



THIRD PERIODIC REVIEW REPORT FINAL, REVISED

**Edman Company Side 1
(aka Cascade Timber #1)
Facility Site ID#: 1204
Cleanup Site ID# 2662**

**2502 Marine View Drive SW
Tacoma, Washington 98422**

**Southwest Regional Office
TOXICS CLEANUP PROGRAM**

December 2024

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1.0 INTRODUCTION

This document is the third periodic review conducted by the Washington State Department of Ecology (Ecology) of post-cleanup site conditions and monitoring data to ensure that human health and the environment are being protected at the Edman Company Side 1 Marine View Drive site (Site; also known as Cascade Timber 1). This periodic review has been revised to address typographical errors that were discovered after the periodic review was originally finalized in March 2024. Cleanup at this Site was implemented under the Model Toxics Control Act (MTCA) regulations, Chapter 173-340 Washington Administrative Code (WAC). The second periodic review was completed in June of 2016. This periodic review will evaluate the period from July 2016 through August 2021. This review only addresses soil and groundwater contamination at the Site. It is not intended to address issues related to contaminated sediments in the adjacent Hylebos Waterway.

Cleanup activities at this Site were completed under a Consent Decree entered into with Ecology in 1993. The cleanup actions resulted in residual concentrations of metals arsenic, copper, lead and zinc in groundwater and arsenic and lead in soil exceeding MTCA Method A cleanup levels remaining at the Site. The MTCA Method A industrial soil cleanup levels for soil are established under WAC 173-340-745. The groundwater cleanup levels were established as per United States Environmental Protection Agency (EPA) Water Quality Criteria, Marine Chronic Criteria. WAC 173-340-420 (2) requires that Ecology conduct a periodic review of a site every five years under the following conditions:

- Whenever the department conducts a cleanup action.
- Whenever the department approves a cleanup action under an order, agreed order or consent decree.
- Or, as resources permit, whenever the department issues a No Further Action (NFA) opinion.
- And one of the following conditions exists:
 - (a) Institutional controls or financial assurance are required as part of the cleanup.
 - (b) Where the cleanup level is based on a practical quantitation limit.
 - (c) Where, in the department's judgment, modifications to the default equations or assumptions using site-specific information would significantly increase the concentration of hazardous substances remaining at the site after cleanup or the uncertainty in the ecological evaluation or the reliability of the cleanup action is such that additional review is necessary to assure long-term protection of human health and the environment.

When evaluating whether human health and the environment are being protected, the factors the department shall consider include [WAC 173-340-420(4)]:

- (a) The effectiveness of ongoing or completed cleanup actions.

- (b) New scientific information for individual hazardous substances of mixtures present at the Site.
- (c) New applicable state and federal laws for hazardous substances present at the Site.
- (d) Current and projected site use.
- (e) Availability and practicability of higher preference technologies.
- (f) The availability of improved analytical techniques to evaluate compliance with cleanup levels.

The department shall publish a notice of all periodic reviews in the Site Register and provide an opportunity for public comment.

2.0 SUMMARY OF SITE CONDITIONS

2.1 Site history

The Edman Company Site is a wood chipping and log exporting facility located at 2502 Marine View Drive in the Tideflats area of Tacoma, Washington. The Site is approximately 8.1 acres and divided into Lot 1 and Lot 2. Lot 1 (Parcel No. 0321268000) is owned by LE PETOMANE XXV, Inc., not individually, but solely as ASARCO Multi-State Custodial Trust Trustee. Lot 2 (Parcel No. 0321268001) is owned by Edman Holdings, LLC. A Vicinity Map and a Site Plan are available as Appendix 6.1 and Appendix 6.2, respectively.

The Site is located along Hylebos Waterway and is in the Commencement Bay Nearshore/Tideflats (CBN/T) Superfund site. In 1982, the CBN/T was added to the National Priorities List (also known as Superfund list) under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The CBN/T site includes the head of Hylebos Waterway and those upland sites that are believed to contribute contamination to the waterway. EPA is responsible for cleanup of waterway sediment, while Ecology is responsible for cleanup of the upland areas that are sources of contamination to the waterway.

The entire Site (Lots 1 and 2) was formerly owned by Cascade Pole Company, which leased it to Cascade Timber Company from 1977 to 1981. Cascade Timber Company used the property as a log sort yard. Cascade Pole Company transferred the property to McFarland Holdings, Inc. (MCHI) in 1986. Since around 1981 the property has not been used for any purpose other than storage. Lot 1 was severed from the property by a formal recorded short plat. In 1997 Edman Holdings, LLC, purchased Lot 2 from MCHI.

From at least 1977 to 1981, slag, a product of the ore smelting process produced at the ASARCO smelting facility in Tacoma, Washington, was placed on the Site as ballast to keep heavy equipment from sinking into the soft soil. The primary component of the log-yard is log dock debris, a combination of wood waste, soil, and crushed slag.

ASARCO had been responsible for the McFarland Site until December 9, 2009. On that date, the United States Bankruptcy Court for the Southern District of Texas entered an order associated with ASARCO's bankruptcy, Case No. 05-21207, that approved a Settlement Agreement establishing the ASARCO Multi-State Custodial Trust for certain ASARCO owned sites, including "McFarland Designated Property" (i.e., the Site), approval of the appointment of a Custodial Trust, approval of a Custodial Trust Agreement, and for the conveyance of the Site to the ASARCO Multi-State Custodial Trust.

2.2 Site investigations

Ecology conducted a surface water investigation at the Site between November 1983 and June 1984. The study found the following metals in surface water runoff: arsenic, copper, lead, and zinc, which were found at concentrations as high as 7,280 micrograms per liter ($\mu\text{g/L}$), 695 $\mu\text{g/L}$, 710 $\mu\text{g/L}$, and 3,000 $\mu\text{g/L}$, respectively. The study theorized that the cause of contamination was the use of slag as yard ballast.

Further investigation conducted by MCHI's contractor, Applied Geotechnology, Inc., in 1998 found arsenic, copper, lead, and zinc at concentrations up to 1,200 µg/L, 2,600 µg/L, 15 µg/L, and 6,200 µg/L, respectively, in surface water on the Site. On November 6, 1989, Ecology issued an Agreed Order that named MCHI and Cascade Pole Company as potentially liable parties under the MTCA. The mutual objective of the Agreed Order was to provide a framework for a Remedial Investigation/Feasibility Study (RI/FS) and the draft Cleanup Action Plan (CAP) for the Site.

After the Agreed Order was issued by Ecology, an RI/FS was conducted, during which four rounds of groundwater sampling were conducted. All samples were analyzed for total and dissolved metals. Soil samples were collected for analysis for metals. This investigation demonstrated that arsenic, copper, lead, and zinc were present at elevated levels in surface soil samples. Samples from the slag/soil interface showed a maximum soil concentration of 180 milligrams per kilogram (mg/kg) arsenic.

Consent Decree No. 932100995, was issued by the State of Washington Department of Ecology for this Site in October 1993 with MCHI, Cascade Pole Company, and ASARCO Incorporated. Under this Consent Decree, materials containing levels of contaminants exceeding the cleanup standards set for the Site were excavated and consolidated for containment with a double barrier cap system. Groundwater monitoring wells also were installed, and maintenance of the containment system and monitoring of stormwater runoff from the entire Site was performed.

