STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

AGREED ORDER NO. DE 3154

FIRST AMENDMENT

In the Matter of Remedial Action by:

Abitibi Consolidated Sales Corporation	)	AGREED ORDER
	)	NO. DE 3154
	)	
	)	

Site: Abitibi Consolidated Sales Corporation, 4302 Chambers Creek Road, Steilacoom, WA.

To: Abitibi Consolidated Sales Corporation
c/o AbitibiBowater
1155 Metcalfe Street, Suite 800
Montreal, Canada H3B 5H2
Attn: Nicole Roy

I. Amendment

Agreed Order No. DE 3154, signed November 29, 2006, is hereby amended to include a Final Cleanup Action Plan (CAP) and Environmental Covenant for the Site. The CAP is included as Exhibit A and a Model Environmental Covenant is included as Exhibit B, and are integral and enforceable parts of the Order. This amendment does not replace or change the existing requirements of the Agreed Order, which shall remain in effect.

II. Background

Agreed Order No. DE 3154, signed November 29, 2006, required Abitibi Consolidated Sales Corporation (Abitibi) to prepare a draft and final Remedial Investigation Report and Feasibility Study (RI/FS), to perform an interim action to remove petroleum hydrocarbon impacted soils, and to prepare a draft Cleanup Action Plan for the Site. Abitibi had initially planned on entering the Site in the Voluntary Cleanup Program (VCP), but was notified by Ecology that the Site should be subject to an Agreed Order. This process was started upon Ecology issuing a PLP Determination dated March 9, 2006. Because Abitibi had anticipated being in the VCP, much of the investigation work

was completed before the Agreed Order was issued. Abitibi had already mobilized to finish the RI, to begin removal of petroleum hydrocarbon impacted soils, and to install monitoring wells to monitor the efficacy of the cleanup. They were permitted to continue their work while the administrative process proceeded.

The RI concluded that as a result of the soil removal action, soil at the Site meets Model Toxics Control Act (MTCA) Method B cleanup levels. Groundwater at the Site had been impacted by historical petroleum releases and after completion of the 2006 soil removal action, contained concentrations of volatile (VOCs) and semivolatile organic compounds (SVOCs) above MTCA Method B cleanup levels. Arsenic in groundwater was found to result from mobilization of naturally-occurring arsenic in Property soil due to biological activity associated with petroleum hydrocarbon degradation. It is expected that withdrawal of near surface ground water will be prohibited, as a condition of institutional controls.

The RI/FS concluded that concentrations of petroleum hydrocarbons and polynuclear aromatic hydrocarbons (PAHs) were above cleanup criteria for unrestricted use (CULs) in soil in the vicinity of the Shipping Warehouse and in a portion of the railroad area. It is expected that soil containing low levels (above CULs) of PAH will be removed and properly disposed if and when the railroad area is removed upon facility demolition, as a condition of institutional controls.

The Feasibility Study completed for the Property evaluated alternatives for cleanup of petroleum hydrocarbons in groundwater. The Selected Remedial Alternative has been identified as monitored natural attenuation in groundwater, following the soil removal action. The CAP provides documentation to support the cleanup effort and summarizes information describing the cleanup for the Site.

Since petroleum hydrocarbons still remained in Site groundwater above MTCA cleanup standards, the Selected Remedial Alternative for groundwater was determined to be quarterly sampling for Constituents of Concern (COCs) utilizing Monitored Natural Attenuation (MNA) analytical parameters to determine a point at which the groundwater contamination would attenuate to levels below MTCA cleanup levels. Groundwater monitoring would continue until four consecutive quarterly samples demonstrate that concentrations of COCs are below the remedial action cleanup levels identified for the Site.

Petroleum compounds are typically highly biodegradable. Because the source of TPH impacts to groundwater had been removed, restoration was expected to occur relatively quickly. Geochemical data collected at the Site include dissolved oxygen and oxidation-reduction potential. Dissolved oxygen was low, and ORP was negative. Both of these suggested that aerobic degradation of petroleum compounds was occurring. Because the asphalt pavement over the Site was removed during the soil removal action, additional dissolved oxygen from surface water infiltration was expected to accelerate natural degradation processes.

Abitibi provided Ecology with a report *West Tacoma Mill Summary Groundwater Monitoring Report*, dated July 16, 2008 based on seven rounds of quarterly MNA

groundwater sampling. The report concludes that all of the petroleum hydrocarbon COCs had remained below MTCA cleanup standards and had met MNA criteria for four consecutive quarters. The report also noted that arsenic remained above the MTCA cleanup level of 0.058 ug/L, but had generally been declining since beginning monitoring in October 2006.

II. Work to be Performed

It is hereby ordered that Abitibi:

1. Enter the Ecology approved Cleanup Action Plan as an integral and enforceable part of Agreed Order DE 3154.
2. File an Environmental Covenant consistent with the Model Environmental Covenant attached as Exhibit B, particularly Section1, requirements 2 and 3 a to address the arsenic that remains in groundwater above the MTCA cleanup level and the PAH impacted soils that remain along the railroad area.

Schedule:

1. The Final Cleanup Action Plan will be entered as a function of Ecology signing this Agreed Order Amendment at the end of the required 30 day comment period, unless public comment results in the need to generate a Responsiveness Summary. If the latter occurs, signing and entry would occur upon Ecology issuing a Responsiveness Summary.
2. An Environmental Covenant shall be filed by the Site Owner with the Pierce County Auditor in accordance with WAC 173-340-440 within 30 days of entry of this Amendment.

Effective Date of this Amendment: Feb. 4, 2010

By: Rebecca S. Lawson

Rebecca S. Lawson, P.E.
Section Manager
Toxics Cleanup Program
Southwest Regional Office

By: _____

Name: JACQUES P. VACHON

Position: SECRETARY

Abitibi Consolidated Sales Corporation

EXHIBIT A

DRAFT CLEANUP ACTION PLAN

EXHIBIT B

MODEL ENVIRONMENTAL COVENANT

Draft
Cleanup Action Plan For Abitibi Consolidated Sales Corporation Property (West Tacoma Mill)

Prepared for

Abitibi Consolidated Sales Corporation

September 2008

CH2MHILL

Executive Summary

The Abitibi Consolidated Sales Corporation West Tacoma Mill (the Property) is a closed paper and pulp mill located on Chambers Creek Road in Steilacoom, Washington. The Property covers 83 acres and has been operated by several different owners since it began operations in 1919. It was closed in 2000. In anticipation of Property transfer, an Environmental Site Assessment was conducted. The site assessment included several phases of sampling of groundwater and soil throughout the Property. This assessment identified one area of concern at the Mill, an area of petroleum-impacted soil and groundwater in the main process area. Petroleum-impacted soil was removed in 2006.

A Remedial Investigation/Feasibility Study (RI/FS) has been completed for this Property. The RI/FS evaluated data collected during the site assessment, subsequent investigations, and the soil removal action, to evaluate the nature and extent of constituents of concern (COCs) in soil and groundwater at the Property. The RI concluded that as a result of the soil removal action, soil at the Property meets Model Toxics Control Act (MTCA) Method B cleanup levels. Groundwater at the Property has been impacted by historical petroleum releases and after completion of the 2006 soil removal action, contained concentrations of volatile (VOCs) and semivolatile organic compounds (SVOCs) above MTCA Method B cleanup levels. Arsenic in groundwater was found to result from mobilization of naturally-occurring arsenic in Property soil due to biological activity associated with petroleum hydrocarbon degradation.

The Feasibility Study completed for the Property evaluated alternatives for cleanup of petroleum hydrocarbons in groundwater. The preferred remedial alternative has been identified as monitored natural attenuation of groundwater, following the soil removal action. This Cleanup Action Plan provides documentation to support the cleanup effort and summarizes information describing the cleanup for the Property.

