through the comments received during the public comment period on the draft Cleanup Action Plan, will provide the greatest protection for human health and the environment.

6.1 Detailed Description of the Selected Cleanup Action

This alternative specifies a cap over the entire site to isolate surface water runoff and wood waste leachate from the contaminated soil/slag in addition to eliminating the potential for worker exposure to the contaminated soil/slag. The cap will also provide a working surface for a continued log sort yard operation. The actual cap design will be determined as part of the remedial design and will include engineered seam seals to prevent infiltration of storm water to the underlying soil/slag. The cap must be of a material and design sufficient to withstand all expected loadings and uses, without allowing the

significant penetration of surface water to the underlying contaminated soil. It is expected that the cap will consist of roller compacted concrete, layered low-permeability asphaltic concrete, or a similar material underlain by a sufficient depth and size of rock ballast.

Capping of the entire site, as opposed to capping only in areas where disposal of slag is suspected, is required to limit infiltration to the shallow aquifer and thereby reduce shallow aquifer flow through contaminated soil/slag. Slag and slag contaminated soils have, most probably, been distributed across much of the site. In order that surface water meet EPA ambient chronic water quality criteria, total containment of contaminated soils is required.

Storm water treatment will be required to limit discharge of oil and other contaminants. It is expected that storm water treatment will consist of oil/water separation and sedimentation or comparable treatment methods. The details associated with storm water treatment will be determined during the remedial design phase. It is required that L-P apply for and receive coverage under the Industrial Storm Water Baseline General NPDES Permit.

BMPs will be implemented as part of this alternative to limit contamination in runoff from the site. These BMPs will address but are not limited to, regular collection and removal of wood waste from the site and regular maintenance of all equipment/facilities used to collect and treat runoff. Regular inspection and maintenance of the engineered seam seals will also be required. Development of a BMP plan will be required as part of remedial design.

In addition to monitoring of surface runoff and ground water, a network of piezometers will be installed to monitor the ground water depth and gradient. This network will allow for the detection of leaks and ensure that the cap is functioning properly.

Given that no soils leaching arsenic over the Dangerous Waste criteria of 5.0 mg/l were found during the 1989 attempt to delineate the extent of highly contaminated soils, Ecology has chosen not to require further characterization or excavation of soils prior to capping.

Deed restrictions will be required to ensure that future uses of the site do not jeopardize the integrity or effectiveness of the cap and storm water collection and treatment systems.

7.0 JUSTIFICATIONS/DETERMINATIONS

The MTCA requires that any alternative selected for site remediation must, as a minimum, meet four threshold requirements as follows: protect human health and the environment; comply with cleanup standards; comply with applicable state and federal laws; and, provide for compliance

monitoring.

7.1 Protection of Human Health and the Environment

The risks identified during the RI/FS process are: 1) potential human health impacts from ingestion and inhalation of on-site wood waste and soil/slag deposits which contain elevated concentrations of metals; 2) potential water quality impacts in the Hylebos Waterway and Hylebos Creek attributable to surface water runoff or ground water discharge containing elevated concentrations of metals; and, 3) potential impacts to marine sediments.

The selected cleanup action eliminates the human health risks from ingestion and inhalation of metals in the slag/soil mixture by capping of the wood waste, contaminated soil, and slag deposits. The metal concentration in surface water runoff attributable to these soils/wastes will be minimized by preventing surface water contact with the soil/slag.

As noted in Section 2.1 above, Ecology believes that the site is a source, along with other sources, of metals to the Hylebos Waterway sediments. Conditions in the Hylebos sediments will be addressed in other activities pursuant to the Commencement Bay Nearshore/Tideflats Record of Decision. The selected cleanup action for the L-P site will minimize the possibility of metals migration from the site soils to the Hylebos Waterway.

7.2 Compliance with Cleanup Standards

The selected alternative is designed to comply with the remedial action objectives listed in Section 5.0 above.