In 1997, a Prospective Purchaser Agreement was executed between the EPA and Edman Holdings, LLC, Edman Company, and F. Talmage Edman for Lot 2 to allow for the redevelopment of the property. In this document, it was stated that ASARCO is fully responsible for all CERCLA and MTCA sediment cleanup costs and for all natural resource damage claims relating to sediment contamination caused by the release of hazardous substances from ASARCO slag at the Site. ASARCO remained responsible for monitoring surface and groundwater wells at the severed parcel, Lot 1, and surface water is to be monitored at the property by MCHI. Lot 2 currently used by Edman Company as a wood chipping and log exporting facility.

2.3 Cleanup levels and point of compliance

2.3.1 Soil and groundwater cleanup levels

The following cleanup levels and point of compliance identified in the Consent Decree are the following:

- MTCA Method A industrial soil cleanup standards are for arsenic of 200 mg/kg and for lead of 1,000 mg/kg. Copper and zinc concentrations were evaluated and determined not to be present on Site at levels that would present a human health (direct contact) hazard.
- As groundwater cannot be used for drinking water due to salinity and as the Site is immediately adjacent to Hylebos Waterway and groundwater discharges to this

waterway, the groundwater cleanup levels were set to surface water standards protective of sediment and water column quality. For these reasons, state and federal marine chronic ambient surface water quality criteria were applied to groundwater at the Site to protect the adjacent Hylebos Waterway. The cleanup standards for groundwater at the Site were set for arsenic at 36 µg/L, for copper at 2.9 µg/L, for lead at 8.5 µg/L, and for zinc at 86 µg/L.

2.3.2 Points of compliance

Points of Compliance included the following:

The point of compliance for groundwater cleanup standards was at the edge of the containment facility. All wells completed to sample the uppermost aquifer system.

Monitoring storm water runoff for the metals of concern was at the post-remediation point of surface water discharge to the Hylebos Waterway.

The Site soils remaining outside the containment system must comply with soil cleanup standards.

2.4 Summary of cleanup actions

After the Agreed Order was issued by Ecology in November 1989, an RI/FS was conducted. Four rounds of groundwater sampling were conducted during the RI/FS, and all samples were analyzed for total and dissolved metals. Concentrations of the metals of concern were low and did not indicate that groundwater was a pathway of contaminant migration.

Surface soil samples were collected from across the Site during the RI/FS. Arsenic was measured and found in 24 samples. Concentrations ranged from 36 mg/kg to 1,900 mg/kg and averaged 467 mg/kg. Copper was measured and found in four samples at concentration ranging from 39 mg/kg to 190 mg/kg. Lead concentrations from eight sampling locations ranged from 46 mg/kg to 1,400 mg/kg. Zinc concentrations from four sample locations ranged from 160 mg/kg to 390 mg/kg.

A Final Remedial Design Report completed in December 1993 included plans for the installation of a containment cell and cap, the installation of storm water collection system, and monitoring of surface water and groundwater. As per the Consent Decree, a Restrictive Covenant limiting the use of most of the Site to industrial purposes was to be filed.

ASARCO has removed all soils and material containing ASARCO slag or related hazardous substances that exceeded MTCA industrial cleanup standards for soil and placed these materials in the containment cell constructed on Lot 1. In July 1995, MCHI and ASARCO executed a Settlement and Indemnification Agreement resolving the Hylebos Waterway sediments litigation between them, pursuant to which ASARCO is fully responsible for all CERCLA and MTCA sediment cleanup costs and for all natural resource damage claims relating to sediment contamination caused by the release of hazardous substances from ASARCO slag at the Site.

The containment cell is approximately 0.5-acres and contains the consolidated wood waste/slag material that is above the cleanup levels from the remainder of the Site. The containment cell consists of a single bottom flexible membrane liner and a leachate collection and recovery system and has a multi-layer cover. The containment system/facility details are shown on Figure 2-2 in Appendix 6.4. Surface water runoff from rainfall on the cell is diverted to one discharge point at the southwest corner of the Site. Four monitoring wells (MCW-1, MCW-2, MCW-3, and MCW-4) were installed at the four sides of the containment cell. These wells were to be completed in the dredged fill; however, actual placement could not be confirmed. As a component of capping activities, ecology blocks (i.e., large concrete blocks) were placed around the perimeter of the cap, forming a berm.

2.5 Groundwater monitoring

The results of groundwater monitoring conducted from May 2015 through July 2018 indicates the following:

- Dissolved arsenic was measured below both MTCA Method A cleanup level (0.005 mg/L) and Site Cleanup Standard (SCS: 0.036 mg/L) in all four wells (MCW-1 through MCW-4). The dissolved arsenic concentrations ranged from 0.00092 mg/L to 0.0027 mg/L. However, all the detected concentrations are below the Surface Water Quality Standard (Marne Chronic) of 0.036 mg/L (SCS) during above sampling period.
- Dissolved lead concentrations were all below the MTCA Method A cleanup level of 0.015 mg/L in all wells every monitoring episode during the sampling period from May 2015 through May 2018. The lead concentrations ranged from 0.00025 mg/L to <0.0008 mg/L. These concentrations were also below the MTCA Surface Water Quality Standard (Marine Chronic) of 0.081 mg/L and SCS of 0.0085 mg/L.
- Dissolved copper concentrations were all below the SCS of 0.0029 mg/L in all wells during the sampling events from May 2015 through May 2018. The dissolved copper concentrations ranged from <0.0020 mg/L to 0.0013 mg/L. In addition, these copper concentrations were all below the MTCA Surface Water Quality Standard of 0.64 mg/L.
- Dissolved zinc was detected below the MTCA Method B cleanup level of 0.48 mg/L and the SCS of 0.086 mg/L for all wells in every monitoring event during the above monitoring period. The zinc concentrations ranged from 0.0014 mg/L to 0.0078 mg/L.

The groundwater monitoring well locations and table of results from May 2011 through May 2018 are presented in Appendix 6.3.

2.5.1 Statistical trend analysis

To evaluate the temporal changes in concentrations of primary constituents of concern (arsenic, copper, lead, and zinc) a statistical analysis of the groundwater monitoring results for the past 10 sampling events (from 2011 through 2018) using the temporal trend evaluation module in the Three-Tiered Monitoring Optimization Tool (3TMO) developed by Parsons and Ramboll. The 3TMO program was developed to facilitate long-term monitoring optimization

evaluations at the site level. Specifically, the temporal trend evaluation module within 3TMO applies the Mann-Kendall nonparametric test to calculate the temporal trends in analyte concentrations overtime.

The results of the Mann-Kendall test at the site indicated that the majority of constituents exhibit a stable trend, or no statistically significant trend at all with the exceptions as below:

- In MCW-2, total zinc concentrations exhibit a “probably increasing” trend according to Mann-Kendall analysis. However, the monitoring results demonstrated that total zinc concentrations in MCW-2 have only above the laboratory detection limit during one sampling event (December 2012), and the laboratory reported concentrations and historical reporting limits have been less than the cleanup criteria for zinc specified in the Consent Decree (0.086 mg/L).
- For MCW-3, the Mann-Kendall test indicates a statistically significant increasing trend for dissolved arsenic; however, all detections of dissolved arsenic have been below the cleanup criteria specified in the Consent Decree (0.036 mg/L) and the identified trend is similar to historical fluctuations over time.
- For MCW-4, total and dissolved arsenic concentrations have varied historically and are identified as “probably increasing” by the Mann-Kendall analysis; however, maximum concentrations for both forms of arsenic (0.0071 mg/L) remain well below the cleanup criteria specified in the Consent Decree (0.036 mg/L).
- Although copper was detected in MCW-1 above the cleanup criteria during one sampling event (in 2016) it has since returned to below cleanup criteria and has been identified as “stable” by the Mann-Kendall analysis.