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Abbreviations and Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
ASB	aeration stabilization basin
AST	aboveground storage tank
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Cleanup Action Plan
COC	constituent of concern
ESA	environmental site assessment
FS	feasibility study
msl	mean sea level
MTCA	Model Toxics Control Act
NPDES	National Pollutant Discharge Elimination System
ORC	oxygen release compound
PAH	polynuclear aromatic hydrocarbon
POC	point of compliance
RAO	remedial action objective
RCW	Revised Code of Washington
RI	remedial investigation
SVOC	semivolatile organic compound
TMP	thermomechanical pulp
TPH	total petroleum hydrocarbons
TTE	Terrestrial Ecological Evaluation
VOC	volatile organic compound
WAC	Washington Administrative Code

1 Introduction

1.1 Purpose

This Draft Cleanup Action Plan (CAP) sets cleanup standards and selects a cleanup action that meets those cleanup standards for the Abitibi Consolidated Sales Corporation (Abitibi) Property (West Tacoma Mill), located in Steilacoom, Washington. This documentation is required by the cleanup process established by the Department of Ecology (Ecology) under Agreed Order No. DE-3154 for this Property and Chapter 173-340 of the Washington Administrative Code (WAC), "The Model Toxics Control Act Cleanup Regulations" (MTCA), and meets the requirements specified in WAC 173-340-380, Draft Cleanup Action Plan.

The cleanup action selected is based on information presented in the Remedial Investigation and Feasibility Study (RI/FS) Report (CH2M HILL, 2007). This CAP and the RI/FS were prepared for the Property in accordance with the Agreed Order between Ecology and Abitibi dated 29 November 2006.

In order to satisfy the MTCA requirements set forth in WAC 173-340-380(1), this CAP includes the following:

- A brief description of the Property history;
- A description of the nature and extent of constituents of concern (COCs) at the Property, summarized from the RI;
- Establishment of cleanup standards for each medium that are protective of human health and the environment;
- Presentation of proposed remedial alternatives summarized from the FS;
- Ecology's selected cleanup action;
- Compliance monitoring and reporting requirements;
- A schedule; and
- A Compliance Monitoring and Sampling and Analysis plan that describes how samples will be collected and tested.

2 Background

2.1 Property Description

The Property is located at 4302 Chambers Creek Road in the Town of Steilacoom, Pierce County, Washington. The Property is situated near the bank of Chambers Creek, at the northern edge of Steilacoom, as shown in Figure 1. Chambers Creek is an estuary of south Puget Sound, and the portion of the creek adjacent to the Property is tidally influenced. The Property is bounded to the west by residential land, to the east by property owned by Western State Hospital and a golf course, and to the south by property owned by the Steilacoom School District. The center of Chambers Creek forms the northwestern boundary of the Property.

The Property is characterized by two distinct physiographic areas that are separated by approximately 200 feet of topographic relief: the lower elevation mill process and manufacturing operations area, and the upland area along the eastern and southwestern Property boundaries where the Mill process effluent plant is located. Surface water drainage across the upland areas is via Garrison Creek, which flows primarily underground from the southeast corner of the Property, toward the Shipping Warehouse, then northwest past the main gate (Gate No. 2) where it discharges into Chambers Creek. Surface drainage from paved areas of the main process area is through the primary clarifier to the NPDES-permitted outfall.

The geologic units that underlie the Property consist of fill, Quaternary alluvium, and glacial deposits. Two water-bearing zones have been identified at the Property: the fill/alluvium aquifer in the lower part of the Property adjacent to Chambers Creek, and the deeper, glacially derived Chambers-Clover Creek aquifer. The fill/alluvium zone sits unconformably on the larger aquifer, and, based on the presence of groundwater seeps at the base of the hill into which the main process area is incised, may be separated from the larger aquifer by zones of lower permeability. Because of regional groundwater discharge patterns to Chambers Creek and Puget Sound, it is unlikely that the mill operations have impacted the Chambers-Clover Creek aquifer.

As described in the RI/FS (CH2M HILL 2007), groundwater in the fill/alluvium aquifer occurs at depths of 5 to 8 feet bgs at elevations ranging from 10 to 12 feet msl. The current groundwater elevation in the vicinity of the main process area (lower elevation area) corresponds with the base of fill material that was likely placed in the 1940s or 1950s. Groundwater flow is toward Chambers Creek at a gradient of approximately 0.01 foot/foot. Quantitative hydraulic conductivity measurements have not been conducted for the wells screened in the aquifer. Given the types of materials found in the subsurface (silty sands and gravels) and the low rate of groundwater recharge observed during onsite excavation activities, an approximate hydraulic conductivity of 1 to 10 feet/day is assumed for the aquifer.

2.2 Property History

The mill was operated between 1919 and December 2000 to manufacture newsprint. Abitibi acquired the Property by way of a merger between Abitibi Price Inc., and Stone Consolidated Corporation in December 1997. Prior to that, other owners had operated the mill since it began operation in 1919. Newsprint was produced from three sources: (1) thermo-mechanical pulp (TMP), (2) purchased pulp, and (3) pulp produced from deinked recycled paper. No Bleach Kraft processes were used during the mill's operation. Auxiliary manufacturing operations included unloading and repulping of purchased Kraft pulp, water filtration, wastewater treatment, and steam generation using hog fuel and natural gas-fired boilers. Petroleum products and chemicals were stored in aboveground storage tanks (ASTs) at various locations within the main process area. The layout of the main process area is shown in Figure 2.

Manufacturing operations were permanently shut down by Abitibi on December 29, 2000. The only activities conducted thereafter were shutdown-related and Property maintenance activities. All major inventories of chemicals were consumed prior to shutdown, with bulk tanks left in an "empty last contained" state, but not "cleaned." Remaining inventories of minor chemicals were returned to suppliers. Cleaning of pulp and process water tanks continued through January 2001. The wastewater treatment plant continued to operate until it was drained and permanently shut down in May 2001.

Abitibi initiated an environmental site assessment (ESA) in 2001 in anticipation of the transfer of the Property. The ESA consisted of:

- Phase I Environmental Site Assessment (2001)
- Phase II Environmental Site Assessment (May 2005)
- Supplemental Investigation (July 2005)

Based on the findings of these investigations, Abitibi decided to remove petroleum-impacted soil from the one area of concern identified on the Property, and submitted a Voluntary Cleanup Program application to Ecology in December 2005. In January 2006, Ecology notified Abitibi that an Agreed Order would be the appropriate regulatory mechanism to handle cleanup activities. Concurrent with preparation of the Agreed Order, Abitibi conducted further delineation of impacted soil and groundwater in February 2006. Petroleum impacted soil was removed as an independent action under Ecology approval and oversight in April and May 2006. The Agreed Order was signed on November 29, 2006.

The results of these investigations, along with characterization and confirmatory sampling conducted as part of the soil removal action in 2006, were summarized in the RI/FS (CH2M HILL, 2007).

2.3 Nature and Extent of Constituents of Concern

Sampling conducted as part of the Phase II ESA in 2005 discovered petroleum-impacted groundwater at two locations within the main process area and concentrations of arsenic in groundwater above MTCA Method B cleanup levels throughout the main process area. A supplemental investigation conducted in May 2005 concluded that petroleum-impacted subsurface soil in the vicinity of the Shipping Warehouse was the source of the petroleum-impacted groundwater, and that the presence of arsenic in groundwater above MTCA Method B cleanup levels was related to natural and/or anthropogenic sources of the metal (CH2M HILL 2005).

As part of the Agreed Order signed in November 2006, Ecology required that a Remedial Investigation and Feasibility Study (RI/FS) be prepared, summarizing and further evaluating the results of previous investigations along with the soil removal action conducted in 2006. This RI/FS report was finalized in April 2007.

Petroleum Compounds

The RI/FS concluded that concentrations of petroleum hydrocarbons and polynuclear aromatic hydrocarbons (PAHs) were above cleanup criteria in soil in the vicinity of the Shipping Warehouse and in a portion of the railroad area, and that petroleum hydrocarbons were above cleanup criteria in groundwater near the Shipping Warehouse. Confirmatory soil sampling following the soil removal action in the vicinity of the Shipping Warehouse in 2006 met MTCA compliance criteria for petroleum hydrocarbons and PAH, as described in the RI/FS.

The source of the PAH in soil in the railroad area is unknown and most likely is related to railroad operations or historical fill used in the area. The extent of PAH-impacted soil is limited, as described in the RI/FS. The PAH concentrations are low (generally less than twice the CUL of 0.14 mg/kg, as shown in Table 1), and other soil and groundwater samples collected in the area did not contain concentrations of PAHs above CULs. Therefore, no further action needs to be taken to address PAH-impacted soil at this time. It is expected that soil containing low levels (above CULs) of PAH will be removed and properly disposed when the railroad area is removed upon facility demolition, as a condition of institutional controls.

