FACT SHEET FOR NPDES PERMIT WA0037953

MCFARLAND CASCADE POLE AND LUMBER COMPANY

ISSUE DATE: _____

PURPOSE of this Fact Sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for McFarland Cascade Pole and Lumber Company (MCPLC) in Tacoma.

The Environmental Protection Agency (EPA) developed the NPDES permitting program as a tool to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." EPA delegated to Ecology the power and duty to write, issue, and enforce NPDES permits within Washington State. Both state and federal laws require any industrial facility to obtain a permit before discharging waste or chemicals to a water body.

An NPDES permit limits the types and amounts of pollution the Permittee may discharge. Those limits are based either on (1) the pollution control or wastewater treatment technology available to the industry, or on (2) the receiving water's customary beneficial uses. This fact sheet complies with Section 173-220-060 of the Washington Administrative Code (WAC), which requires Ecology to prepare a draft permit *and accompanying fact sheet* for public evaluation before issuing an NPDES permit.

PUBLIC ROLE in the Permit

Ecology makes the draft permit and fact sheet available for public review and comment at least 30 days before we issue the final permit to the facility operator (WAC 173-220-050). Copies of the fact sheet and draft permit for MCPLC, NPDES permit WA0037953, are available for public review and comment from August 11, 2008, until the close of business September 9, 2008. For more details on preparing and filing comments about these documents, please see Appendix A - Public Involvement.

Before publishing the draft NPDES permit, MCPLC reviewed it for factual accuracy. Ecology corrected any errors or omissions about the facility's location, product type or production rate, discharges or receiving water, or its history.

After the public comment period closes, Ecology will summarize substantive comments and our responses to them. Ecology will include our summary and responses to comments to this Fact Sheet as Appendix D - Response to Comments, and publish it when we issue the final NPDES permit. The rest of the fact sheet will not be revised, but the full document will become part of the legal history contained in the facility's permit file.

I. INTRODUCTION

Table 1. General Facility Information

Applicant:	McFarland Cascade Pole and Lumber Company
Facility Name and Address:	1640 Marc Street Tacoma, WA 98421
Type of Facility:	Wood Preserving
SIC Code	2491
Discharge Location:	Outfall 001: Blair Waterway via Lincoln Ave. Ditch Latitude: 47(15' 18" N Longitude: 122(24' 30" W Outfall 002: Puyallup River Latitude: 47(15' 20" N Longitude: 122(24' 51" W
Water Body ID Number:	Outfall 001: WA-10-0020 Outfall 002: WA-05-1003

The Federal Clean Water Act (FCWA, 1972, and later amendments in 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), administered by the federal Environmental Protection Agency (EPA). The EPA authorized the state of Washington to manage the NPDES permit program in our state. Our state legislature accepted the delegation and assigned the power and duty for conducting NPDES permitting and enforcement to Ecology. The legislature defined Ecology's authority and obligations for the wastewater discharge permit program in 90.48 RCW (Revised Code of Washington).

Ecology adopted rules describing how we exercise our authority:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC),
- Water quality criteria for surface waters (chapter 173-201A WAC) and for ground waters (chapter 173-200 WAC)
- Sediment management standards (chapter 173-204 WAC).

These rules require any industrial facility operator to obtain an NPDES permit before discharging wastewater to state waters. They also define the basis for limits on each discharge and for other performance requirements imposed by the permit.

Under the NPDES permit program Ecology must prepare a draft permit and accompanying fact sheet, and make it available for public review. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments on the draft permit, during a period of thirty days (WAC 173-220-050). (See Appendix A - Public Involvement for more detail about the Public Notice and Comment procedures). After the Public Comment Period ends, Ecology may make changes to the draft NPDES permit in response to comments received. Ecology will summarize the responses to comments and any changes to the permit in Appendix D - Response to Comments.

MCPLC is located in Tacoma approximately 200 feet east of the Puyallup River (at approximately river mile 0.8) and is approximately 1,000 feet south of the Milwaukee Waterway. Figure 1 provides a vicinity map of the facility's location.