Collectively, the results suggests that groundwater concentrations are predominantly stable or do not exhibit a statistically significant increasing trend likely to approach or exceed the relevant cleanup criteria specified in the Consent Decree. Summary of Mann-Kendall test results (Table 3) and temporal changes graphs (concentrations vs time; Figures 2a through 2d) are presented in Appendix 6.4.

Based on the results of above statistical trend analysis and the following reasons, Ecology decided to discontinue the groundwater monitoring at the Site in 2018:

- The groundwater cannot be used for drinking water purposes because of its salinity.
- Considering that the Site and adjacent properties are currently used for industrial purposes with no current or likely future use of groundwater for drinking water purposes.
- Concentrations of contaminants of concern have been in general compliance with the established Site cleanup criteria.

2.6 Restrictive Covenant

Institutional controls required in the form of Restrictive Covenant were included with the Consent Decree. The Restrictive Covenant was determined to be required at the Site because the cleanup action at the Site would result in residual concentrations of arsenic and lead exceeding the MTCA Method A cleanup levels for industrial soil. The Restrictive Covenant No. 9609100214 was recorded in the Pierce County on September 10, 1996, for Lot 1, where the containment cell and cap are located and included the following three limitations:

- The property 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 Codes;
- Activities on the property that interfere with or reduce the effectiveness of the cleanup action or any operation, maintenance, or monitoring required by the Decree are prohibited; and
- Activities on the property that may result in the release of a hazardous substance that was contained as a part of the cleanup action are prohibited, and continued maintenance of the containment system must be provided for.

The Restrictive Covenant for Lot 2 (file number 9609100213) was filed in Pierce County, Washington, on September 10, 1996, and included the following two limitations:

- The property 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 Restrictive Covenant; and
- Activities on the property that interfere with the continuing obligation of surface water monitoring required by the Consent Decree are prohibited.

The Restrictive Covenants are available as Appendix 6.5.

3.0 PERIODIC REVIEW

3.1 Effectiveness of completed cleanup actions

Based upon the Site visit conducted on April 14, 2021, the asphalt cap, berm, and monitoring wells observed to be in good condition. No cracks and/or pot holes in the cap were observed. The ecology block berm was observed to surround the three sides of the cap that were visible. The excavation and containment of contaminated soils has effectively eliminated the risk of human and wildlife exposure to the contaminated soils/sediment. The cap also prevents storm water from coming in contact with these contaminated soils. In 1997, Ecology removed the Edman Company Side 1 (a.k.a. Cascade Timber 1) Site from the State's Hazardous Sites List after determining that the Site no longer presented a threat to human health and the environment. A photo log is available as Appendix 6.6.

The Restrictive Covenants for the Site were recorded and are still in place. This Restrictive Covenant prohibits activities that will result in the release of contaminants contained as part of the cleanup without Ecology's approval and prohibits any use of the property that is inconsistent with the Covenant. This Restrictive Covenant serves to ensure the long term integrity of the remedial actions.

3.2 New scientific information for individual hazardous substances for mixtures present at the Site

Cleanup levels at the Site were based on regulatory standards. These standards continue to be protective of Site-specific conditions.

3.3 New applicable state and federal laws for hazardous substances present at the Site

The cleanup at the Site was governed by Chapter 173-340 WAC (1991 ed.). WAC 173-340-702(12) (c) [2001 ed.] provides that,

"A release cleaned up under the cleanup levels determined in (a) or (b) of this subsection shall not be subject to further cleanup action due solely to subsequent amendments to the provision in this chapter on cleanup levels, unless the department determines, on a case-by-case basis, that the previous cleanup action is no longer sufficiently protective of human health and the environment."

The marine chronic ambient water quality criteria were revised by Ecology in 2006. These changes were not substantial enough to determine that the previous cleanup action is no longer sufficiently protective of human health and the environment.

The current MTCA Method A industrial soil cleanup standard for arsenic has been reduced from 200 mg/kg to 20 mg/kg since the Consent Decree was issued. Because contaminated soils at the Site have been capped, the modification to the MTCA cleanup standard does not represent an increase in risk to human health or the environment. Several of the state marine chronic surface water quality criteria have also changed since the Enforcement Order was issued.

Values for lead and zinc have been reduced to 8.1 µg/L and 81 µg/L, respectively. Overall, the changes to the original standards have not resulted in the need for additional remedial actions at the Site. The Table below presents the original and current cleanup levels:

Soil Cleanup Levels

Compound	Original MTCA Method A-Industrial (mg/kg) ^a	Current MTCA Method A Industrial (mg/kg)
Arsenic	200	20
Copper
Lead	1,000	1,000
Zinc

Groundwater Cleanup Levels

Compound	Original Federal / State Surface Water Quality Standard-Marine Chronic (µg/L)	Current Federal / State Surface Water Quality Standard-Marine Chronic (µg/L) ^{b,c}	Current MTCA Method A/Method B Cleanup Standard (µg/L)
Arsenic	36	36	5
Copper	2.9	3.1	640
Lead	8.5	8.1	15
Zinc	86	81	480

Notes:

^a Model Toxics Control Act Cleanup Regulations, Chapter 173-340 (2001 edition). Method A Cleanup Levels.

^b Ambient Water Quality Criteria for Marine Waters. EPA's Quality Criteria for Water Summary, 1994.

^c Ambient Water Quality Standards for Marine Surface Waters of Washington State

Key:

... no value cited
mg/kg milligrams per kilogram
µg/L micrograms per liter

3.4 Current and projected Site use

The Site is currently used for industrial purposes. The Site will continue to be used as a log storage yard and wood chipping facility. Future use of the Site is not expected to change. These uses are not likely to have a negative impact on the integrity of the Site cap or sediments adjacent to the Site as long as the conditions of the Restrictive Covenant are followed.

3.5 Availability and practicability of higher preference technologies

The implemented remedy included the excavation and capping/containment of hazardous substances, development of a storm water conveyance system, and installation of a groundwater monitoring system. These actions continue to be protective of human health and

the environment. While higher preference cleanup technologies may be available, they are still not practicable at this Site.

3.6 Availability of improved analytical techniques to evaluate compliance with cleanup levels

The analytical methods used at the time of the remedial action were capable of detection below the Site specific cleanup levels. The presence of improved analytical techniques would not affect decisions or recommendations made for the Site.