Gasoline-range petroleum hydrocarbons were detected in five groundwater samples collected in the Shipping Warehouse Area of the main process area. TPH-gasoline concentrations ranged from 0.25 to 1.3 mg/L, and results for two samples exceeded the MTCA Method A CUL of 0.8 mg/L. Diesel-range petroleum hydrocarbons were detected in two groundwater samples collected in the Shipping Warehouse Area of the main process area. Concentrations ranged from 0.51 to 1 mg/L. The MTCA Method A CUL is 0.5 mg/L. As with TPH-gasoline, the samples containing TPH-diesel above the CUL were collected immediately downgradient of the area where TPH-impacted soil was excavated. TPH-diesel has not been detected in groundwater above the MTCA Method A CUL since December 2006. TPH-gasoline has not been detected in groundwater above the MTCA Method A CUL since March 2007 (CH2M HILL, March 2008).

Naphthalene, 2-methylnaphthalene, and 1-methylnaphthalene were detected at concentrations above their respective MTCA Method B CULs in one groundwater sample located immediately downgradient of the excavated area. These compounds were not detected, or were detected below their respective CULs, during the five subsequent quarterly samples collected at this location. The compounds were never detected at concentrations greater than their MTCA Method B CULs in the other monitoring wells on the Property (CH2M HILL, March 2008).

The RI/FS report concluded that the only area of the Property that required further remediation for TPH and PAH compounds was the petroleum-impacted groundwater near (north-northeast of) the Shipping Warehouse. Petroleum-impacted groundwater appears limited to a small part of the shallow fill/alluvium aquifer immediately adjacent to the 2006 excavation.

Arsenic

Arsenic was detected in 21 of the 53 soil samples collected at the Property. Arsenic concentrations range from 5 to 10 mg/kg, below the MTCA Method A Cleanup value of 20 mg/kg. No known sources of arsenic existed at the Property, and concentrations are generally less than would be expected from airborne deposition associated with the nearby Asarco smelter if groundwater was in direct contact with airborne deposition. Concentrations of arsenic in soil are consistent with regional background levels, in accordance with WAC 173-340-709. Therefore, arsenic in soil at the Property is believed to be the result of natural processes rather than anthropogenic activities, therefore no further action is needed to characterize its extent.

Arsenic was detected in all groundwater and seep samples collected for arsenic analysis at the Property. Concentrations of the metal range from 0.4 to 40 ug/L (see the RI/FS for details). The results for 15 of 19 samples are above the MTCA Method A CUL for arsenic (5 ug/L). The highest concentration of arsenic (40 ug/L) occurred in a groundwater sample collected in 2005 from a temporary monitoring well in the Shipping Warehouse Area, where petroleum-impacted soil was later removed. Dissolved oxygen concentrations in this area are fairly low (less than 1.3 mg/L). Low dissolved oxygen is associated with reducing conditions and is correlated to higher dissolution of arsenic in groundwater. Quarterly groundwater samples collected following the soil removal action have contained significantly lower concentrations of arsenic, with a maximum concentration of 19 ug/L in August 2006 and generally decreasing concentrations since that time (CH2M HILL, March 2008).

Because arsenic concentrations in soil were consistent with regional background levels and because there is no historical evidence of arsenic use at the facility, nor are arsenic concentrations in groundwater linked to any pattern of arsenic concentrations in soil, arsenic in groundwater is therefore believed to be the result of natural conditions. This determination is consistent with previous assessments of similar groundwater arsenic concentrations by Ecology (Coleman, 2008). Specifically, arsenic can occur naturally in groundwater in the Western U.S. in excess of the MTCA Method A standard of 5 ppb. Welch et al. (2000) found that approximately 10% of 30,000 groundwater samples across the U.S. contained arsenic concentrations greater than 10 µg/L. In the Western U.S., arsenic can occur naturally up to 50 µg/L (Welch et al., 1988).

No further action for arsenic in groundwater is required because arsenic is not associated with activities at the Property and because arsenic detected soil and groundwater appear to result from natural conditions, however the elevated arsenic conditions will be addressed by institutional controls regarding groundwater withdrawal.

2.4 Terrestrial Ecological Evaluation

A Terrestrial Ecological Evaluation (TEE) was considered, but found not to be necessary based on the fact that TPH-affected soil was removed during excavation and replaced by clean fill in 2006. The extent of affected groundwater is limited and has diminished since the TPH-affected soil was removed. This exclusion from a TEE was determined in accordance with WAC173-340-7491.

2.5 Conclusion

The RI/FS report concluded that the only area of the Property that required further remediation was the petroleum-impacted groundwater near (north-northeast of) the Shipping Warehouse, which appears limited to a small part of the shallow fill/alluvium aquifer immediately adjacent to the area excavated in 2006.

3 Description of Proposed Cleanup Action

Remedial Action Objectives (RAOs) were developed in order to provide a framework for the evaluation of potential remedial actions for groundwater in the area of the Shipping Warehouse. RAOs are specific goals for protecting human health and the environment that also define a framework for developing cleanup actions. Considering the nature of the impacts to groundwater and the requirements of MTCA, the following RAOs were identified for the Property:

- Protect human health and the environment;
- Allow for unrestricted future re-use of the Property;
- Comply with applicable or relevant and appropriate requirements (ARARs) as defined in Table 2 of this CAP.

As described in the RI/FS, the independent cleanup action conducted in April-May 2006 meets MTCA compliance criteria for soil.

The cleanup action described in this CAP will address groundwater in the vicinity of the soil removal action, which contains concentrations of petroleum-related compounds above cleanup criteria. The impacted groundwater occurs in a fill-alluvium aquifer which discharges to Chambers Creek. Shallow groundwater in the vicinity of the Property is not used as a drinking water source. Because groundwater discharges to the creek, protection of surface water is considered in the proposed cleanup action. There is no current or historical evidence that groundwater COCs are being discharged to Chambers Creek.

The FS prepared under the Agreed Order for this area evaluated two remedial technologies: 1) Monitored Natural Attenuation; and 2) Accelerated In-situ Bioremediation. Both of these technologies have been documented to be successful for remediation of petroleum hydrocarbon releases to groundwater. Several general response actions for groundwater also were evaluated but found not to meet the RAOs for the Property. These alternatives, with a summary of their evaluations, are described in Table 3 and below.

3.1 Rejected Alternative: No Action

Under this alternative no active remediation would occur and only Institutional Controls and Monitoring would be instituted.

- It would not meet the Remedial Action Objective and
- It would not meet the desired requirement to allow unrestricted use of the property.

3.2 Rejected Alternative: Groundwater Containment Technologies

Under this alternative, two containment technologies were considered, but rejected due to high cost, relative to efficacy and remedial timeframe.

- Low-Permeability Barrier Wall would be effective in preventing groundwater from discharging to the river, but data to date do not indicated that contamination is migrating to close proximity to the river. High cost.
- Hydraulic Containment would be difficult to achieve due to variable low-permeability soils at the property and uncertainties related to depth of confining unit.

3.3 Rejected Alternative: Groundwater Collection Technologies

Under this alternative groundwater would be extracted and disposed at a treatment facility.

- High cost would result and it may be difficult to achieve containment due to variable low-permeability soils at the property and uncertainties related to depth of confining unit.

3.4 Rejected Alternative: Permeable Reactive Barrier

Under this alternative migrating contamination would be intercepted by barrier wall that contains reactive materials to break down the petroleum hydrocarbons.

- Likely to be effective, but high cost of construction and disposal of waste would result.

3.5 Other Alternative Considered: Accelerated In-Situ Bioremediation

The second alternative evaluated in the FS was accelerated in-situ bioremediation using oxygen-release compound (ORC). The program would consist of the following components:

- Enhancement of the oxygen content of groundwater by injecting Oxygen Releasing Compounds (ORC) into the subsurface. ORC is a mixture of compounds that, when mixed with water, releases oxygen. The increase of oxygen levels allows the indigenous petroleum-degrading bacteria to multiply, causing the petroleum concentrations to decrease. Two injections of ORC would require the installation of approximately eight injection points near MW-1 during each injection event. The injection points would be perpendicular to groundwater flow and located on 20-foot centers.