7.3 Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

This evaluation criterion is used to determine the degree to which the selected cleanup action complies with federal and state standards and regulations. The following ARARs apply to the site:

STATE LAWS AND REGULATIONS

a. Model Toxics Control Act Cleanup Regulation, Chapter 173-340 WAC

b. Hazardous Waste Cleanup - Model Toxics Control Act, Chapter 70.105D RCW

c. State Environmental Policy Act, Chapter 197-11 WAC

d. Minimum Standards for Construction and Maintenance of Water Wells, Chapter 173-160 WAC

e. Water Pollution Control, Chapter 90.48 RCW

f. NPDES Permit Program, Chapter 173-220 WAC

g. Water Quality Standards for Surface Waters of the State of Washington, Chapter 173-201 WAC

h. Submission of Plans and Reports for Construction of Wastewater Facilities, Chapter 173-240 WAC

i. Dangerous Waste Regulations, Chapter 173-303 WAC

j. Washington Clean Air Act, Chapter 70.94 RCW

k. Washington Industrial Safety and Health Act (WISHA)

FEDERAL LAWS AND REGULATIONS

l. Resource Conservation and Recovery Act (RCRA)

m. Occupational Safety and Health Act (OSHA), 29 CFR subpart 1910.120

n. Federal Water Pollution Control Act of 1972 (Clean Water Act)

o. Water Quality Act of 1987:
   1) Section 308. Establishes water quality criteria for toxic pollutants.
   2) Section 402. Establishes the NPDES permit process for discharges to surface water bodies.

The selected cleanup action achieves all ARARs listed above. Capping of the entire site, providing surface runoff treatment (oil/water separation and sedimentation), applying for coverage under the Industrial Stormwater Baseline General NPDES permit, and implementing BMPs are designed to achieve all known, available, and reasonable treatment, and comply with

state and federal NPDES regulations for surface runoff. Other ARARs such as shoreline management regulations, and air quality regulations will be complied with as an integral part of the remedial design and implementation steps.

7.4 Compliance Monitoring

Compliance monitoring as specified in WAC 173-340-410 will be provided to determine compliance with the cleanup standards listed in Section 5.0. Surface and ground water will be monitored to evaluate compliance with cleanup standards. A compliance monitoring plan will be prepared and submitted to Ecology for approval as part of the remedial design phase.

7.5 Short-Term Effectiveness

Capping and implementation of BMPs should result in immediate improvements in the quality of storm water runoff. Any continued contaminant release from the site in surface runoff is expected to be due to the ongoing log sort yard operation. Treatment of storm water should reduce contaminant concentrations in off-site discharge to levels which will support maintenance of acceptable water quality in the Hylebos Waterway (attainment of ambient water quality criteria). If it is determined, after major sources of metals to the head of Hylebos Waterway are controlled, that water quality criteria continue to be exceeded in the waterway, additional controls on the discharge may be required.

The cap should effectively isolate contaminated soil/slag from surface water runoff. Significant movement of contaminants via shallow groundwater flow is not expected. This is due to the reduction in infiltration through the contaminated soil/slag matrix across the site. Capping should eliminate the human health concerns associated with and ingestion of the contaminated soil/slag and air entrainment.

7.6 Long-Term Effectiveness

Implementation of the selected alternative will prevent contact between precipitation/surface water runoff and contaminated soil/slag materials. This alternative should be protective of human health and the environment in the long term. However, this is dependent on adequate maintenance of the cap and the storm water collection and treatment system. In addition, BMPs must be implemented continually. Ongoing maintenance will be required since contaminated soil/slag will not be destroyed or permanently immobilized. Monitoring of ground and surface water will be conducted to ensure that cleanup standards are met and that significant off-site migration of metals does not occur in the future. The selected alternative provides for, in addition to monitoring, routine inspections and maintenance of the cap, seam seals, and other engineering controls to ensure their integrity and effectiveness.

7.7 Reduction of Toxicity, Mobility, or Volume

The implementation of this alternative will not result in a chemical or physical reduction of toxicity, mobility, or volume of the contamination. However, the cleanup action will greatly reduce the contact of storm water with contaminated soil/slag through the use of a physical barrier (cap), thereby limiting the mobility of contaminants.

7.8 Implementability/Technical Feasibility

This alternative employs conventional technologies and, therefore, should be readily implemented. Capping has been performed at another log sort yard in the Tacoma area. Oil/water separation and sedimentation are also conventional technologies.

Maintenance requirements for the cap and storm water treatment system should not pose any technical difficulties.

7.9 Cost

The relative costs of the alternatives determined in the FS and Ecology's addendum to the FS are given in Table 3.