Figure 1. Vicinity Map.

II. BACKGROUND INFORMATION

A. Facility Description

Background/History

Cascade Pole and Lumber Company (CPLC) owns the wood preserving plant on the Tacoma Tide Flats at 1640 East Marc Avenue in Tacoma, Washington. The facility is leased to, and operated by, McFarland Cascade Pole and Lumber Company (MCPLC). McFarland Cascade Holdings, Inc. owns both CPLC and MCPLC. Facility operation started in 1974 and falls within Standard Industrial Code (SIC) 2491.

The site is approximately 43 acres in size. Based on data for 1990 through 2004, the site receives an annual average precipitation of 36.1 inches.

No process wastewater discharges from the site. The discharge consists only of treated stormwater runoff and bypasses/overflows to the stormwater treatment system and stormwater reuse system. This proposed permit renews the facility's discharge permit to discharge treated stormwater to the Blair Waterway (via Lincoln Avenue Ditch) and the Puyallup River and bypass/overflow events to the Puyallup River. This facility is not classified as an EPA major facility.

Industrial Process

Activities at MCPLC include debarking, sizing and framing, incising, staining, treating, and distributing finished lumber products to customers. Treated wood products manufactured at the site include utility poles, pilings and dimensional lumber used for decking, fencing, and other similar applications. The facility pressure treats or thermally treats wood products with either water or oil-based preservative

formulations (as described below). Wood products are transferred in and out of treating cyclinders (retort) in trams on tracks. A transfer table (Subpart W drip pad system) conveys the wood products to and from the retorts and the Subpart W drip pads located adjacent to the treatment plant. Figure 2 provides a site map of the facility.

In addition to the wood-preserving operations, MCPLC also operated various wood fabrication and related activities including: lumber and pole incising, pole cutting and framing, and lumber staining.

MCPLC's wood preserving operations use both water-borne and oil-borne preservatives. Wood products treated at the site include: utility poles, cross-arms, and dimensional lumber. Wood preservatives currently used include the following Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) registered-use pesticides:

- Copper Azole (CA-B) – is a mixture of copper compounds and tebuconazole and is not a restricted use preservative. The facility typically uses a solution strength of 1 to 2 percent to preserve lumber. It manages CA-B products on the inorganic side of the treating plant, and handles it on the former CCA drip pad.

- Pentachlorophenol (PCP) – is purchased in solid block and liquid concentrate. The facility mixes PCP in a closed mixing system with aromatic treating oil, similar to No. 2 diesel, to form a 5 percent, by weight, preservative solution. MCPLC uses athe oil mixture containing 5 percent PCP to preserve utility poles and cross-arms.

- Creosote – is a mixture of hydrocarbons produced from the fractional distillation of coal. The facility purchased the preservative in "creosote oil" form and formerly used it to treat utility poles. MCPLC discontinued use of creosote effective December 31, 2004, however it still stores creosote treated wood on the site.

- Chromate Copper Arsenate (CCA) – is a mixture of chromium, copper, and arsenic compounds. The facility purchases the chemical in a 60 percent CCA solution that is diluted to a 2 percent, by weight, preservative solution. MCPLC discontinued the use of CCA for residential products effective December 31, 2003, and now uses CA-B preservative. CCA usage is still reserved for selected industrial products.