- Installation of one additional groundwater monitoring well in the downgradient flow direction between MW-1 and Chambers Creek (MW-5; see Figure 2).
- Quarterly sampling of the four existing wells and one new well on a rotating schedule to evaluate and confirm that degradation of petroleum constituents is occurring. The four downgradient wells (MW-1, MW-2, MW-3, and MW-5) are analyzed for all COCs and arsenic. The upgradient well is analyzed for arsenic only. Although arsenic is not a COC for the Property, it is included in the groundwater monitoring program to assess any trends in groundwater arsenic concentrations. Water quality parameters monitored include specific conductance, oxidation-reduction potential, pH, temperature, and dissolved oxygen.
- Groundwater monitoring will continue until four consecutive quarterly samples demonstrate concentrations of COCs that are below the remedial action cleanup levels identified for the Property.
- Groundwater would be monitored before and after each injection event. In addition, the groundwater wells would be sampled once per quarter. During each sampling event, the four downgradient wells would be analyzed for all COCs and arsenic. The upgradient well would be analyzed for arsenic only. Water quality parameters monitored would include specific conductance, oxidation-reduction potential, pH, temperature, and dissolved oxygen. Quarterly groundwater monitoring would be coordinated with pre- and post-ORC injection groundwater monitoring such that during the first year, six sampling events would be conducted (i.e., two pre-injection events, two post-injection events, and two 'routine' quarterly groundwater monitoring events).

3.6 Selected Alternative: Monitored Natural Attenuation

Under this alternative, a groundwater monitoring program will be established to document the continued natural biodegradation of petroleum hydrocarbons in groundwater. The program will consist of the following components:

- Installation of one additional groundwater monitoring well in the downgradient flow direction between MW-1 and Chambers Creek (MW-5; see Figure 2),
- Quarterly sampling of the four existing wells and one new well on a rotating schedule to evaluate and confirm that degradation of petroleum constituents is occurring. The four downgradient wells (MW-1, MW-2, MW-3, and MW-5) are analyzed for all COCs and arsenic. The upgradient well MW-4 is analyzed for arsenic only. Although arsenic is not a COC at this Property, it will be included in the groundwater monitoring program to assess any trends in groundwater arsenic concentrations. Water quality parameters monitored include specific conductance, oxidation-reduction potential, pH, temperature, and dissolved oxygen.
- Groundwater monitoring will continue until four consecutive quarterly samples demonstrate that concentrations of COCs are below the remedial action cleanup levels identified for the Property.

Petroleum compounds are typically highly biodegradable. Because the source of TPH impacts to groundwater has now been removed, restoration should occur relatively quickly.

Geochemical data collected at the Property include dissolved oxygen and oxidation-reduction potential. Dissolved oxygen is low, and ORP is negative. Both of these suggest that aerobic degradation of petroleum compounds is occurring. Because the asphalt pavement over the Property was removed during the soil removal action, additional dissolved oxygen from surface water infiltration is expected to accelerate natural degradation processes.

3.7 Justification for Selected Cleanup Alternative

The goal of the FS was to identify a preferred remedial action alternative that meets MTCA requirements and Property-specific remedial action objectives. Alternatives were evaluated relative to criteria required by MTCA:

- Protection of human health and the environment;
- Compliance with cleanup levels and ARARs;
- Provision for compliance groundwater monitoring;
- Long-term effectiveness;
- Short-term effectiveness;
- Reasonable restoration time frame;
- Permanent reduction in toxicity, mobility, and volume of hazardous substances;
- Ability to be implemented;
- Status of the groundwater plume at the Property;
- Mechanisms of natural attenuation at the Property;
- Source control efforts;
- Cleanup cost.

The key summary points in the comparison of the two groundwater alternatives that were not rejected are the following:

- Both alternatives are equally protective of human health and the environment over the long term. Alternative 2 might result in faster cleanup, but it is not clear given current data whether the addition of ORC would result in appreciable acceleration of the biodegradation that is already taking place;

- Both alternatives would reduce concentrations of petroleum-related compounds based on naturally occurring biodegradation or enhanced natural biodegradation processes of residual petroleum impacts;

- The costs associated with Alternative 2 are higher than Alternative 1 because of the additional cost of purchasing and injecting the ORC, and the additional groundwater monitoring required to assess ORC injection effectiveness. The benefit of conducting this injection process is uncertain.

When two or more alternatives are equal in benefit, the less costly alternative is given preference. Based on the results of the decision analysis, monitored natural attenuation

was selected as the preferred remedial alternative. This alternative is protective of human health and the environment, and previous remedial actions have removed the majority of the mass in the impacted area. The potential additional reduction in risk from ORC injection is disproportionate to the additional cost (25 percent higher) of this alternative. Chapter 9 of the RI/FS provides a more detailed description of the decision analysis process.

3.8 Applicable or Relevant and Appropriate Requirements

The preferred remedial alternative will comply with federal, state, and local Applicable or Relevant and Appropriate Requirements (ARARs). Applicable requirements are promulgated federal and state laws or regulations that specifically apply to a hazardous substance, cleanup action or location. The ARARs identified for the groundwater remedial action at the West Tacoma Mill are presented in Table 2. Please see Chapter 7 of the RI/FS for a more detailed description of the identification of ARARs.

4 Cleanup Levels and Points of Compliance

The 2006 soil removal action was conducted to meet MTCA Method A soil cleanup levels of 2,000 ppm diesel-range TPH; 2,000 ppm heavy oils; and 30 ppm gasoline-range TPH. Once these levels were met, samples were collected for SVOC, PAH, VOC, and TPH constituents. These results were evaluated for compliance with MTCA risk criteria. This evaluation, presented in detail in the RI/FS (CH2M HILL, 2007), confirmed that no further action was required for soil at the Property. Therefore, CULs for soil are not presented in this CAP. Table 4a provides analytes tested in soil during the cleanup action, along with comparison values used during the RI/FS evaluation.

MTCA defines the point of compliance (POC) as the point or points where cleanup levels shall be attained. The POC for drinking water-based cleanup levels is groundwater throughout the Property, vertically from the uppermost level of the saturated zone to the lowest depth that could be impacted by petroleum-related compounds from the Property.

Table 4b presents the constituents to be analyzed for groundwater, along with cleanup levels for the identified COCs.

Because initial monitoring well sample results (August and December 2006) indicated that the farthest downgradient monitoring well (MW01) contained COC concentrations in excess of the selected remedial action cleanup levels, an additional well was installed further downgradient of the soil removal action area in February 2007. This new well (MW-5) has been sampled four times and does not contain COCs above cleanup levels, as detailed in the quarterly sampling reports. This well will act as a sentinel well for groundwater migration toward Chambers Creek.

In accordance with Ecology's *Guidance on Sampling and Data Analysis Methods* (January 1995), groundwater sample results will have to meet the selected remedial action cleanup criteria for four consecutive quarterly sampling events in order to demonstrate remedial action completion.

5 Compliance Monitoring

Compliance monitoring will be performed in accordance with WAC 173-340-410, Compliance Monitoring Requirements. The selected remedial alternative provides for long-term groundwater monitoring to ensure that the selected alternative, monitored natural attenuation, successfully meets cleanup standards.

The Compliance Monitoring Plan includes the following components:

Quarterly sampling. Four of the five groundwater monitoring wells will be sampled each quarter. Sampling of wells MW-3 and MW-4, neither of which has shown evidence of containing detectable concentrations of constituents of concern during the initial rounds of sampling, will be conducted on an alternating basis to reduce sampling costs. Quarterly data collection will continue for the three groundwater monitoring wells with actual or potential presence of constituents of concern. Table 5 presents the current status of the sampling program for each of the groundwater monitoring wells (as approved by Ecology through approval of the quarterly monitoring report dated February 2, 2007).

Sampling approach. Monitoring well sampling will be conducted in accordance with the low-flow technique approved in the Ecology-approved Sampling and Analysis Plan for the Independent Remedial Action conducted in April and May 2006.

Analytical parameters. Monitoring wells MW-1, MW-2, MW-3, and MW-5 will be sampled for the constituents of concern identified in Table 4. All wells, including MW-4, are sampled for arsenic. Arsenic was not identified as a COC for the Property, but it will be monitored to assess any trends in groundwater arsenic concentrations. Quarterly Groundwater Monitoring Reports and the Summary Groundwater Monitoring Report include trend charts of results. Only those wells that have detections and the parameters detected are shown on the charts. Non-detects are not shown.

Analysis of Results. Groundwater monitoring will continue until four consecutive quarterly sampling events show that concentrations of COCs in groundwater are below cleanup criteria in monitoring wells MW-1, MW-2, MW-3, and MW-5.