Table 3. Remedial Alternative Cost Comparison

ALTERNATIVE	COST(1)
Alternative 1. Runoff collection and treatment by sedimentation & saltwater coagulation/flocculation; off-site disposal log deck scrapings (non-RCRA)	7,930,000
Alternative 2. Runoff collection and treatment by conventional coagulation and flocculation; off-site disposal of log deck scrapings (non-RCRA)	8,840,000
Alternative 3. Concrete Cap	2,540,000
Alternative 4. On-site disposal of soils in impermeable lined cells	10,410,000
Alternative 5. Off-site disposal of soils at RCRA facility	49,920,000
Alternative 6. Off-site disposal of soils at non-RCRA facility	2,490,000
Alternative 7.(Amended). Cap (RCC assumed), runoff collection and treatment (oil/water separation & sedimentation), BMPs	2,900,000

(1) 30-year present worth cost using 5 percent discount rate

7.10 Elimination of Other Alternatives

Alternatives 1 and 2 were eliminated because they did not address the issue of worker exposure to arsenic-contaminated dust emissions on and near the site. Capping alone (Alternative 3) was not chosen primarily because it did not address storm water management issues and the potential for leaching of highly contaminated soil/slag. Alternatives 4 and 5 were not selected due to excessive cost without a corresponding increase in the degree of protection offered by the alternative. Alternative 6 was not chosen since an acceptable off-site facility is not currently available.

On-site containment, rather than waste treatment, was selected as the cleanup action because literature review and bench scale studies for similar sites have not demonstrated the existence of a feasible treatment system (biological or chemical) for this waste.

8.0 STATE AND COMMUNITY ACCEPTANCE

State and community acceptance has been evaluated based on the comments received during the public comment period. The draft CAP has been modified by Ecology based on these comments to arrive at the final CAP.

9.0 CLEANUP ACTION REQUIREMENTS

The cleanup action as selected is designed to accomplish the following requirements:

1. Protect human health and the environment.

2. Comply with cleanup standards per WAC 173-340-700 through 760.

3. Comply with applicable state and federal laws per WAC 173-340-710.

4. Provide compliance monitoring per WAC 173-340-410.

5. Use permanent solutions to the maximum extent practicable per WAC 173-340-360(4), (5), (7), and (8).

6. Provide a reasonable restoration timeframe per WAC 173-340-360(6).

7. Consider public concerns, if any, raised during public comment on the draft cleanup action plan per WAC 173-340-360(10) through (13).

10.0 SCHEDULE FOR IMPLEMENTATION/UPCOMING ACTIVITIES

Ecology will issue an Order to Louisiana-Pacific Corporation cover the remedial design, remedial construction, and all other work phases. The time line for implementation of all project phases will be defined in the Order. Full public participation, including a 30-day public comment period and public meeting, will accompany the MTCA Order.

REFERENCES

CH2M-Hill. 1987. Site Investigation Report. Prepared for Louisiana-Pacific Corporation, Tacoma Facility, October, 1987.

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Louisiana-Pacific. 1989. Louisiana-Pacific Corporation Tacoma Log Sort Yard Feasibility Study. Submitted to the Washington State Department of Ecology. April 1989.

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Norton, D., and A. Johnson. 1985. Completion Report on WQIS Project 1 for the Commencement Bay Nearshore/Tideflats Remedial Investigation: Assessment of Log Sort Yards as Metal Sources to Commencement Bay Waterways, November 1983 to June 1984. Washington State Department of Ecology Memorandum. February 27, 1985.