4.0 CONCLUSIONS

- The cleanup actions completed at the Site appear to be protective of human health and the environment.
- Soil cleanup levels have not been met at the Site; however, under WAC 173-340-740(6) (f), the cleanup action is determined to comply with cleanup standards since the long-term integrity of the containment system is ensured, and the requirements for containment technologies in WAC 173-340-360(8) have been met.
- Groundwater concentrations of contaminants of concern have generally decreased after the implementation of the Site remedy. Dissolved copper, lead, and zinc concentrations have been below the Site cleanup levels and/or below the laboratory detection limits in all compliance monitoring wells since May of 2011 sampling event. Only dissolved arsenic concentrations exceed the Site cleanup level in one monitoring well.
- Sufficient compliance groundwater monitoring has been conducted to demonstrate that, as of May 2018, the remedy has effectively contained metals contamination in soils.
- Annual cap inspection, containment cell and general Site improvements (monitoring wells, vent pipes, drainage channels, fences, etc.) are being conducted to identify items requiring repair (i.e., damaged wells, clogged drains, damaged gates and fences etc.). The cap, monitoring wells, drains, and perimeter fence are all in good condition and do not require any repairs at this time. Although groundwater monitoring is no longer required, monitoring wells should continue to be maintained in good condition in the event that future groundwater sampling is needed, such as if the cap fails or deteriorates.
- The Restrictive Covenant for the property is in place and will be effective in protecting public health and the environment from exposure to hazardous substances and protecting the integrity of the cleanup action.

Based on this periodic review, the Department of Ecology has determined that the requirements of the Consent Decree and the Restrictive Covenant are being satisfactorily met. The cap, drains, and perimeter fence are all in satisfactory condition and no repairs are needed at this time. The surface cover is in satisfactory condition, and Site activities do not pose a risk of exposing contaminated soils at the Site. It is the property owner's responsibility to continue to inspect the Site to ensure that the integrity of the cap is maintained.

4.1 Next review

The next review for the Site will be scheduled five years from the date of this periodic review. In the event that additional cleanup actions or institutional controls are required, the next periodic review will be scheduled five years from the completion of those activities.

5.0 REFERENCES

Applied Geotechnology, Inc. Remedial Investigation – Cascade Timber Yard No. 1. December 8, 1989.

Department of Ecology. Consent Decree No. 93-2-10099-5. October 12, 1993.

Hydrometrics, Inc. Final Remedial Design Report, Cascade Timber No. 1 Remediation, Tacoma, Washington. December 10, 1993.

Pierce County. Restrictive Covenant, 2502 Marine View Drive-Lot 1. September 10, 1996a.

Pierce County. Restrictive Covenant, 2502 Marine View Drive-Lot 2. September 10, 1996b.

Hydrometrics, Inc. Third Quarter 1997 Status Report-Cascade Timber 1. December 10, 1997.

Hydrometrics, Inc. September Status Report-Cascade Timbers 1. September 9, 1998.

Department of Ecology. 1996. Restrictive Covenant, 2502 Marine View Drive, Tacoma, Washington.

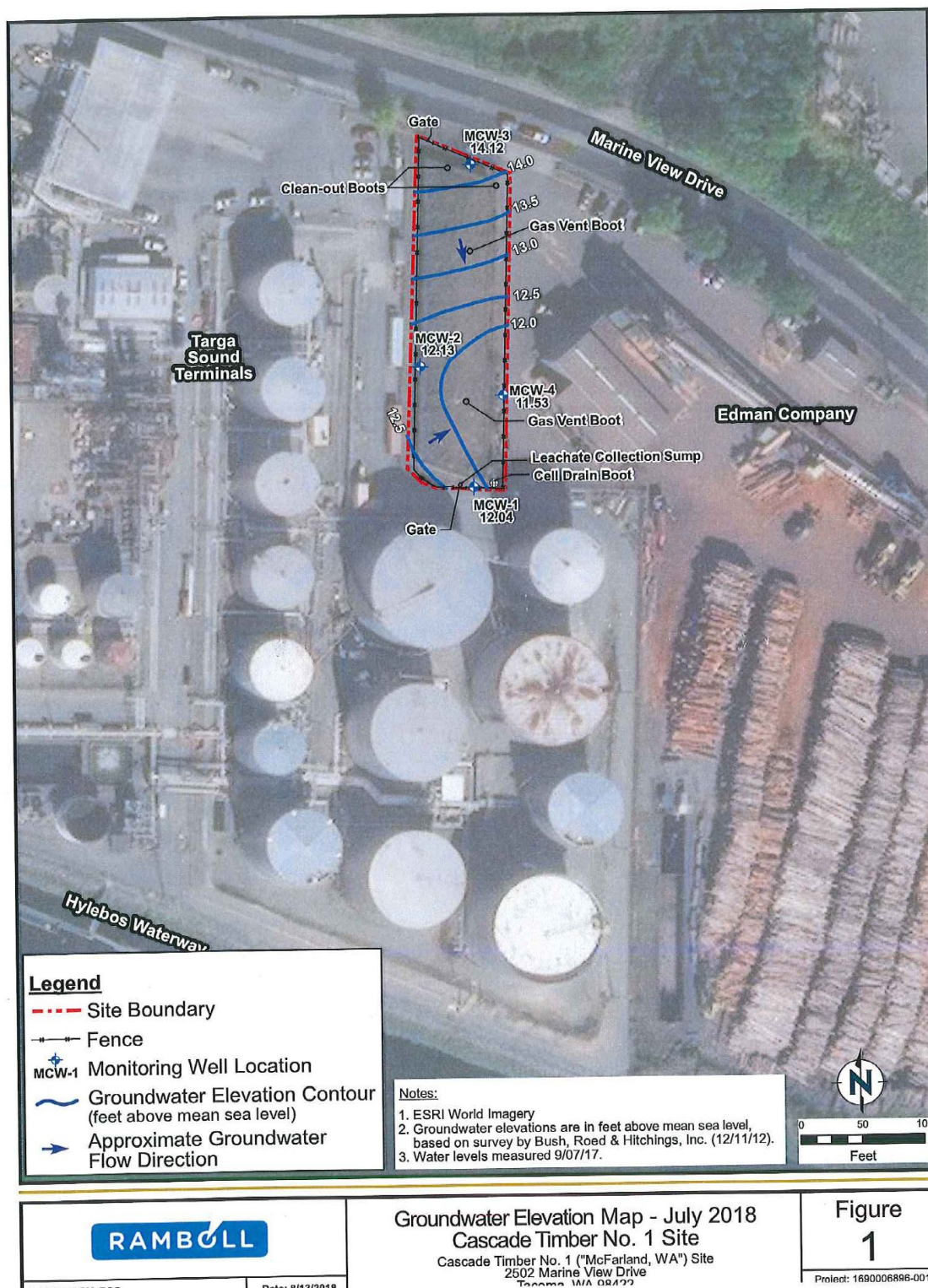
RAMBOLL ENVIRON. Annual Groundwater Monitoring and O&M Reports, Cascade Timber #1 (a.k.a MacFarland, WA) Site. May 2011 through May 2015.

Department of Ecology. Final Periodic Review Report, Edman Company Side 1 (a.k.a. Cascade Timber No. 1), 2502 Marine View Drive, Tacoma, Washington. May 2011.

Department of Ecology. Site Visit. April 14, 2021.

6.0 APPENDICES

6.3 Groundwater monitoring well locations and table of results



[illegible]

Notes	Chronic Surface Water Standard
Marine	
militarants per liter	
high	
step	
offeris not established	
PHH-GX gasoline range petroleum hydrocarbons	
PHH-PAH polycyclic aromatic hydrocarbons (C ₁₀ -C ₂₄)	
PHH-PHC motor oil range petroleum hydrocarbons	
Bold values and cells shaded gray represent an exceedence of the MTCA Method A/B criteria.	
Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.	
Concentration was below detection limit.	
Concentration was below reporting limit.	