6 Schedule for Implementation

Table 6 presents a summary of actions already completed at the site. The proposed schedule for the remainder of the cleanup action is as follows:

- Finalize Cleanup Action Plan – June 2008

- Conduct Quarterly Groundwater monitoring – August and December 2006; March, June, September and December 2007; March 2008; continuing until four consecutive quarters record groundwater concentrations of COCs below cleanup criteria

- Submit Quarterly Reports – approximately one month following each quarterly sampling event, reports will be submitted to Ecology summarizing the results of each quarter's sampling and any trends or issues identified. A final quarterly report will be submitted to confirm the fourth consecutive quarter of concentrations of COCs below cleanup criteria, in compliance with the requirements of this CAP. Ecology will review the final compliance monitoring report and approve it or provide additional comments within 30 days of receipt of the final report.

TABLE 6
Site Investigation Timeline
Abitibi West Tacoma Mill, RI/FS Report, Steilacoom, WA

Action	Date	Report Date
Phase I Environmental Site Assessment (ESA)	2001	2001
Phase II ESA	February - May 2005	May 2005
West Tacoma Mill Supplemental Field Investigation	May – July 2005	July 2005
Agreed Order No. DE 3154 and Public Participation Plan	January – November 2006	November 29, 2006
West Tacoma Mill In-place Characterization Sampling	February – March 2006	March 2006
Removal of petroleum-affected soil, confirmation sampling, and site restoration	April – May 2006	April 2007 (RI/FS)
Installation and initial sampling of four permanent monitoring wells in the vicinity of the former excavation	August – September 2006	April 2007 (RI/FS)
Remedial Investigation/Feasibility Study	Incorporates data collected 2005-2006	April 2007
Groundwater Monitoring	Seven rounds completed to date; See Table 5	Quarterly reports approx. 1 month post-sampling
Cleanup Action Plan	May 2007 – March 2008	Est. June 2008

7 Institutional Controls and Property Use Restrictions

Monitoring for natural attenuation of petroleum-related compounds in groundwater will continue until groundwater meets cleanup standards for four consecutive quarters. Until this condition is met, Property use and access is restricted to ensure that no unauthorized personnel come into contact with potentially impacted groundwater at the Property. There is no current pathway for exposure to potentially impacted groundwater at the site. Contact with potentially impacted groundwater would only occur if intrusive activities (i.e., excavation) took place. In addition, the site is fenced and under 24-hour security supervision until such time that Abitibi Consolidated Sales turns the property over to another party or parties. Use of groundwater from the surficial aquifer requires a permit from the Department of Ecology in accordance with RCW 18.104. No such use is planned or anticipated during the time the property is under current ownership.

An Environmental Covenant will be required to restrict use of near surface groundwater due to the presence of arsenic above the groundwater CUL and to assure proper handling of contaminated soils that may be encountered during demolition and/or subsequent site development. A Model Environmental Covenant accompanies this CAP.

8 Public Participation

The draft CAP will be submitted for a 30-day public comment period in accordance with WAC 173-340-380(2) and WAC 173-340-600(13). This provides the public an opportunity to formally comment on the proposed cleanup. Any public comments and concerns will be evaluated by Ecology and Abitibi in finalizing the CAP. A responsiveness summary will be prepared by Ecology and may be included with the final CAP to respond to public comment. The Agreed Order and Public Participation Plan were previously submitted for a 30-day public comment period and have already been finalized.

9 Ecology Determination

Consistent with Chapter 70.105D RCW, "Model Toxics Control Act", as implemented by Chapter 173-340 WAC, "Model Toxics Control Act Cleanup Regulation", Ecology has determined that the selected cleanup actions are protective of human health and the environment, attain federal and state requirements which are applicable or relevant and appropriate, comply with cleanup standards, and provide for compliance monitoring. The cleanup actions satisfy the preference expressed in WAC 173-340-360 for the use of permanent solutions to the maximum extent practicable, provide for a reasonable restoration time frame, and consider public concerns raised during public comment on the draft CAP.

10 References

CH2M HILL. 2005. *Final Phase II Environmental Site Assessment, Abitibi West Tacoma Mill Steilacoom, Washington*. July 2005.

CH2M HILL. 2007. *Final Remedial Investigation/Feasibility Study Report, Abitibi West Tacoma Mill, Steilacoom, Washington.* April 2007.

CH2M HILL. 2008. *West Tacoma Mill Quarterly Groundwater Monitoring Round 6 Results (December 2007).* March 2008.

Coleman, Marv. 2008. Personal Communication, March 20, 2008.

Welch et al. 1988. *Arsenic in Ground Water of the Western United States*. GROUND WATER, Vol. 26. No. 3, pp. 333-347.

Welch et al. 2000. *Arsenic in Ground Water of the Unites States: Occurrence and Geochemistry*. GROUND WATER, Vol. 38, No. 4, pp. 589-6

Source: USGS 2002

Approximate boundary of Site, excavated as part of Interim Action

N

0 100 200 400 Feet

1 inch equals 200 feet

FIGURE 1

Subject Property: Abitibi West Tacoma Mill
Steilacoom, WA

Sources: Pierce County GIS Data; USGS High Resolution Orthoimage 2002.

Monitoring Well Location

N

0 25 50 100 Feet

1 inch equals 68 feet

FIGURE 2
Mill Layout

Cleanup Action Plan
Abitibi West Tacoma Mill
Steilacoom, WA

File Path: \\baloo\Groups\NWRMIS\GIS\Abitibi\MapDocuments\CleanupActionPlan\Fig2_MillLayout.mxd, Date: July 13, 2007

Table 1
Soil Samples with Results Above PAH Comparison Values
Abitibi Consolidated Sales Corporation Cleanup Action Plan, Steilacoom, Washington

Sample ID			**RR1**		**RR2**		**ACSI-BDS-19**
Location ID			Railroad Track		Railroad Track		
Sample Date			3/03/2005		3/03/2005		Shipping Area 5/12/2006
Compound	**Units**	**CV**					
Indeno(1,2,3-cd)pyrene	mg/kg	0.14	0.074	U	0.069	U	**0.28**
Benzo(b)fluoranthene	mg/kg	0.14	0.091		**0.26**		**0.94**
Benzo(k)fluoranthene	mg/kg	0.14	0.074	U	**0.15**		**0.39**
Chrysene	mg/kg	0.14	**0.24**		**0.58**		**0.44**
Benzo(a)pyrene	mg/kg	0.14	0.074	U	**0.18**		**0.76**
Benzo(a)anthracene	mg/kg	0.14	**0.22**		**0.56**		**0.43**

mg/kg = milligrams per kilograms

Data Qualifiers

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the sample-specific method detection limit (MDL).

= exceeds comparison value

TABLE 2
Promulgated Standards and Criteria (ARARs)
Abitibi Consolidated Sales Corporation Cleanup Action Plan, Steilacoom, Washington

Environmental Media Standards or Criteria	Source
Groundwater	
Federal MCL	40 CFR 141 and 142
Federal MCL Goals	40 CFR 141 and 142
Washington State SMCL	WAC 246-290
Washington GWQS	WAC 173-200
Washington MTCA Method B Cleanup Levels for Groundwater	WAC 173-340
Surface Water	
Washington MTCA Method B Cleanup Levels for Surface Water	WAC 173-340
Washington Water Quality Standards for Marine Water, Chronic (MWC ST)	WAC 173-201A
Washington Water Quality Standards for Marine Water, Acute (MWA ST)	WAC 173-201A
Federal Water Quality Criteria for Surface Water, Saltwater Chronic (SWC FED)	40 CFR 131
Federal Water Quality Criteria for Surface Water, Saltwater Acute (SWA FED)	40 CFR 131
Federal Water Quality Criteria for the Consumption of Organisms Only (HH FED FISH)	40 CFR 131
Soil—Main process area	
Washington MTCA Method A Cleanup Levels for Soil	WAC 173-340

Notes:
GWQS = Groundwater Quality Standard
MCL = Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Levels

TABLE 3
Summary of Technology Screening for Groundwater
Abitibi Consolidated Sales Corporation Cleanup Action Plan, Steilacoom, Washington