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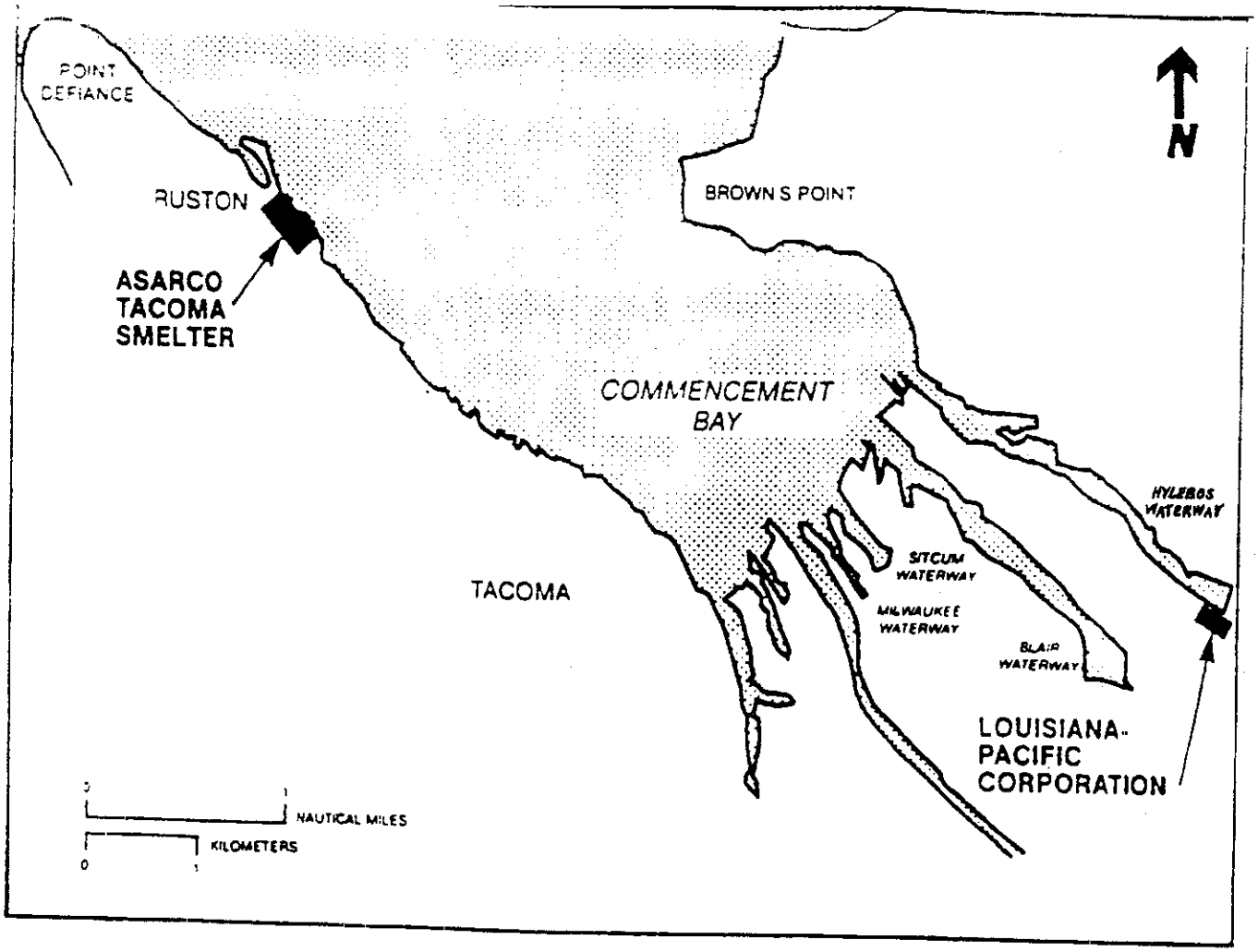

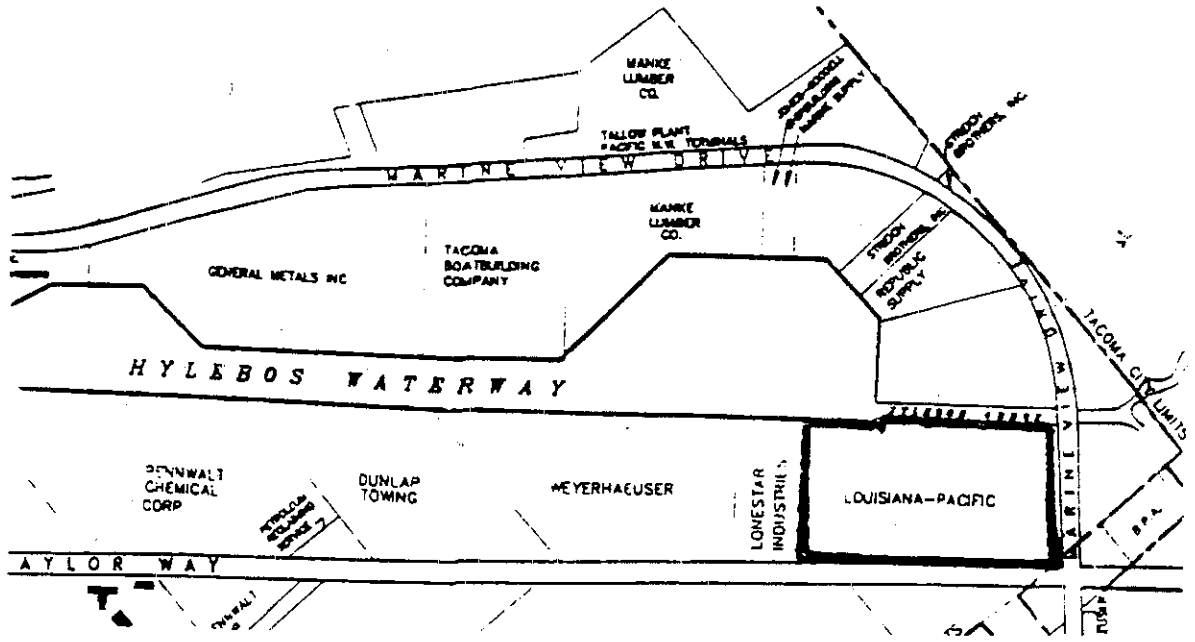

Figure 1. Location of Louisiana-Pacific Site

Attachment A

Responsiveness Summary For The Louisiana-Pacific Log Sort Yard Draft Cleanup Action Plan