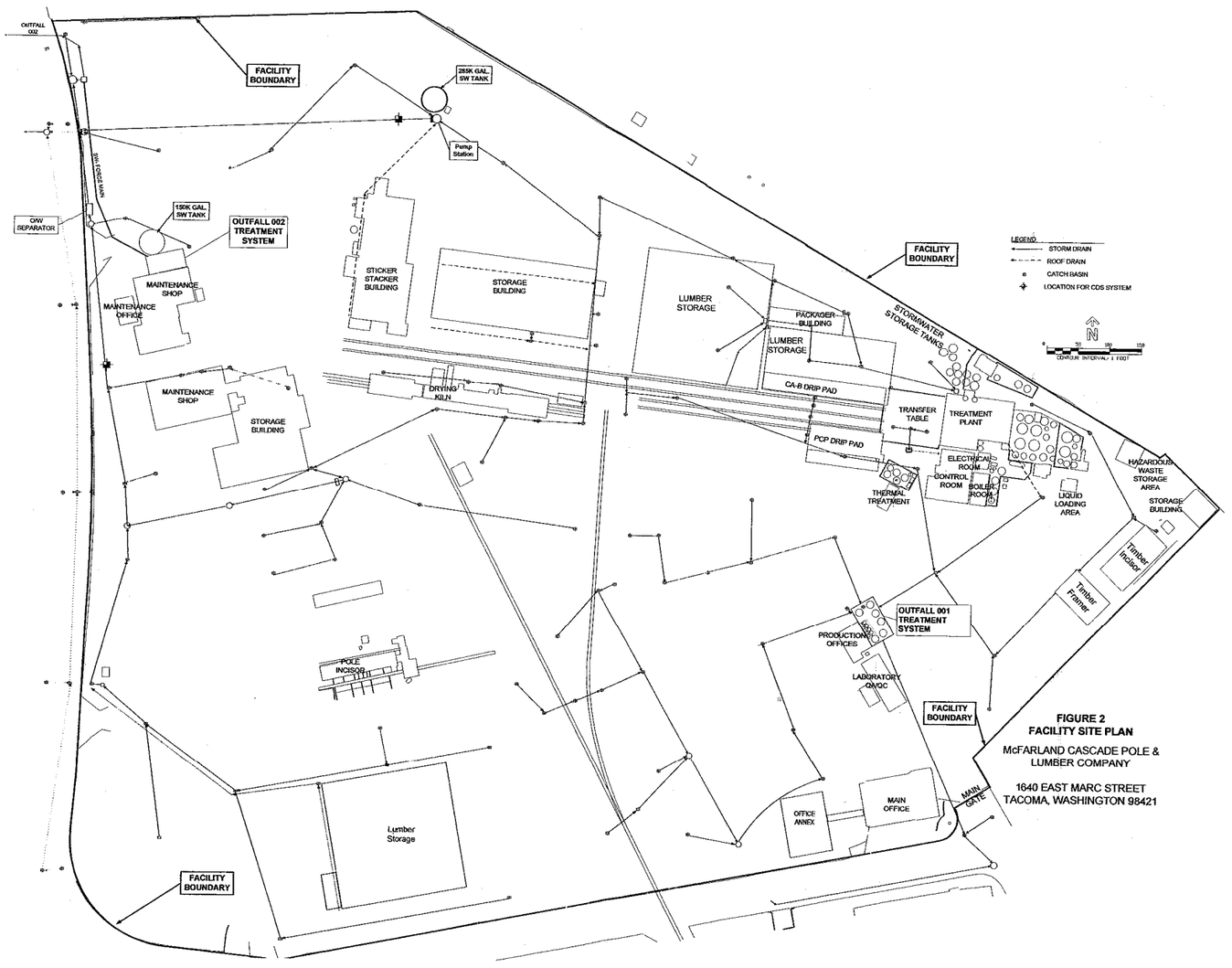

Figure 2. Facility Site Plan.

Customers order utility poles, cross-arms, and lumber that MCPLC treats to industry or customer specifications. Poles are pressure treated or thermally treated with PCP, and shipped to customer or stored in the PCP/creosote treated wood storage yard. The facility purchases lumber from various sawmills, stains and pressure treats it with CA-B and either ships product to retail outlets or stores it in the CA-B treated wood storage yard.

MCPLC currently operates four retorts and one butt vat. Generally, it uses one retort for PCP pressure treatment, while it uses the remaining three retorts for CA-B pressure treatment. The butt vat is used for PCP thermal treatment of poles. The retorts and butt vat are situated under roof to prevent contact with stormwater.

The facility removes treated wood products from the drip pad only after drippage has ceased and it has completed an inspection. It manages any de-minimus drippage in the storage area in accordance with the facility's *Contingency Plan for Incidental and Infrequent Drippage in the Treated Storage Yard*.