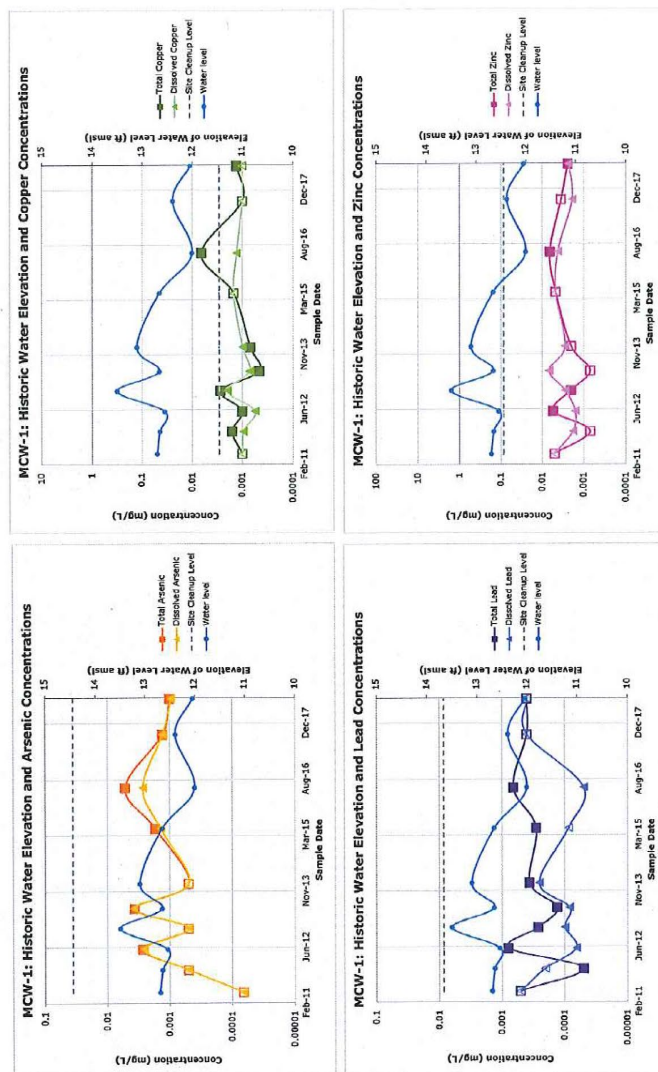
6.4 Summary of Mann-Kendall test results and concentraions vs time graphs (temporal changes)

Table 3: Summary of Mann-Kendall Test Results
Cascade Timber No.1 ("McFarland, WA") Site
2502 Marine View Drive, Tacoma, Washington

Mann-Kendall Results Summary				Arsenic		Copper		Lead		Zinc	
Well ID	Start Date	End Date	Samples	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
MCW-1	5/18/2011	7/25/2018	10	--	--	--	Stable	--	ND	--	Stable
MCW-2	5/18/2011	7/25/2018	10	Stable	Stable	--	--	--	ND	Probably Increasing	--
MCW-3	5/18/2011	7/25/2018	10	Stable	Increasing	ND	ND	--	ND	--	--
MCW-4	5/18/2011	7/25/2018	10	Probably Increasing	Probably Increasing	--	--	--	ND	--	Stable

Notes:

-- = No statistically significant temporal trend (<90% confidence) in concentrations; low variability of results (coefficient of variation [COV]<1)
 ND = all sample results are less than the laboratory practical quantitation limit (have a qualifier of "J"), or the results are a mixture of non- detects and results having a "J" qualifier
 Stable = no statistically significant temporal trend (<90% confidence) in concentrations; low variability of results (COV < 1)
 Probably Increasing = statistically significant (90-95% confidence) increasing trend in concentrations
 Increasing = statistically significant (>95% confidence) increasing trend in concentrations
 Decreasing = statistically significant (>95% confidence) decreasing trend in concentrations



Non-Kendall Results Summary		Arsenic		Copper		Lead		Zinc	
Well ID	Start Date	End Date	Samples	Total	Dissolved	Total	Dissolved	Total	Dissolved
MCW-1	5/18/2011	2/2/2018	10	Stable	Stable	Stable	Stable	Stable	Stable
MCW-2	5/18/2011	2/2/2018	10	Stable	Stable	Stable	Stable	Stable	Stable
MCW-3	5/18/2011	2/2/2018	10	Stable	Stable	Stable	Stable	Stable	Stable
MCW-4	5/18/2011	2/2/2018	10	Stable	Stable	Stable	Stable	Stable	Stable

Notes: *Open symbols indicate samples with no detections, the value shown on the graph is half of the reporting limit

** = Not statistically significant temporal trend (<95% confidence) in concentrations; low variability of results (coefficient of variation [COV] < 1)

ND = All sample results are less than the laboratory practical quantitation limit (have a quality of "7"), or the results are a mixture of non-detects and results having a "7" quality

Stable = No statistically significant temporal trend (<95% confidence) in concentrations; low variability of results (coefficient of variation [COV] < 1)

Increasing = statistically significant (>95% confidence) increasing trend in concentrations

Decreasing = statistically significant (>95% confidence) decreasing trend in concentrations

Fluctuating = statistically significant (>95% confidence) fluctuating trend in concentrations

Stable = No statistically significant temporal trend (<95% confidence) in concentrations; low variability of results (coefficient of variation [COV] < 1)

Increasing = statistically significant (>95% confidence) increasing trend in concentrations

Decreasing = statistically significant (>95% confidence) decreasing trend in concentrations

Fluctuating = statistically significant (>95% confidence) fluctuating trend in concentrations

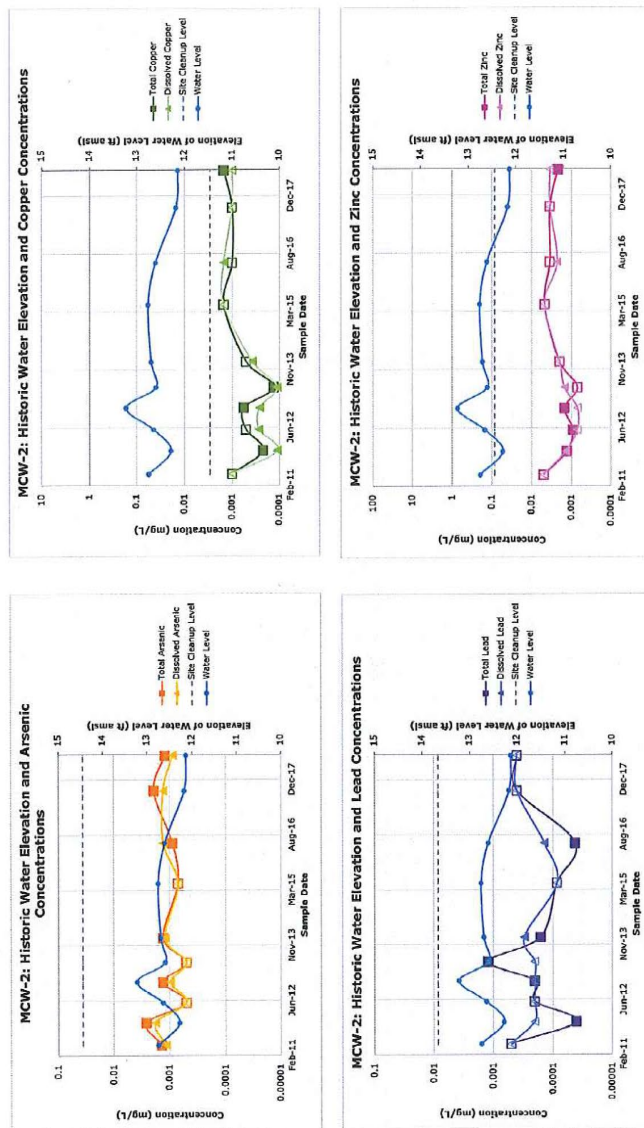
GROUNDWATER ELEVATION AND METAL CONCENTRATIONS - MCW-1