This document summarizes the Department of Ecology's (Ecology) response to comments received on the Louisiana-Pacific Tacoma Log Sort Yard Draft Cleanup Action Plan (CAP). Comments were received from several parties. While the originator of each of the issues raised is not specified in this document, the comments received from all parties are available for public viewing at Ecology's Southwest Regional Office.

Issue No. 1

Ecology has failed to state why the use of Method C for the derivation of cleanup standards is inappropriate for this site.

Response to Issue No. 1

Method C is not inappropriate for use at the Louisiana-Pacific site. Since Method A Industrial soil standards exist for arsenic and lead, the contaminants of principal concern for human health, Ecology has chosen to use Method A to derive the cleanup standards for this site. The use of Method A at this site is protective of human health and the environment by the direct exposure pathway and is justified for the reasons specified in section 5.0, paragraph 1 of the Cleanup Action Plan. Method C may be used to derive industrial cleanup levels in the case of non-routine actions where Method B or Method A levels are impossible to achieve or may cause greater environmental harm. The use of Method C in this case leads to a cleanup standard of 188 mg/kg for arsenic, as compared to 200 mg/kg derived under Method A. The use of Method C versus Method A would not change the choice of the remedy selected since soils will be capped in-place.

Issue No. 2

Considering the subsequent use of the log yard by heavy log-bearing equipment, and the fact that the cap would rest on a subbase of soil/wood waste, there is concern that the cap would crack and permit surface runoff to enter subsurface soils and groundwater.

Response to Issue No. 2

The purpose of the Cleanup Action Plan is not to provide the exact engineering and construction specifications of the alternative to be

implemented, but rather to identify and outline in general terms the preferred alternative that is to enter the remedial design phase. A requirement of the selected alternative is that the cap be of sufficient structural character to withstand the expected loadings and uses without jeopardizing its integrity with respect to permeability and mechanical failure.

After reviewing the performance and maintenance requirements of the roller compacted concrete cap constructed at the Portac log sort yard, it is Ecology's opinion that a cap meeting the requirements of the Cleanup Action Plan is capable of being constructed and maintained at the L-P site. However, upon review, Ecology has chosen not to require a particular material for construction of the cap. Instead, Ecology will allow the use of other materials if it can be shown that such materials will fulfill the intent of the Cleanup Action Plan and the selected alternative.

Issue No. 3

The existing Remedial Investigation (RI) data are insufficient to accurately identify the source areas for elevated metals and arsenic in surface water. Thus, alternatives addressing protection of surface water, specifically the preferred alternative, are overly conservative.

Response to Issue No. 3

Given the elevated concentrations of arsenic found in surface water runoff from several locations on the site, and the lateral and vertical mixing of bark, slag, and soil that has occurred during log sorting and deck scraping operations at the site, it is Ecology's opinion that the entire area of the log sort yard may act as a source for metals. Thus, given the present and expected future conditions at the site, it is deemed necessary to mitigate the exposure of surface water to contaminated soils from across the entire site.

Issue No. 4

The existing RI and Feasibility Study (FS) data are insufficient to accurately quantify volumes of soils with elevated metals and arsenic. Consequently, cost estimates for containment and removal alternatives are probably not reliable enough for comparisons.

Response to Issue No. 4

It is Ecology's opinion that the existing data are of sufficient quality and quantity to make an adequate determination of soil volumes containing elevated concentrations of metals. While contaminated soil/slag/bark

that does not qualify as a Dangerous Waste per WAC 173-303 may be disposed of at a non-RCRA landfill, a facility that is willing accept these wastes has not been identified. Given the extremely high cost of disposal of contaminated soil/slag/bark at a RCRA hazardous waste facility, even a large variation in the volume of soil qualifying as Dangerous Waste would not make this alternative the most economically attractive alternative.

Issue No. 5

A dedicated on-site conventional landfill similar to the one being constructed at the Elf Atochem yard site would provide better long-term protection and would be much more cost-effective than a concrete cap.