Utility poles and lumber are transferred to the retorts via two sets of small-gauge rails on the transfer table. MCPLC uses these rails to transfer untreated wood to the four retorts and to convey treated wood from the retorts to the PCP or CA-B drip pads. The facility later transfers treated wood from the drip pads to the appropriate storage yard. Effective May 14, 2002, most dimension lumber treated at the site receives a full paper wrap before placement in the treated products storage yard. MCPLC leaves a small amount of material unwrapped due to size limitations of the packaging equipment and customer preference (i.e. odd-shaped playground equipment pieces, lattice, etc.)

Chemical Storage/Tank Inventory

The facility has segregated their chemical storage and tanks into nine separate areas based on activities conducted and chemicals used in the areas. Each of the chemical storage areas provide infrastructure to provide secondary containment in case of a leak or spill. Table 2 provides an inventory of the tanks/storage facilities.

Table 2. Chemical Storage/Tank Inventory.

Tank Number	Capacity (gallons)	Content/Purpose
1A	51,220	1-2% CA-B working solution
1B	19,916	Stormwater/CA-B makeup water
1C	12,314	Stormwater/CA-B makeup water
1D	50,937	Stormwater/CA-B makeup water
1E	17,327	Stormwater/CA-B makeup water
1F	12,220	Stormwater/CA-B makeup water
1G	20,416	Stormwater/CA-B makeup water
1H	3,020	Empty
2A	22,670	5% PCP working solution
2B	25,509	5% PCP working solution
2C	48,541	5% PCP working solution
2D	26,047	Vent Tank
2E	53,768	1-2% CA-B working solution
2F	51,505	5% PCP working solution
2G	18,800	Aromatic oil
2H	3,807	5% PCP working solution
2I	51,504	1.2-3.5% CA-B working solution

Tank Number	Capacity (gallons)	Content/Purpose
2J	51,504	1.2-3.5% CA-B working solution
2K	21,107	Stormwater/CA-B makeup water
2L	21,052	Diesel
2M	21,700	Industrial Water
2N	21,700	SBX-Borate
2O	31,836	9% CA-B concentrate
2P	8,372	60% CCA concentrate
2Q	6,004	Nash pump circulation water
Retort A	15,163	CA-B/Borate treatment
Retort B	37,920	CA-B/CCA treatment
Retort C	37,920	CA-B/PCP treatment
Retort D	37,906	PCP treatment
5A	15,022	5% PCP working solution
5B	20,181	5% PCP working solution
5C	31,109	5% PCP working solution
5D	19,742	5% PCP working solution
5E	8,404	Vapor emission control
5F	317	Water scavenger tank
5G	--	Heat exchanger
A	10,190	Empty
B	7,990	Empty
6A	21,160	Settling Tank
6B	20,260	Nash pump vapor emission control
6C	19,250	Nash pump circulation water
6D	--	Monarch oil/water separator
6E	--	Oil/water separator
6F	331	PCP oil/water separator
6G	552	PCP/water scavenger
6H	611	Vapor emission control

Other Product Handling and Containment Areas

The covered chemical unloading area is located south of Containment Area 1. MCPLC received bulk shipments of CA-B, CCA, diesel, and a blend of vegetable-based oil and lubricating oil in this area of the plant and has posted specific procedures for chemical unloading. Consistent with 40 CFR 122.8, employees cap the transfer connection when not in use. In addition, employees place drip pans under equipment susceptible to leakage, such as hose connections, hose reels, and filler nozzles. The floor is paved concrete and slopes toward a sump with a capacity of 500 gallons. The facility pumps water collected in the sump to the settling tank located in Containment Area 6 or to the appropriate product storage tank. The paved surface around the truck unloading station offers additional spill protection in this area. In the event that spilled material enters the storm drainage network, the oil/water separator at the inlet to the 001 stormwater treatment system provides containment and prevents off-site discharge.