CASCADE TIMBER NO. 1 ("McFarland, WA") S.
2502 MARINE VIEW DRIVE
TACOMA, WA 98422



FIGURE
2a

DRAWN BY: D.B. DATE: 12/29/2018 PROJECT: 1800006



Non-Model Results Summary				Arsenic		Copper		Lead		Zinc	
Well ID	Start Date	End Date	Samples	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
MCW-1	5/18/2011	7/25/2018	10	Stable	Stable	ND	ND	ND	ND	Probably Increasing	Stable
MCW-2	5/18/2011	7/25/2018	10	Stable	Stable	ND	ND	ND	ND	Probably Increasing	Stable
MCW-3	5/18/2011	7/25/2018	10	Stable	Stable	ND	ND	ND	ND	Probably Increasing	Stable
MCW-4	5/18/2011	7/25/2018	10	Probably Increasing	Probably Increasing	ND	ND	ND	ND	Probably Increasing	Stable

Notes:
 *Open symbols indicate samples with no detections, the value shown on the graph is half of the reporting limit.
 ND = Not Detected
 St = Statistically Significant
 P = Probably Increasing
 I = Increasing
 D = Decreasing
 S = Stable
 F = Fluctuating
 T = Trending
 U = Unknown
 L = Low
 H = High
 M = Medium
 V = Very Low
 V = Very High
 F = Fair
 G = Good
 B = Bad
 P = Poor
 F = Fair
 G = Good
 B = Bad
 P = Poor

Non-Model Results:
 ND = all sample results are less than the laboratory practical quantitation limit (have a quality of "Y"), or the results are a mixture of non-detects and results having a "Y" qualifier.
 Stable = no statistically significant temporal trend (<95% confidence) in concentrations; low variability of results (coefficient of variation [COV] < 1).
 Increasing = statistically significant (>95% confidence) increasing trend in concentrations.
 Decreasing = statistically significant (>95% confidence) decreasing trend in concentrations.

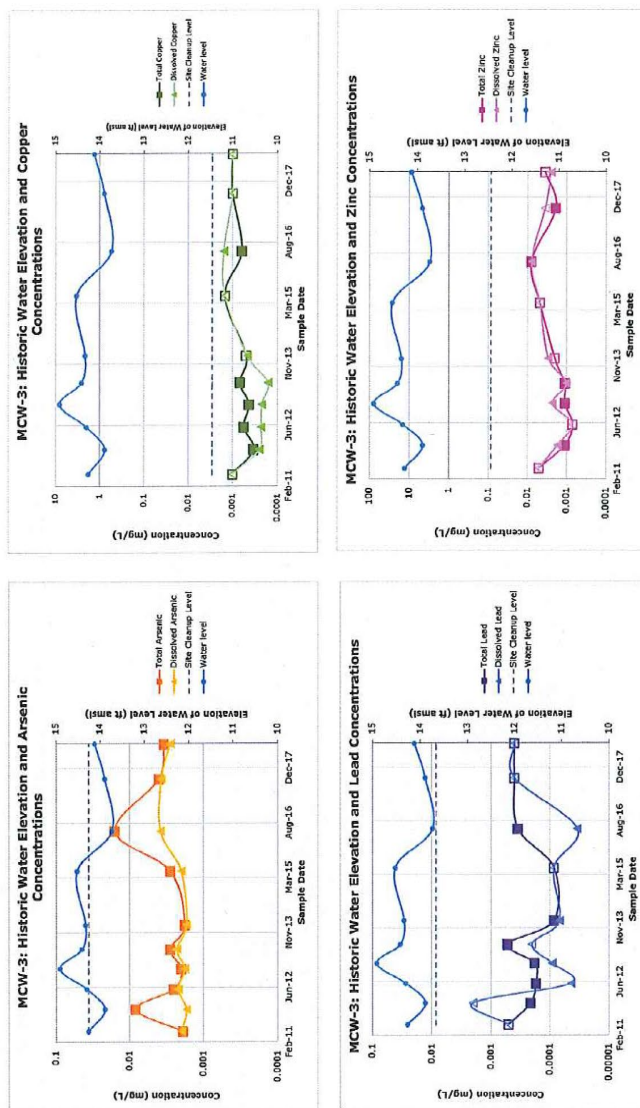
GROUNDWATER ELEVATIONS AND METAL CONCENTRATIONS - MCW-2

CASCADE TIMBER NO. 1 ("McFarland, WA") SI
2502 MARINE VIEW DRIVE
TACOMA, WA 98422

RAMBOLL

FIGURE 2b

CREATED BY: DJB DATE: 11/29/2018 PROJECT: 180-0046



Metal Results Summary				Copper		Lead		Zinc	
Well ID	Start Date	End Date	Samples	Total	Discharged	Total	Discharged	Total	Discharged
MCW-3	5/18/2011	7/27/2018	10	Stable	Stable	Stable	Stable	Stable	Stable
MCW-3	5/18/2011	7/27/2018	10	Stable	Stable	Stable	Stable	Stable	Stable
MCW-3	5/18/2011	7/27/2018	10	Stable	Stable	Stable	Stable	Stable	Stable
MCW-3	5/18/2011	7/27/2018	10	Stable	Stable	Stable	Stable	Stable	Stable

Notes:
*Open symbols indicate samples with no detections, the value shown on the graph is half of the reporting limit
*Original sample results are shown in blue
*Final results are shown in red

Notes:
*Open symbols indicate samples with no detections, the value shown on the graph is half of the reporting limit
*Original sample results are shown in blue
*Final results are shown in red