Technology	Retained	Effectiveness	Implementability	Cost
No Further Action	No	Does not meet Remedial Action Objectives.	Easily implemented	Low cost
Institutional Controls and Monitoring	No	Does not meet requirement to allow for unrestricted use of the Property.	Easily implemented	Low cost
Groundwater Containment Technologies				
Low-Permeability Barrier Wall	No	Effective in preventing groundwater discharge to the river.	Implementable	High cost
Hydraulic Containment (drains and wells)	No	Difficult to achieve containment due to low-permeability materials at the Property and uncertain depth of confining unit.	Implementable	Moderate cost for installation; high cost for treatment and disposal
Groundwater Collection Technologies				
Groundwater Extraction	No	Difficult to achieve containment due to low-permeability materials at the Property and uncertain depth of confining unit.	Implementable	High cost
Treatment Technologies				
Monitored Natural Attenuation	Yes	Now that source removal has been completed, residual petroleum in groundwater is likely to biodegrade relatively quickly.	Implementable	Low cost
Permeable Reactive Barrier	No	Potentially effective for the removal of dissolved petroleum compounds. Technology is considered developmental.	Implementable	High cost
In-Situ Accelerated Bioremediation	Yes	Effective at promoting natural biodegradation of petroleum-related compounds. May be difficult to achieve effective oxygen release compound (ORC) delivery due to variability in formation density and conductivity.	Implementable	Moderate cost

Table 4a

Constituents to be Analyzed and Cleanup Levels for Groundwater

Abitibi Consolidated Sales Corporation Cleanup Action Plan, Steilacoom, Washington

Analyte	Unit	Final Groundwater Cleanup Level	Source	Analytical Method
Specific Conductance	mS/cm	N/A		field probe
Oxidation-Reduction Potential	mV	N/A		field probe
pH	dimensionless	N/A		field probe
Temperature	C	N/A		field probe
Dissolved Oxygen	mg/L	N/A		field probe
Arsenic	mg/L	N/A; not a COC for this Property		E200.8-Diss
TPH-GRO	mg/L	0.8	MTCA Method A Groundwater	NWTPHG
TPH-DRO	mg/L	0.5	MTCA Method A Groundwater	NWTPHD
Benzene	mg/L	0.0008	MTCA Method B Groundwater	SW8021BMod
Carbazole	mg/L	0.0044	MTCA Method B Groundwater	SW8270D
Napthalene	mg/L	0.16	MTCA Method B Groundwater	SW8270D
2-Methylnapthalene	mg/L	0.032	MTCA Method B Groundwater	SW8270D
1-Methylnapthalene	mg/L	0.0024	MTCA Method B Groundwater	SW8270D

Notes:

MTCA = Model Toxics Control Act

TPH = Total Petroleum Hydrocarbons

mS/cm - milliSiemens per centimeter

DO - dissolved oxygen

mg/L - milligrams per liter

Temp - temperature

C - degrees Celsius

mV - milliVolts

ORP - oxidation-reduction potential

N/A - not applicable

Table 4b
Constituents Analyzed and Comparison Values for Soil - 2006 Soil Removal Action
Abitibi Consolidated Sales Corporation Cleanup Action Plan, Steilacoom, Washington

Chemical Group	CAS	Analyte	Units	Comparison Value	Source
Aroclors	12674-11-2	Aroclor 1016	mg/kg	-	
Aroclors	11104-28-2	Aroclor 1221	mg/kg	-	
Aroclors	11141-16-5	Aroclor 1232	mg/kg	-	
Aroclors	53469-21-9	Aroclor 1242	mg/kg	-	
Aroclors	12672-29-6	Aroclor 1248	mg/kg	-	
Aroclors	11097-69-1	Aroclor 1254	mg/kg	-	
Aroclors	11097-69-1	Aroclor 1254	mg/Kg	1.6	MTCA B
Aroclors	11096-82-5	Aroclor 1260	mg/kg	-	
Metals	7440-38-2	Arsenic	mg/Kg	20	MTCA A
Metals	7440-39-3	Barium	mg/Kg	16,000	MTCA B
Metals	7440-43-9	Cadmium	mg/Kg	40	MTCA B
Metals	7440-47-3	Chromium	mg/kg	48	Puget Sound Background[a]
Metals	7440-50-8	Copper	mg/Kg	3,000	MTCA B
Metals	7439-92-1	Lead	mg/kg	1,000	MTCA A
Metals	7439-97-6	Mercury	mg/Kg	24	MTCA B
Metals	7782-49-2	Selenium	mg/Kg	400	MTCA B
Metals	7440-22-4	Silver	mg/Kg	400	MTCA B
PAH	91-57-6	2-Methylnaphthalene	mg/Kg	320	MTCA B
PAH	83-32-9	Acenaphthene	mg/Kg	4,800	MTCA B
PAH	120-12-7	Anthracene	mg/Kg	24,000	MTCA B
PAH	56-55-3	Benzo(a)anthracene	mg/Kg	0.14	MTCA B
PAH	50-32-8	Benzo(a)pyrene	mg/Kg	0.14	MTCA B
PAH	205-99-2	Benzo(b)fluoranthene	mg/Kg	0.14	MTCA B
PAH	207-08-9	Benzo(k)fluoranthene	mg/Kg	0.14	MTCA B
PAH	218-01-9	Chrysene	mg/Kg	0.14	MTCA B
PAH	53-70-3	Dibenz(a,h)anthracene	mg/Kg	0.14	MTCA B
PAH	206-44-0	Fluoranthene	mg/Kg	3,200	MTCA B
PAH	86-73-7	Fluorene	mg/Kg	3,200	MTCA B
PAH	193-39-5	Indeno(1,2,3-cd)pyrene	mg/Kg	0.14	MTCA B
PAH	91-20-3	Naphthalene	mg/Kg	1,600	MTCA B
PAH	87-86-5	Pentachlorophenol	mg/Kg	8.3	MTCA B
PAH	129-00-0	Pyrene	mg/Kg	2,400	MTCA B
SVOC	108-60-1	2,2'-Oxybis(1-Chloropropane)	mg/Kg	14	MTCA B
SVOC	95-95-4	2,4,5-Trichlorophenol	mg/Kg	8,000	MTCA B
SVOC	88-06-2	2,4,6-Trichlorophenol	mg/Kg	91	MTCA B
SVOC	105-67-9	2,4-Dimethylphenol	mg/Kg	1,600	MTCA B
SVOC	51-28-5	2,4-Dinitrophenol	mg/Kg	160	MTCA B
SVOC	121-14-2	2,4-Dinitrotoluene	mg/Kg	160	MTCA B
SVOC	606-20-2	2,6-Dinitrotoluene	mg/Kg	80	MTCA B
SVOC	91-58-7	2-Chloronaphthalene	mg/Kg	6,400	MTCA B
SVOC	95-57-8	2-Chlorophenol	mg/Kg	400	MTCA B
SVOC	95-48-7	2-Methylphenol	mg/Kg	4,000	MTCA B
SVOC	91-94-1	3,3'-Dichlorobenzidine	mg/Kg	2.2	MTCA B
SVOC	106-47-8	4-Chloroaniline	mg/Kg	320	MTCA B
SVOC	106-44-5	4-Methylphenol	mg/Kg	400	MTCA B
SVOC	65-85-0	Benzoic Acid	mg/Kg	320,000	MTCA B

Table 4b
Constituents Analyzed and Comparison Values for Soil - 2006 Soil Removal Action
Abitibi Consolidated Sales Corporation Cleanup Action Plan, Steilacoom, Washingtor