The treatment plant building also houses selected bulk oil storage tanks and non-bulk oil containers (i.e. 55-gallon drums). The bulk tanks consist of two above ground 575-gallon tanks containing motor oil and hydraulic oil. These elevated tanks are contained within a steel pan that is supported by the reinforced concrete plant floor. The steel pan provides 645 gallons of containment capacity; greater than 110 percent of the largest tank. The facility stores non-bulk containers within a dedicated steel pan over the

concrete plant floor. The containment pan has a net capacity of 138 gallons; greater than 110 percent of the single largest 55-gallon container.

The vehicle fueling station for on-site maintenance vehicles is located in the western portion of the property. The covered containment area consists of 1-foot reinforced-concrete walls and a 6-inch thick reinforced-concrete slab, providing a containment volume of 900 gallons. The only above-ground steel tank situated in this containment is a 750-gallon gasoline tank placed on an elevated steel skid. MCPLC drains the stormwater towards a sump located in the middle of the containment area. The facility pumps water collected in the sump to the settling tank located in Containment Area 6. Employees utilize the gasoline dispenser located west of the tank that is equipped with an emergency shut-off. The area around the gasoline dispenser is bermed.

The covered hazardous waste accumulation area is located west of Containment Area 1. The facility stores hazardous wastes in 55-gallon steel drums prior to shipment to a RCRA permitted treatment, storage, and disposal facility. A three-sided wood frame structure and chainlink fence encloses this area. The gate remains locked when employees do not occupy the area. The floor is epoxy-coated concrete with a 6-inch curb along the perimeter providing a containment volume of 2,200 gallons.

The covered sticker-stacker area is located south of the treated wood storage building. Employees stain untreated lumber using an acrylic, non-toxic waterborne stain in the sticker-stacker building. The stain solution is stored in a concrete containment area in the stain mixing room west of this building.

MCPLC no longer treats or stores creosote treated poles at the facility. The only creosote treated materials that are stored on-site are used railroad ties. These railroad ties have been taken out of service and are distributed from the facility for reuse in landscaping applications.

Stormwater Treatment

Outfall 001 Stormwater Drainage Basin

The facility stores PCP/creosote treated poles on approximately 22 acres in the eastern portion of the site. Stormwater in this area collects through a network of catch basins and storm drains that route the stormwater to a treatment system. Catch basins equipped with inserts and/or hay bails control floating and settleable solids. The current treatment system consists of:

1. A four-compartment oil/water separator;
2. One 41,455 gallon influent storage tank;
3. Eight-vessel mixed-media filters;
4. Two granular activated carbon (GAC) adsorption units (one 20,000 pound capacity and one 40,000 pound capacity);
5. One 18,426 gallon backwash water settling/storage tank;
6. An automated pH controller.

Figure 3 provides a process flow schematic diagram.

The four-compartment oil/water separator removes sinking solids, floating solids, oils and greases. Three pumps, located in the fourth compartment, collect stormwater from the separator and pump it to the eight vessel mixed media and two vessel carbon filters.

The eight mixed-media filters consist of layers of gravel, sand and garnet that remove fine solids from the stormwater. After stormwater goes through the mixed-media filters, it passes through the two carbon units. The facility can operate the mixed-media filters and carbon filters in parallel mode, if necessary. Dissolved contaminants in stormwater adsorb onto the activated carbon media. The effectiveness of the treatment system depends upon the contact time between the stormwater and the activated carbon media. MCPLC monitors the influent and effluent from the 001 system to evaluate removal efficiency and when "breakthrough" of pollutants may occur. This enables MCPLC to predict when it needs to replace the carbon media.

Outfall 001 discharges to the Lincoln Avenue Ditch which discharges to the Blair Waterway.