Response to Issue No. 5

Cleanup standards derived under WAC 173-340-745 (Method A Industrial) are derived for the protection of human health via the direct exposure pathway; they do not represent values considered protective of surface or ground water unless otherwise denoted. Given the saturated, well-mixed conditions occurring on the unpaved log sort yard during heavy precipitation, it is likely that even soils below the Method A cleanup standard would contribute to arsenic, copper, lead, and zinc contamination of surface waters and water migrating to the underlying aquifer if left uncapped. Containment of contaminated soils on only a portion of the site does not address the fate and transport of the metals remaining in the active log yard area.

Issue No. 6

Based on a soil sample taken in 1987 leaching arsenic over the 5.0 mg/l Dangerous Waste limit, Ecology has proposed that soils exceeding this criteria be removed. An effort was made in 1989 to identify and delineate the boundaries of soil exceeding this limit. Given that no samples exceeding this criteria were found, it is requested that Ecology reconsider the necessity of the removal and the effect that excavation and disposal of soils will have on the construction of the remedy.

Response to Issue No. 6

Ecology was present and took split samples during the rather extensive effort made in 1989 to identify the extent of soils exceeding the Dangerous Waste characteristic leaching criteria. No samples exceeding the criteria were found. Given these results, and the fact that additional study may delay implementation of the preferred remedial alternative, Ecology will not require that these soils be further characterized or removed prior to capping.

Issue No. 7

On page 8, section 6.1, second line from the bottom, sentence states "EP Toxicity testing conducted on soil samples...". Is this a typographical error and should read "EPA Toxicity testing"? If not, could you explain.

Response to Issue No. 7

EP Toxicity or EP Tox stands for "Extraction Procedure" toxicity testing, a standardized extraction method used to designate characteristic hazardous wastes. This has been clarified in the text of the CAP. The EP Tox extraction procedure has subsequently been replaced by the Toxicity Characteristic Leaching Procedure (TCLP) test.

Issue No. 8

On page 13, section 7.7, paragraph states that the implementation of this plan "will not result in reduction of toxicity, mobility, or volume of contamination...[but] will greatly reduce the contact of storm water with contaminated soil/slag thereby limiting the mobility of contaminants." This may be standard phrasing but it sounds too important a point not to have one or two more qualifying sentences emphasizing the difference between the terms *reducing* and *limiting*.

Response to Issue No. 8

The Model Toxics Control Act (MTCA) requires that a preference be given to "permanent solutions" which, in addition to other criteria, lead to a reduction in toxicity, mobility, or volume of the contamination. The statement at issue was meant to specify that there would be no chemical or physical alteration of the waste itself (<u>reducing</u> toxicity, mobility, or volume), but rather a physical containment of the waste and a separation of the contaminants from the vehicle of migration (<u>limiting</u> contact with surface water).

EXHIBIT B

SCOPE OF WORK

All work performed at and around the site pursuant to this Order shall be accomplished in accordance with Chapter 173-340 WAC and plans prepared by Louisiana-Pacific Corporation shall be submitted for review and approval by Ecology.

Task 1 - Safety and Health Plan

All work, including sampling and other field data gathering activities, shall be performed under an appropriate health and safety plan for the protection of workers and the surrounding community in accordance with Ecology and WISHA requirements. Louisiana-Pacific shall submit this plan to Ecology prior to commencing any action on the site. Louisiana-Pacific shall be solely responsible for ensuring that the plan satisfies applicable laws and requirements.

Schedule: Within one month of the effective date of this Order

Task 2 - Application for Shoreline Permit

Louisiana-Pacific Corporation shall apply for a City of Tacoma Shoreline permit for the implementation of the cleanup action.

Schedule: Within one month of the effective date of this Order

Task 3 - Recording of Restrictive Covenant

Louisiana-Pacific Corporation shall record the attached Declaration of Restrictive Covenant in the Site property deed and provide a signed copy to the Department of Ecology.

Schedule: Within two months of the effective date of this Order

Task 4 - Preliminary Design

Submit a preliminary design of the cap and stormwater collection and treatment system in accordance with the selected cleanup action outlined in the Cleanup Action Plan (Exhibit A) to Ecology for approval when the basic design parameters have been determined (approximately 30% design completion). This submittal shall

include the following: all design data and criteria; preliminary design assumptions and calculations; relevant design standards to be used in the final design; a process flow diagram; and, plans showing the proposed location of the oil/water separator, sedimentation basin (or equivalent treatment units), sumps, and surface water collection system features. The preliminary design shall also discuss the preparation or planning of the following items to be incorporated in the draft and final Remedial Design: construction phases and schedule; preparation of as-built plans; construction quality control/quality assurance; operation, maintenance, and monitoring requirements; and an outline of foreseeable problems which might be encountered.