Chemical Group	CAS	Analyte	Units	Comparison Value	Source
SVOC	100-51-6	Benzyl Alcohol	mg/Kg	24,000	MTCA B
SVOC	111-44-4	Bis-(2-Chloroethyl) Ether	mg/Kg	0.91	MTCA B
SVOC	117-81-7	bis(2-Ethylhexyl)phthalate	mg/Kg	71	MTCA B
SVOC	85-68-7	Butylbenzylphthalate	mg/Kg	16,000	MTCA B
SVOC	86-74-8	Carbazole	mg/Kg	50	MTCA B
SVOC	132-64-9	Dibenzofuran	mg/Kg	160	MTCA B
SVOC	84-66-2	Diethylphthalate	mg/Kg	64,000	MTCA B
SVOC	131-11-3	Dimethylphthalate	mg/Kg	80,000	MTCA B
SVOC	84-74-2	Di-n-Butylphthalate	mg/Kg	8,000	MTCA B
SVOC	117-84-0	Di-n-Octyl phthalate	mg/Kg	1,600	MTCA B
SVOC	118-74-1	Hexachlorobenzene	mg/Kg	0.63	MTCA B
SVOC	87-68-3	Hexachlorobutadiene	mg/Kg	13	MTCA B
SVOC	77-47-4	Hexachlorocyclopentadiene	mg/Kg	480	MTCA B
SVOC	67-72-1	Hexachloroethane	mg/Kg	71	MTCA B
SVOC	78-59-1	Isophorone	mg/Kg	1,100	MTCA B
SVOC	98-95-3	Nitrobenzene	mg/Kg	40	MTCA B
SVOC	86-30-6	N-Nitrosodiphenylamine	mg/Kg	200	MTCA B
SVOC	108-95-2	Phenol	mg/Kg	48,000	MTCA B
TPH	68334-30-5	Diesel Range Hydrocarbons	mg/kg	2,000	MTCA A
TPH	86290-81-5	Gasoline Range Hydrocarbons	mg/kg	30	MTCA A
TPH		Motor Oil	mg/kg	2,000	MTCA A
VOC	630-20-6	1,1,1,2-Tetrachloroethane	mg/Kg	38	MTCA B
VOC	71-55-6	1,1,1-Trichloroethane	mg/Kg	72,000	MTCA B
VOC	79-34-5	1,1,2,2-Tetrachloroethane	mg/Kg	5.0	MTCA B
VOC	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	mg/Kg	2.40E+06	MTCA B
VOC	79-00-5	1,1,2-Trichloroethane	mg/Kg	18	MTCA B
VOC	75-34-3	1,1-Dichloroethane	mg/Kg	8,000	MTCA B
VOC	75-35-4	1,1-Dichloroethene	mg/Kg	1.7	MTCA B
VOC	563-58-6	1,1-Dichloropropene	mg/kg	-	
VOC	87-61-6	1,2,3-Trichlorobenzene	mg/kg	-	
VOC	96-18-4	1,2,3-Trichloropropane	mg/Kg	0.14	MTCA B
VOC	120-82-1	1,2,4-Trichlorobenzene	mg/kg	-	
VOC	120-82-1	1,2,4-Trichlorobenzene	mg/Kg	800	MTCA B
VOC	95-63-6	1,2,4-Trimethylbenzene	mg/Kg	4,000	MTCA B
VOC	96-12-8	1,2-Dibromo-3-chloropropane	mg/Kg	0.71	MTCA B
VOC	95-50-1	1,2-Dichlorobenzene	mg/Kg	7,200	MTCA B
VOC	95-50-1	1,2-Dichlorobenzene	mg/kg	-	
VOC	107-06-2	1,2-Dichloroethane	mg/Kg	11	MTCA B
VOC	78-87-5	1,2-Dichloropropane	mg/Kg	15	MTCA B
VOC	108-67-8	1,3,5-Trimethylbenzene	mg/Kg	4,000	MTCA B
VOC	541-73-1	1,3-Dichlorobenzene	mg/kg	-	
VOC	142-28-9	1,3-Dichloropropane	mg/kg	-	
VOC	106-46-7	1,4-Dichlorobenzene	mg/kg	-	

Table 4b
Constituents Analyzed and Comparison Values for Soil - 2006 Soil Removal Action
Abitibi Consolidated Sales Corporation Cleanup Action Plan, Steilacoom, Washington

Chemical Group	CAS	Analyte	Units	Comparison Value	Source
VOC	106-46-7	1,4-Dichlorobenzene	mg/Kg	42	MTCA B
VOC	594-20-7	2,2-Dichloropropane	mg/kg	-	
VOC	78-93-3	2-Butanone	mg/Kg	48,000	MTCA B
VOC	110-75-8	2-Chloroethylvinylether	mg/kg	-	
VOC	95-49-8	2-Chlorotoluene	mg/Kg	1,600	MTCA B
VOC	591-78-6	2-Hexanone	mg/kg	-	
VOC	106-43-4	4-Chlorotoluene	mg/kg	-	
VOC	99-87-6	4-Isopropyltoluene	mg/kg	-	
VOC	108-10-1	4-Methyl-2-Pentanone (MIBK)	mg/Kg	6,400	MTCA B
VOC	67-64-1	Acetone	mg/Kg	8,000	MTCA B
VOC	107-02-8	Acrolein	mg/Kg	1,600	MTCA B
VOC	107-13-1	Acrylonitrile	mg/Kg	1.9	MTCA B
VOC/BTEX	71-43-2	Benzene	mg/Kg	18	MTCA B
VOC	108-86-1	Bromobenzene	mg/kg	-	
VOC	74-97-5	Bromochloromethane	mg/kg	-	
VOC	75-27-4	Bromodichloromethane	mg/Kg	16	MTCA B
VOC	74-96-4	Bromoethane	mg/kg	-	
VOC	75-25-2	Bromoform	mg/Kg	130	MTCA B
VOC	74-83-9	Bromomethane	mg/Kg	110	MTCA B
VOC	75-15-0	Carbon Disulfide	mg/Kg	8,000	MTCA B
VOC	56-23-5	Carbon Tetrachloride	mg/Kg	7.7	MTCA B
VOC	108-90-7	Chlorobenzene	mg/Kg	1,600	MTCA B
VOC	75-00-3	Chloroethane	mg/Kg	350	MTCA B
VOC	67-66-3	Chloroform	mg/Kg	160	MTCA B
VOC	74-87-3	Chloromethane	mg/Kg	77	MTCA B
VOC	156-59-2	cis-1,2-Dichloroethene	mg/Kg	800	MTCA B
VOC	10061-01-5	cis-1,3-Dichloropropene	mg/kg	-	
VOC	124-48-1	Dibromochloromethane	mg/Kg	12	MTCA B
VOC	74-95-3	Dibromomethane	mg/Kg	800	MTCA B
VOC/BTEX	100-41-4	Ethylbenzene	mg/Kg	8,000	MTCA B
VOC	106-93-4	Ethylene Dibromide	mg/Kg	0.012	MTCA B
VOC	98-82-8	Isopropylbenzene	mg/Kg	8,000	MTCA B
VOC/BTEX	108-31-3/1	m,p-Xylene	mg/Kg	160,000	MTCA B
VOC	74-88-4	Methyl Iodide	mg/kg	-	
VOC	1634-04-4	Methyl tert-Butyl Ether	mg/Kg	560	MTCA B
VOC	75-09-2	Methylene Chloride	mg/Kg	130	MTCA B
VOC	104-51-8	n-Butylbenzene	mg/kg	-	
VOC	103-65-1	n-Propylbenzene	mg/kg	-	
VOC/BTEX	95-47-6	o-Xylene	mg/Kg	160,000	MTCA B
VOC	135-98-8	sec-Butylbenzene	mg/kg	-	
VOC	100-42-5	Styrene	mg/Kg	33	MTCA B
VOC	98-06-6	tert-Butylbenzene	mg/kg	-	
VOC	127-18-4	Tetrachloroethene	mg/Kg	1.9	MTCA B
VOC/BTEX	108-88-3	Toluene	mg/Kg	6,400	MTCA B
VOC	156-60-5	trans-1,2-Dichloroethene	mg/Kg	1,600	MTCA B
VOC	10061-02-6	trans-1,3-Dichloropropene	mg/kg	-	

Table 4b
Constituents Analyzed and Comparison Values for Soil - 2006 Soil Removal Action
Abitibi Consolidated Sales Corporation Cleanup Action Plan, Steilacoom, Washington

Chemical Group	CAS	Analyte	Units	Comparison Value	Source
VOC	110-57-6	trans-1,4-Dichloro-2-butene	mg/kg	-	
VOC	79-01-6	Trichloroethene	mg/Kg	2.5	MTCA B
VOC	75-69-4	Trichlorofluoromethane	mg/Kg	24,000	MTCA B
VOC	108-05-4	Vinyl Acetate	mg/Kg	80,000	MTCA B
VOC	75-01-4	Vinyl Chloride	mg/Kg	0.67	MTCA B
VOC/BTEX	1330-20-7	Xylenes, Total	mg/Kg	16,000	MTCA B

Notes:

[a]Puget Sound Background concentration taken from: Ecology. 1994. Natural background concentrations in the Puget Sound area. Washington State Department of Ecology, Olympia, Washington.

Not all compounds were analyzed at all locations. Evaluation of the combined results against cleanup standards was conducted as part of the RI/FS (CH2M HILL, 2007) in accordance with MTCA standards.