Outfall 002 Stormwater Drainage Basin

MCPLC stores lumber treated with inorganic preservative (CA-B) on approximately 22 acres in the western portion of the site. Stormwater in this area and the untreated wood storage area collects through a network of catch basins and storm drains that route the stormwater to permitted Outfall 002 or to stormwater storage tanks for reuse as preservative make-up water. All catch basins are equipped with inserts and/or hay bails to control floating and settleable solids. Prior to discharge to the Puyallup River via an 8-port diffuser, the facility treats stormwater through:

1. Two in-ground continuous deflective system separating (CDS) units;
2. An automatic filtration unit with self-cleaning mechanism;
3. Six-vessel Everfilt mixed-media filter system with automatic backwash;
4. Two GAC adsorption units;
5. One 15,000 gallon backwash water supply tank;
6. One 25,000 gallon backwash water settling storage tank;
7. An automated pH controller;
8. One 150,000 gallon influent storage tank.

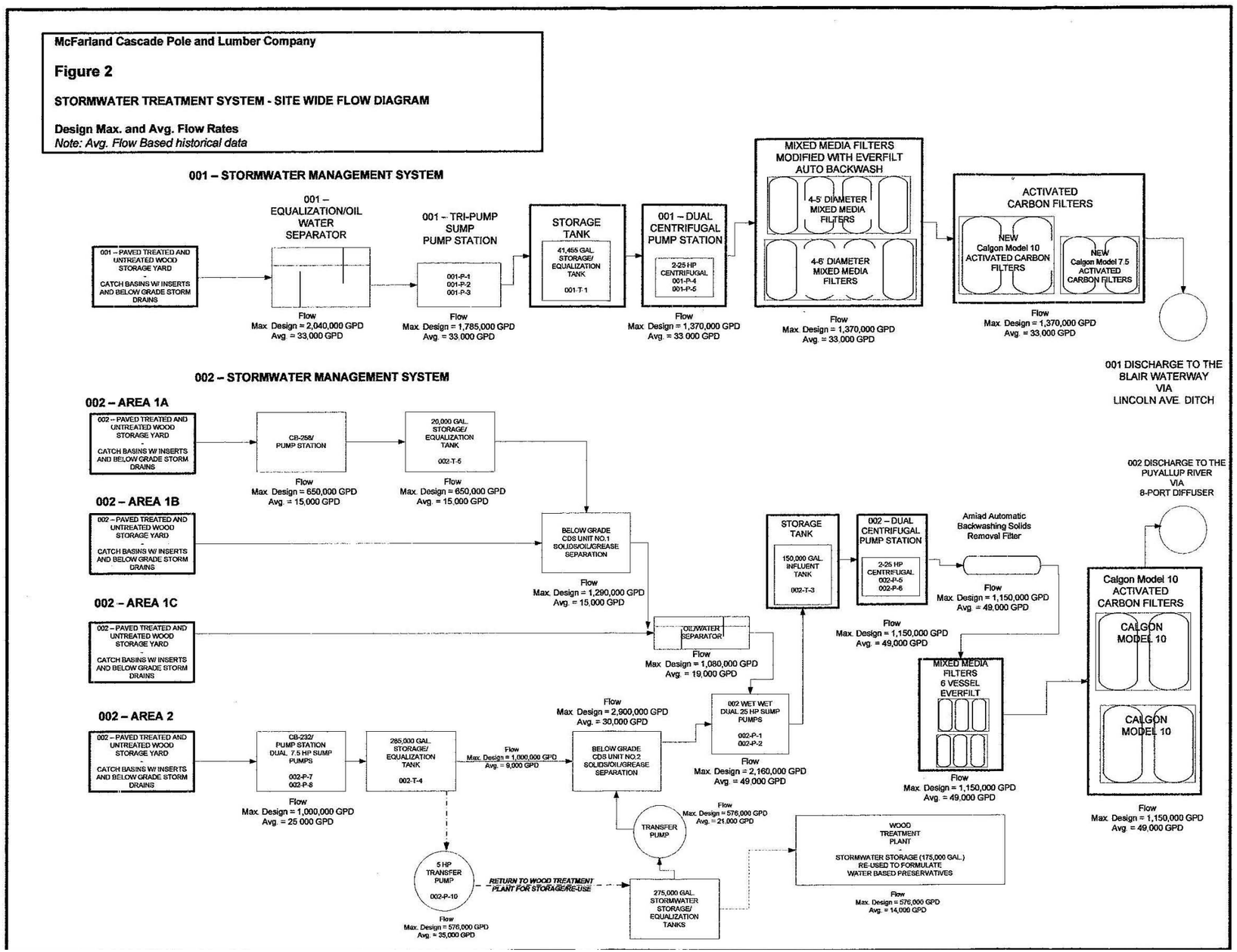

Figure 3. Process Flow Schematic Diagram.