Schedule: Within 2 months of the effective date of this Order

Task 5 - Draft Remedial Design

Submit draft remedial design documents, in accordance with the approved remedial design work plan, for Ecology comment. Remedial design documents shall include design for any construction needed to implement BMPs.

The remedial design activities shall consist of preparation of the following: an engineering report; construction plans and specifications; and, an operation and maintenance plan. Preparation of all remedial design documents shall be in accordance with WAC 173-340-400. The engineering report shall contain: all assumptions used as a basis for design; calculations, and other engineering support materials; an analysis of expected cap permeability; a detailed map illustrating the proposed location of cleanup actions; results of pertinent sampling and analyses; and, a detailed schedule of the remedial actions to be implemented.

The operation and maintenance plan shall address, at a minimum, the following: regular cleaning of the cap; maintenance of the cap and seam seals; control of waste material during normal sort yard operations; control of other contaminant sources on site; maintenance, cleaning, and operation of drainage system features; and, maintenance, cleaning, and operation of the oil/water separator and sedimentation basin (or equivalent treatment units). The plan shall address operation and maintenance aspects of the remedial action as specified in WAC 173-340-400(4)(c). The operation and maintenance plan shall also include a monitoring plan which describes all sampling activity required before, during and after remedial action.

The monitoring plan, included in the operation and maintenance plan shall be designed to asses protectiveness of remedial actions

Task 8 - Construction Documentation/As-Built Plans

At the completion of construction the engineer responsible for the supervision of construction shall prepare as-built drawings and a report documenting all aspects of facility construction. The report shall also contain an opinion from the engineer, based on testing results and inspections, as to whether the cleanup action has been constructed in substantial compliance with the plans and specifications and related documents.

Schedule: Within two months of completion of construction

during construction and operation and maintenance periods associated with the cleanup. In addition, monitoring shall be conducted to confirm that the cleanup actions have resulted in the attainment of cleanup standards. The monitoring plan shall be prepared in accordance with WAC 173-340-410(3) and WAC 173-340-820.

The monitoring plan shall specifically address installation and sampling of existing and additional wells in the shallow dredge fill aquifer. Additional wells shall be located as close as possible to the Hylebos Waterway. The monitoring plan shall identify proposed well locations based on site-specific logistical considerations. Proposed well construction details shall be contained in the plan.

The monitoring plan shall address evaluation of ground water quality in new and existing wells quarterly for three years. At the end of this period, Ecology will evaluate the results and determine if any further action should be taken.

Schedule: Within 2 months of Ecology approval of the Preliminary Design

Task 6 - Final Engineering Design Report

Submit final remedial design documents, which respond to Ecology's comments on the draft design, for Ecology approval.

Schedule: Within 3 weeks of receipt of Ecology's comments on the draft Engineering Design Report

Task 7 - Implement Remedial Action

Implement cleanup actions as outlined in the Ecology-approved Engineering Design Report. During construction, detailed records shall be kept of all aspects of the work performed, including construction techniques and materials used, items installed, and tests and measurements performed. The requirements of WAC 173-340-400(7) shall be met. Photographic documentation of all major and critical construction phases shall be performed by Louisiana-Pacific Corporation. An extra copy of the photos shall be submitted to Ecology along with the project record drawings.

Schedule: In accordance with the schedule contained in the approved final remedial design documents

ATTACHMENT A

DECLARATION OF RESTRICTIVE COVENANT

The property that is the subject of this Restrictive Covenant is the subject of remedial action under Chapter 70.105D RCW. The work done to clean up the property (hereafter the "Cleanup Action") is described in Washington State Department of Ecology Order No. DE 92TC-S312, and in attachments to the Order. This Restrictive Covenant is required by WAC 173-340-440 because the Cleanup Action at the Site will result in residual concentrations of arsenic and lead which exceed Ecology's Method A, and C cleanup levels for Industrial soil established under WAC 173-340-745.

Louisiana-Pacific is the fee owner of real property known as the Louisiana-Pacific Tacoma log sort yard in the county of Pierce, state of Washington (legal description attached hereto), hereafter referred to as the "Site."