MTCA = Model Toxics Control Act

TPH = Total Petroleum Hydrocarbons

VOC - Volatile Organic Compound

BTEX - Benzene, Toluene, Ethylbenzene, and Xylenes

SVOC - Semivolatile Organic Compound

PAH - Polynuclear Aromatic Hydrocarbon

N/A - not applicable

mg/Kg - milligrams per kilogram

' - ' indicates no standard available

Table 5

Monitoring Well Sampling Status

Abitibi Consolidated Sales Corporation Cleanup Action Plan, Steilacoom, Washington

	MW-1 (all COCs)	**MW-2 (all COCs)**	**MW-3 (all COCs)**	**MW-4 (upgradient; arsenic only)**	**MW-5 (all COCs)**	**current status**
Sep-06	✓ (>)	✓ (<)	✓ (<)	✓	n/a	completed
Dec-06	✓ (>)	✓ (>)	✓ (<)	✓	n/a	completed
Mar-07	✓ (<)	✓ (>)	✓ (<)		✓ (<)	completed
Jun-07	✓ (<)	✓ (<)		✓	✓ (<)	completed
Sep-07	✓ (<)	✓ (<)	✓ (<)		✓ (<)	completed
Dec-07	✓ (<)	✓ (<)		✓	✓ (<)	completed
Mar-08	✓ (>)	✓ (<)	✓ (<)		✓ (<)	completed
Jun-08	X	X		X	X	tentative, as required
Sep-08	X	X	X		X	
Dec-08	X	X		X	X	
Number of consecutive sampling events below comparison values for COCs	4	4	5	n/a (only As sampled for this well)	5	Site-wide: 4

Notes:

COC = constituent of concern

✓ Indicates that a monitoring well has been sampled as scheduled.

X Indicates that a monitoring well is scheduled to be sampled.

(>) Indicates that all key parameter concentrations other than for As are above applicable criteria.

(<) Indicates that all key parameter concentrations other than for As are below applicable criteria.

After Recording Return to:
Marv Coleman, Site Manager / Inspector
Department of Ecology
Southwest Regional Office
Toxics Cleanup Program
P.O. Box 47775
Olympia, WA 98504-7775

Environmental Covenant

Grantor: Abitibi Consolidated Sales Corporation

Grantee: State of Washington, Department of Ecology

Legal: Section 29 Township 20 Range 02 Quarter 44 : BEG NW COR OF GROUNDS WESTERN WASH HOSP E 633 FT N 1574 FT W 1015 FT M/L TO SWLY LI OF PURPOSED STEIL CK WATERWAY TH ON A COMPOUND C TO R 650 FT M/L TO INT A R/A LI TO S LI OF THOS M CHAMBERS DLC SD LI BEING 943 FT W OF BEG TH S ALG SD LI 900 FT TO A PT 360 FT N OF S LI OF SD DC TH E 242 FT TH S 360 FT TO S LI OF SD DC TH E ALG SD LI 701 FT TO BEG SUBJ TO EASE TO CITY OF TACOMA.
and
Section 29 Township 20 Range 02 Quarter 44 : COM ON S LI OF CHAMBERS DC IN SEC 32 AT A PT 855.8 FT W OF SEC LI BET SECS 32 & 33 BEING SE COR OF CASCADE PAPER CO PROP TH N 1574 FT TO N LI OF SD PROP TO POB TH CONT N 606 FT TH W 615 FT TO ELY LI OF STEIL WESTON RD TH ALG SD RD SWLY 700 FT M/L TO N LI OF SD CASCADE PAPER CO PROP TH E 855 FT M/L TO POB SUBJ TO CITY OF TACOMA EASE.

Tax Parcel Nos.: Parcel Nos. 0220294002, 0220294007.

Cross Reference: Agreed Order No. DE 3154

Grantor, Abitibi Consolidated Sales Corporation, hereby binds Grantor, its successors and assigns to the land use restrictions identified herein and grants such other rights under this environmental covenant (hereafter "Covenant") made this day of _____, 2009 in favour of the State of Washington Department of Ecology (Ecology). Ecology shall have full right of enforcement of the rights conveyed under this Covenant pursuant to the Model Toxics Control Act, RCW 70.105D.030(1)(g), and the Uniform Environmental Covenants Act, 2007 Wash. Laws ch. 104, sec. 12.

This Declaration of Covenant is made pursuant to RCW 70.105D.030(1)(f) and (g) and WAC 173-340-440 by Abitibi Consolidated Sales Corporation , its successors and assigns, and the State of Washington Department of Ecology, its successors and assigns (hereafter "Ecology").

A remedial action (hereafter "Remedial Action") occurred at the property that is the subject of this Covenant. The Remedial Action conducted at the property is described in the following document:

Draft Cleanup Action Plan For Abitibi Consolidated Sales Corporation Property (West Tacoma Mill), dated September 2008.

This document is on file at Ecology's Southwest Regional Office.

This Covenant is required because the Remedial Action resulted in residual concentrations of arsenic (As), in the near surface aquifer, which exceed the Model Toxics Control Act Method B Cleanup Level established under WAC 173-340-720 and polynuclear aromatic hydrocarbons (PAHs), in soils associated with the rail lines, which exceed the Model Toxics Control Act Method B Cleanup level established under WAC 173-340-740 remaining at the site.

The undersigned, Abitibi Consolidated Sales Corporation, is the fee owner of real property (hereafter "Property") in the County of Pierce, State of Washington that is subject to this Covenant. The Property is legally described as follows: Section 29 Township 20 Range 02 Quarter 44 : BEG NW COR OF GROUNDS WESTERN WASH HOSP E 633 FT N 1574 FT W 1015 FT M/L TO SWLY LI OF PURPOSED STEIL CK WATERWAY TH ON A COMPOUND C TO R 650 FT M/L TO INT A R/A LI TO S LI OF THOS M CHAMBERS DLC SD LI BEING 943 FT W OF BEG TH S ALG SD LI 900 FT TO A PT 360 FT N OF S LI OF SD DC TH E 242 FT TH S 360 FT TO S LI OF SD DC TH E ALG SD LI 701 FT TO BEG SUBJ TO EASE TO CITY OF TACOMA.
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Abitibi Consolidated Sales Corporation makes the following declaration as to limitations, restrictions, and uses to which the Property 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 Property (hereafter "Owner").

Section 1.

1. No near surface aquifer groundwater may be taken for domestic, agricultural, or any use from the Property.

2. A portion of the Property contains PAH contaminated soil located in and along the railroad area by the loading dock. Upon demolition of the rail lines any contaminated soil exceeding MTCA standards that is removed shall disposed of according to regulatory requirements. The creation of a new exposure pathway creates a need for the Owner to notify Ecology of the method of soil removal and where it is to be disposed. The Owner shall not alter, modify, or remove existing structures in any manner that may result in the release or exposure to the environment of that contaminated soil or create a new exposure pathway without prior written approval from Ecology.

Section 2.

Any activity on the Property that may interfere with the integrity of the Remedial Action and continued protection of human health and the environment is prohibited.

Section 3.

Any activity on the Property that may result in the release or exposure to the environment of a hazardous substance that remains on the Property as part of the Remedial Action, or create a new exposure pathway, is prohibited without prior written approval from Ecology.

Section 4.

The Owner of the property must give thirty (30) day advance written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Remedial Action.

Section 5.

The Owner must restrict leases to uses and activities consistent with the Covenant and notify all lessees of the restrictions on the use of the Property.

Section 6.

The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Covenant. Ecology may approve any inconsistent use only after public notice and comment.

Section 7.

The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Remedial Action; to take samples, to inspect remedial actions conducted at the property, to determine compliance with this Covenant, and to inspect records that are related to the Remedial Action.

Section 8.

The Owner of the Property reserves the right under WAC 173-340-440 to record an instrument that provides that this Covenant shall no longer limit use of the Property or be of any further force or effect. However, such an instrument may be recorded only if Ecology, after public notice and opportunity for comment, concurs.

ABITIBI CONSOLIDATES SALES CORPORATION

_____

Name of Signatory

_____

Title

Dated: _____

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

_____

Marv Coleman
Site Manager / Inspector

Dated: _____

STATE OF WASHINGTION

COUNTY OF PIERCE

On this _____ day of _____, 2009, I certify that _____ _____ personally appeared before me, acknowledged that **he/she** signed this instrument, on oath stated that he/she was authorized to execute this instrument, and acknowledged it as the _____ [type of authority] of Abitibi Consolidated Sales Corporation to be the free and voluntary act and deed of such party for the uses and purposes mentioned in the instrument.

_____
Notary Public in and for the State of

Washington, residing at _____.

My appointment expires _____.