Figure 3 provides a process flow schematic diagram of the system.

The facility collects and treats stormwater from drainage basin 002 through the CDS units before collecting in a wet well at the northwest corner of the site. The CDS units remove large particles, oil and greases. An existing pump station (CB-232) transfers stormwater into a 285,000 gallon equalization storage tank. From the tank, MCPLC pumps stormwater to the wood treatment plant, a 150,000 gallon influent equalization storage tank, and/or directs it, in a controlled manner, through the three decant valves to the stormwater treatment system.

The stormwater treatment system is located immediately north of the maintenance shop. The automatic filtration unit removes suspended solids from the stormwater prior to carbon adsorption. The carbon filtration unit has two vessels, each with a capacity for 20,000 pounds of activated carbon. This unit removes dissolved stormwater contaminants by adsorbtion to the activated carbon. However, the carbon media can also remove fine-grained suspended solids. The ability of the treatment system to remove dissolved contaminants is primarily dependent upon the contact time between the stormwater and the activated carbon media. The facility typically operates the dual vessel carbon unit in parallel.

MCPLC collects influent and effluent samples from the 002 system to determine the removal efficiency and monitor "breakthrough" conditions of the carbon units.

During the 2007 upgrade, the 002 treatment system was greatly enhanced by adding an Everfilt six-vessel mixed media unit and a second Calgon Carbon Model 10 dual adsorber. The resulting two dual vessel carbon units (4-20,000 lb capacity vessels in total) are operated in parallel. The individual 20,000 lb vessels within each unit are also operated in parallel. This configuration allows for midpoint sampling between the two carbon vessels of each unit which provides greater process control.

Stormwater Equalization Capacity

MCPLC installed a 285,000 gallon storage tank in the 002 drainage basin in 2005 that is uses to temporarily store and equalize the stormwater. Eleven additional stormwater storage tanks with a capacity of approximately 275,000 gallons are located north of the wood treatment plant. The facility returns stored stormwater to the wood treatment plant for reuse and/or directs it in a controlled manner to the 002 stormwater treatment system. Dedicated water storage within the wood treatment plant is approximately 175,000 gallons. The combined stormwater storage capacity is approximately 735,000 gallons.

MCPLC installed two smaller additional equalization storage tanks in basins 001 and 002 as part of a major stormwater treatment system upgrade in 2007. A 41,455 gallon equalization tank was constructed in basin 001 and a 150,000 gallon tank was constructed in basin 002. This will effectively increase the combined stormwater storage capacity to 930,000 gallons.

Covered Storage

Two 40,000 square foot lumber storage buildings were constructed within the 002 drainage basin during the years 2003 and 2004. MCPLC added these buildings to provide additional covered storage.

The facility completed a 2,400 square foot addition to the PCP drip pad building in 2003 and a 3,000 square foot roof extension to covered storage building in 2005. Lumber stand covers were constructed from 2003-2006.

Providing more covered area greatly reduces the possibility of stormwater coming into contact with potential pollutants. MCPLC continues to evaluate methods and find opportunities to construct more covered storage areas.

Vehicle Maintenance

MCPLC maintains and services most of the vehicles and equipment on site. Typical vehicle maintenance activities include oil change and equipment repairs. Employees conduct these activities under a roof between maintenance buildings. Used oil is stored in 55-gallon drums situated on a metal grate over a drip pan. When full, employees transfer the used oil from the drums to a 1,000-gallon steel tank located east of the maintenance building. The tank is situated on a skid and above a 1,200 gallon secondary containment area. The used oil concrete containment was epoxy coated in March 2007. An outside vendor regularly removes used oil from the tank for recycling.