As a result of the Cleanup Action, the Site will include a woodwaste, soil, and slag mixture which will be covered by an asphaltic concrete or concrete cap. The Site will also include monitoring wells, a storm water drainage system, and a surface water treatment system consisting of a sedimentation basin or comparable treatment unit and an oil/water separator or comparable treatment unit.

Louisiana-Pacific Corporation makes the following declaration as to limitations, restrictions, and uses to which the Site may be put, and specifies that such declarations shall constitute covenants to run with the land, as provided by law, and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Site.

Section 1 The Site may be used only for Industrial uses as defined in and allowed under the City of Tacoma's Zoning Regulations codified in the Tacoma City Code as of the date of this Restrictive Covenant. Except as provided in Section 4 of this Covenant.

Section 2 Any activity on the Site that may interfere with or reduce the effectiveness of the Cleanup Action or any operation, maintenance, monitoring, or other activity required by the Order (or any Ecology-approved modification or amendment to the Order) is prohibited. Any activity on the Site that may result in the release of a hazardous substance that was contained as a part of the Cleanup Action is prohibited. The Ecology project coordinator must be informed in writing two weeks prior to any site activity which might be inconsistent with this section.

Section 3 The owner of the Site must give written notice to the Department of Ecology, or to a successor agency, of the owner's intent to convey any interest in the Site. No conveyance of title, easement, lease, or other interest in the Site shall be consummated by the owner without adequate and complete provision for the continued operation, maintenance, and monitoring of the Cleanup Action.

Section 4 The owner must notify and obtain approval from the Department of Ecology, or from a successor agency, prior to any use of the Site that may be inconsistent with the terms of this Restrictive Covenant. The Department of Ecology, or its successor agency, may approve such a use only after public notice and comments.

Section 5 The owner shall allow authorized representatives of the Department of Ecology, or of a successor agency, the right to enter the Site at reasonable times for the purpose of evaluating compliance with the Cleanup Action Plan and the Order, to take samples, to inspect Cleanup Actions conducted at the Site, and to inspect records that are related to the Cleanup Action.

Section 6 The owner of the Site and owner's assigns and successors in interest reserve the right under WAC 173-340-730 and WAC 173-340-440 to record an instrument which provides that this Restrictive Covenant shall no longer limit the use of the Site or be of any further force or effect. However, such an instrument may be recorded only with the consent of the Department of Ecology or of a successor agency. The Department of Ecology or a successor agency may consent to the recording of such an instrument only after public notice and comment.

Louisiana-Pacific Corporation agrees to file this Restrictive Covenant in the Site property deed with the Pierce County Auditor and provide the Department of Ecology with a signed copy.

_____

(Name)

_____

(Title)

Louisiana-Pacific Corporation

LEGAL DESCRIPTION

PARCEL "A"
Commencing at the Southeast corner of Section 36, Township 21 North, Range 3 East of the Willamette Meridian; thence Westerly along the South line of said Section 36 a distance of 865.49 feet to the Northwesterly right of way line of Hylebos Access Road; thence on an angle to the right of 128°32'54", Northeasterly along the said right of way line a distance of 225.38 feet to the true point of beginning of this description; thence continuing Northeasterly along said right of way a distance of 457.06 feet to the P.C. of a curve to the left having a radius of 904.93 feet; thence along said curve to the left through a central angle of 5°00'36" a distance of 79.13 feet; thence Northwesterly on a line parallel with and 100.00 feet measured at a right angle from the Southerly pierhead line of Hylebos Waterway extended Southeasterly, and also more or less along the center line of Hylebos Creek Channel as now located, to a point on the Easterly pierhead line of the Hylebos Waterway turning basin; thence on an angle to the left of 90° a distance of 100.00 feet along the said Easterly pierhead line to intersect the said Southerly pierhead line of said waterway; thence on an angle to the right of 90° along the said Southerly pierhead line a distance of 163.01 feet to a point on the South line of the Northwest quarter of the Southeast quarter of said Section 36; thence continuing Northwesterly along the Hylebos Waterway pierhead line a distance of 250.0 feet; thence on an angle to the left of 90° a distance of 815.94 feet to a point on the Northerly right of way line of Taylor Way; thence on an angle to the left of 91°04'32" along the said right of way line a distance of 1,226.11 feet to intersect a curve to the left having a radius of 348.27 feet, said radius point being on an angle to the left of 99°57'44" from the said point of intersection; thence along said arc to the left through a central angle of 81°48' a distance of 497.21 feet to the true point of beginning.

Situate in the City of Tacoma, County of Pierce, and State of Washington.