GROUNDWATER ELEVATION AND METAL CONCENTRATIONS - MCW-3

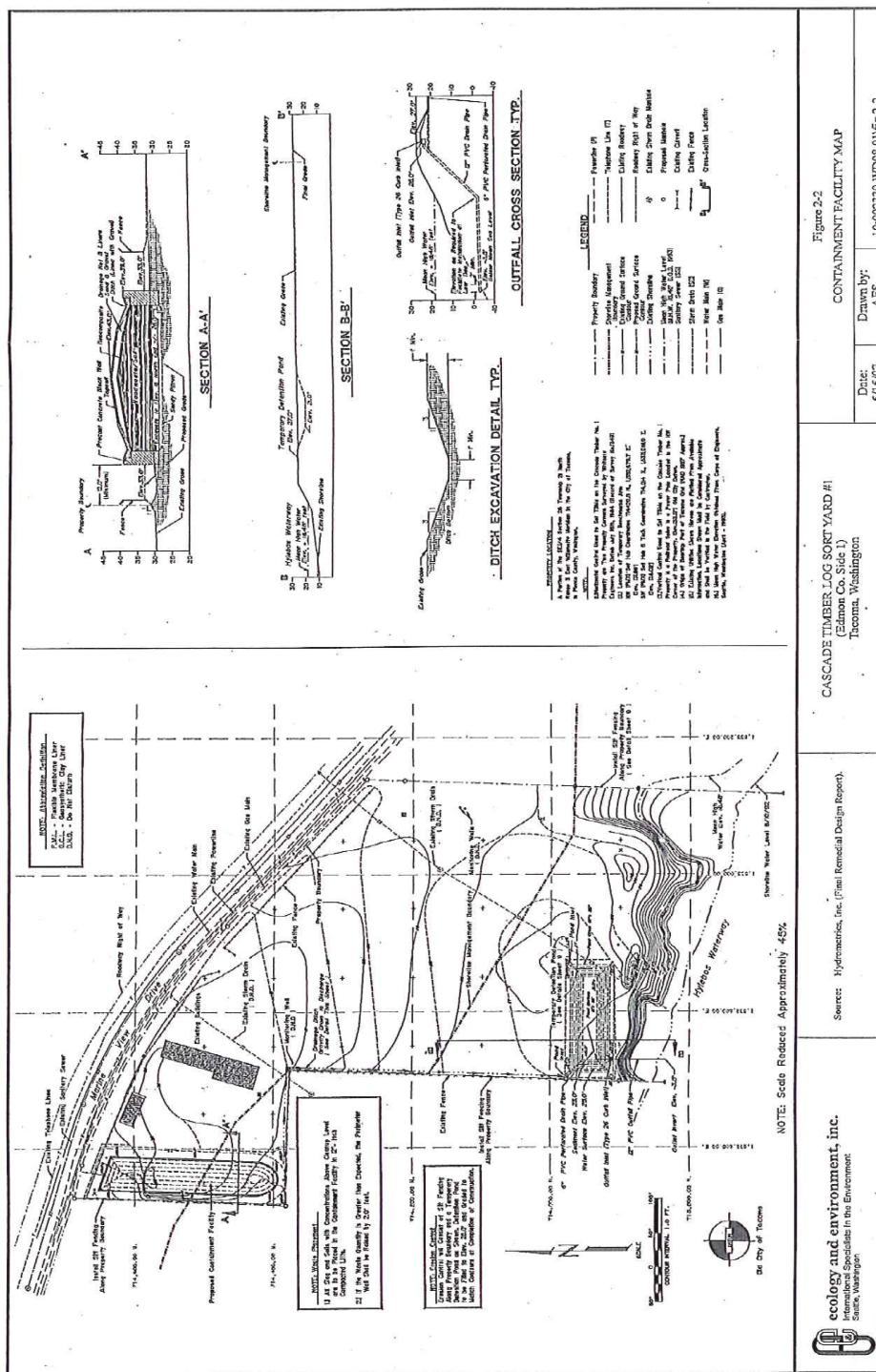
CASCADE TIMBER NO. 1 ("McFarland, WA") SI
2502 MARINE VIEW DRIVE
TACOMA, WA 98422

FIGURE
2C

RAMBOLL

DATE: 12/20/2018 PROJECT: 160026

6.5 Containment facility map



6.6 Restrictive Covenant

AFTER RECORDING RETURN TO:

RESTRICTIVE COVENANT 2502 Marine View Drive - LOT 1

Notice is hereby given that the property, which is the subject of this Restrictive Covenant, described as, Lot 1 of City of Tacoma Short Plat recorded in the real property records of Pierce County, Washington on April 1, 1996, under Auditor's Recording No. 9604010402, (the "Property") is the subject of remedial action under Chapter 70.105D RCW. The work done to clean up the Property (hereinafter the "Cleanup Action") is described in Washington State Department of Ecology Consent Decree, Pierce County No. 93-2-10099-5, and in exhibits to the Decree. The Consent Decree is filed with the Superior Court of the State of Washington in and for Pierce County.

The restrictions and obligations described in this Restrictive Covenant are intended to run with the land and be binding on any and all persons who acquire an interest in the Property.

Potential purchasers and lessees are further put on notice that,

1. The Property 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, attached hereto as Exhibit A.
2. Activities on the Property that interfere with or reduce the effectiveness of the Cleanup Action or any operation, maintenance, or monitoring required by the Decree are prohibited.
3. Activities on the Property that may result in the release of a hazardous substance that was contained as a part of the Cleanup Action are prohibited, and continued maintenance of the containment system must be provided for.

The owner of the Property and owner's assigns and successors in interest reserve the right to record an instrument which provides that this Restrictive Covenant shall no longer limit the use of the Property 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.

Executed as of the _____ day of _____, 1996.

PROPERTY OWNER: _____

By _____
his _____

Attachments:

Exhibit A - Applicable Zoning Regulations

STATE OF WASHINGTON }
COUNTY OF _____ } ss.

On this _____ day of _____, 1996, before me, a Notary Public in and for the State of Washington, personally appeared _____, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person who executed this instrument, on oath stated that he/she was authorized to execute the instrument, and acknowledged it as the _____ of _____ to be the free and voluntary act and deed of said corporation for the uses and purposes mentioned in the instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first above written.

NOTARY PUBLIC in and for the State of
Washington, residing at: _____
My appointment expires: _____
Print Name: _____

EXHIBIT A (CONT.)

TACOMA MUNICIPAL CODE

until the expiration of the appeal period; provided however, that a permit granted by the Hearing Examiner shall not become effective in the event there is an appeal filed within the limits prescribed.

B. Height Regulations: A building, structure or portion thereof erected shall not exceed a height of 100 feet, unless such building or structure is set back on all sides one foot for each four feet such building or structure exceeds 100 feet in height.

C. Area Regulations: A building or structure hereafter built, enlarged or moved shall provide the following yards or lot areas:

1. Front Yard. Where all the frontage is located in the M-2 Heavy Industrial District no front yard is required. Where the frontage is partly in the M-2 Heavy Industrial District and partly in a Dwelling District the front yard requirement of the Dwelling District shall apply. In the M-2 Heavy Industrial District.

2. Side Yard. Where the side of a lot in the M-2 Heavy Industrial District abuts the side of a lot in a Dwelling District there shall be a side yard of not less than seven and one-half feet in width. In other cases, a side yard for a commercial or industrial building shall not be required.

3. Rear Yard. Where a lot in the M-2 Heavy Industrial District abuts upon a Dwelling District there shall be a rear yard having a depth of not less than 20 feet for interior lots and 10 feet for corner lots. In other cases a rear yard is not required.

D. Parking and Loading Space Regulations. Parking space for buildings as required in Section 13.06.350.

Loading space as required in Section 13.06.350: (Ord. 25374 § 2; passed Oct. 5, 1993; Ord. 20220 § 10; passed Oct. 1, 1974; Ord. 19858 § 6; passed July 3, 1973; Ord. 19286 § 2; passed Jan. 26, 1971; Ord. 15003; passed May 3, 1954; Ord. 14793 § 26; passed May 18, 1953.)

AFTER RECORDING RETURN TO:

RESTRICTIVE COVENANT
2502 Marine View Drive - LOT 2

Notice is hereby given that the property, which is the subject of this Restrictive Covenant, legally described as, Lot 2 of City of Tacoma Short Plat recorded in the real property records of Pierce County, Washington on April 1, 1996, under Auditor's Recording No. 9604010402, (the "Property") was the subject of remedial action under Chapter 70.105D RCW. The work done to clean up the Property (hereinafter the "Cleanup Action") is described in Washington State Department of Ecology Consent Decree, Pierce County No. 93-2-10099-5, and in exhibits to the Decree. The Consent Decree is filed with the Superior Court of the State of Washington in and for Pierce County.

The restrictions and obligations described in this Restrictive Covenant are intended to run with the land and be binding on any and all persons who acquire an interest in the Property.

Potential purchasers and lessees are further put on notice that:

1. The Property 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, attached hereto as Exhibit A.
2. Activities on the Property that interfere with the continuing obligation of surface water monitoring required by the Decree are prohibited.

The owner of the Property and owner's assigns and successors in interest reserve the right to record an instrument which provides that this Restrictive Covenant shall no longer limit the use of the Property 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.

Executed as of the ____ day of _____, 1996,

PROPERTY OWNER: MCFARLAND CASCADE HOLDINGS, INC.

By _____
Its _____

Attachment:
Exhibit A - Applicable Zoning Regulations

STATE OF WASHINGTON }
COUNTY OF PIERCE } ss.

On this ____ day of _____, 1996, before me, a Notary Public in and for the State of Washington, personally appeared _____, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person who executed this instrument, on oath stated that he was authorized to execute the instrument, and acknowledged it as the _____ of McFarland Cascade Holdings, Inc. to be the free and voluntary act and deed of said corporation for the uses and purposes mentioned in the instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first above written.

NOTARY PUBLIC in and for the State of
Washington, residing at _____
My appointment expires _____
Print Name _____

EXHIBIT A

TACOMA MUNICIPAL CODE

13.06.330 M-2 district

The following are regulations of the M-2 Heavy Industrial District:

A. Use Regulations. A building, structure or land or a building or structure hereafter built, altered or enlarged shall be used for only the following permitted uses:

1. Any use permitted in the M-1 Light Industrial District within or outside a building or fence; provided, however, that all residential uses are prohibited in the M-2 Heavy Industrial District except necessary quarters for caretakers and watchmen. Automobile house trailers and mobile homes are allowed for such caretaker and watchman quarters provided a special permit has been approved in accordance with Section 13.06.375; provided further, that group care homes, day care centers and nursery schools are also prohibited from M-2 Heavy Industrial Districts.

1.5. Automobile house trailers and mobile homes as temporary office space in accordance with provisions of Section 13.06.375.

2. Alcohol manufacture or liquor distillery.

3. Asbestos products manufacture.

4. Asphalt manufacture and creosote manufacture and treatment plants.

5. Bag cleaning.

6. Brick, tile, terra cotta and pottery manufacture.

7. Carborundum and abrasive manufacture.

8. Cloth, cord, rope and thread manufacture.

9. Chemicals manufacture but excluding acid manufacture.

10. Concrete and concrete products manufacture.

11. Coke ovens.

12. Felt manufacture.

13. Fish curing, smoking and canning.

14. Flour, feed and cereal manufacture.

15. Gums, percha, tar and rubber goods manufacture.

16. Iron, steel, brass, copper and other metals, foundry and fabrication but excluding smelter and blast furnace.

17. Lampblack, paint, varnish, oil and turpentine manufacture.

18. Linoleum and oil cloth manufacture.

19. Meat and food manufacture, and processing but excluding the slaughter of animals and rendering of fat.

20. Mining, rock quarry and rock, sand and gravel cleaning, crushing and processing.

21. Railroad repair and classification yard.

22. Rolling mill.

23. Petroleum and petroleum products aboveground storage in excess of 1,000 gallons.

24. Plastics manufacture.

25. Salt works.

26. Saw and planing mill.

27. Soap manufacture.

28. Shipyard.

29. Tobacco products manufacture.

30. Wool pulling or scouring.

31. Accessory uses when located on the same lot.

32. Conditional Uses. When authorized by the Hearing Examiner after a duly advertised public hearing, the following uses shall also be permitted in an M-2 District:

a. Construction/demolition/land-clearing/debris recycling. Application for a conditional use permit shall be made to the Public Works Department, and shall include site development plans showing all existing and proposed structures,

existing and proposed drainage, existing and proposed topography circulation, access drives/fire lanes, equipment and/or material storage location and size, parking and loading areas, and natural or environmentally sensitive features. This application shall be accompanied by filing fees as set forth in Sections 13.06.471 and 13.06.473.

The intent and purpose of this section, and criteria for granting of conditional use permits by the Hearing Examiner, shall be the same as those stated in Section 13.06.375 of this chapter regarding special use permits.

In authorizing a conditional use the Hearing Examiner may attach thereto such conditions as are authorized under Section 13.03.070 of this title.

A conditional use permit so authorized shall expire as provided in Section 13.06.474 hereof if no substantial development has taken place in accordance with plans for which such conditional uses were authorized.

Conditional use permits authorized under this section shall not become effective until expiration of the appeal period following the granting thereof by the Hearing Examiner, and shall be subject to the appellate procedures set forth in Section 13.06.485 hereof, and shall not become effective

EXHIBIT A (CONT.)

TACOMA MUNICIPAL CODE

until the expiration of the appeal period; provided, however, that a permit granted by the Hearing Examiner shall not become effective in the event there is an appeal filed within the limits prescribed.

B. Height Regulations. A building, structure or portion thereof erected shall not exceed a height of 100 feet, unless such building or structure is set back on all sides one foot for each four feet such building or structure exceeds 100 feet in height.

C. Area Regulations. A building or structure hereafter built, enlarged or moved shall provide the following yards or lot areas:

1. Front Yard. Where all the frontage is located in the M-2 Heavy Industrial District no front yard is required. Where the frontage is partly in the M-2 Heavy Industrial District and partly in a Dwelling District the front yard requirement of the Dwelling District shall apply in the M-2 Heavy Industrial District.

2. Side Yard. Where the side of a lot in the M-2 Heavy Industrial District abuts the side of a lot in a Dwelling District there shall be a side yard of not less than seven and one-half feet in width. In other cases, a side yard for a commercial or industrial building shall not be required.

3. Rear Yard. Where a lot in the M-2 Heavy Industrial District abuts upon a Dwelling District there shall be a rear yard having a depth of not less than 20 feet for interior lots and 10 feet for corner lots. In other cases a rear yard is not required.

D. Parking and Loading Space Regulations. Parking space for buildings as required in Section 13.06.350.

Loading space as required in Section 13.06.350. (Ord. 25374 § 2; passed Oct. 5, 1993; Ord. 20220 § 10; passed Oct. 1, 1974; Ord. 19858 § 6; passed July 3, 1973; Ord. 19286 § 2; passed Jan. 26, 1971; Ord. 15003; passed May 3, 1954; Ord. 14793 § 26; passed May 18, 1953.)

6.7 Photo log

Photo 1: Edman Company log yard and asphalt cap – from the southeast.



Photo 2: Edman Company log yard and asphalt cap – from south.



Photo 3: Edman Company log yard, asphalt cap and the containment cell – from the east.



Photo 4: Edman Company parcel with containment cell and fence – from the northeast.



Photo 5: Containment cell and the fence – from the southwest.



Photo 6: Containment cell and monitoring well MCW-4 – from the west.