Employees conduct vehicle washing only in the paved area north of the transfer table pit. The facility collects all washwater, treats it with activated carbon, and reuses it in the treating plant as preservative make-up water. No wash water discharges to the stormwater drainage system.

Residual Solids

In addition to the wood treating process wastes that are either listed, characteristic hazardous or state-only dangerous wastes, MCPLC also manages non-hazardous solid wastes, universal waste and exempted wastes that it generates in ancillary manufacturing and maintenance operations at the site. To the greatest extent possible, it recycles these materials.

MCPLC designates all wastes generated at the facility and manages it in appropriately labeled containers. The containers are of sufficient strength and integrity to prevent leakage and are compatible with their contents. As applicable, the facility equips containers with covers or lids to control spillage and the potential generation of leachate. The following table lists these "other" waste types and details the management approach:

Table 3. Solid Waste Management.

Description	Waste Type	Management Approach
Used oil	Non-Regulated	Reclaim/recycle
Used oil filters	Non-Regulated	Reclaim/recycle
Antifreeze	Non-Regulated	Reclaim/recycle
Fluorescent lamps	Universal	Reclaim/recycle
Used batteries	Universal	Reclaim/recycle
Plastic coated lumber wrap	Non-hazardous	Recycle
Paper lumber wrap	Non-hazardous	Subtitle D landfill
Office paper	Non-hazardous	Recycle
Cardboard/corrugated paper	Non-hazardous	Recycle
Scrap metal, metal banding, empty aerosol cans	Non-hazardous	Recycle
Plastic banding	Non-hazardous	Recycle
Treated wood (used/damaged/off-spec)	Exempt/non-hazardous	Subtitle D landfill
Office waste	Non-hazardous	Subtitle D landfill

Scrap metal that has come into contact with PCP is decontaminated at the PCP drip pad before leaving the site.

Discharge Outfall

Outfall 001 collects runoff from the eastern portion of the site and includes: treated wood storage areas for pentachlorophenol treated products. While located within the Outfall 001 basin, the stormwater from the retort/drip pad area does not discharge to Outfall 001, but is collected for reuse. Stormwater runoff from Outfall 001 enters the Lincoln Avenue Ditch via the City of Tacoma storm drain and, ultimately, discharges into the Blair Waterway.

Outfall 002 collects stormwater from the western portion of the site and includes: untreated pole storage, treated wood storage areas for copper-treated and CCA-treated wood, storage buildings, offices, and the maintenance shop. Outfall 002 discharges into the Puyallup River via a diffuser at approximately river mile 0.8. MCPLC installed the diffuser in 2000.

The Outfall 002 diffuser has 8 ports spaced at 15 foot intervals and come equipped with Tideflex valves. The ports are 3-inch in nominal diameter (1.5 inch in effective diameter) with a port angle of 30 degrees.

The facility also has a 30-inch diameter discharge pipe which protrudes from the river bank located upstream of the diffuser. Ecology has authorized this discharge point for bypasses of storm events that exceed the design capacity of the basin 002 stormwater reuse and treatment systems. MCPLC maintains the bypass/overflow outfall that is owned by the Army Corps of Engineers (Corps). The Corps owns the dike road and levee access road between the MCPLC site and the Puyallup River, as well as the east bank off the river. The Washington Department of Natural Resources (DNR) owns the aquatic land (Puyallup River bottom) commencing approximately 160 feet west of the outfall. The bypass/overflow outfall also discharges stormwater runoff from the dike road. This roadway primarily serves truck traffic exiting the Maersk Pacific Truck terminal. Figure 4 provides a plan view map showing the locations of Outfall 002, the Bypass/Overflow Outfall, the Dike Road and the stormwater catchbasins serving the road.

B. Permit Status

Ecology recieved an application for permit renewal on September 1, 2006. Ecology accepted it as complete on September 13, 2006.

Ecology issued the previous permit for this facility on February 7, 2002. The previous permit was modified two times. The first modification was issued on March 14, 2002. The second modification was issued on April 25, 2002.

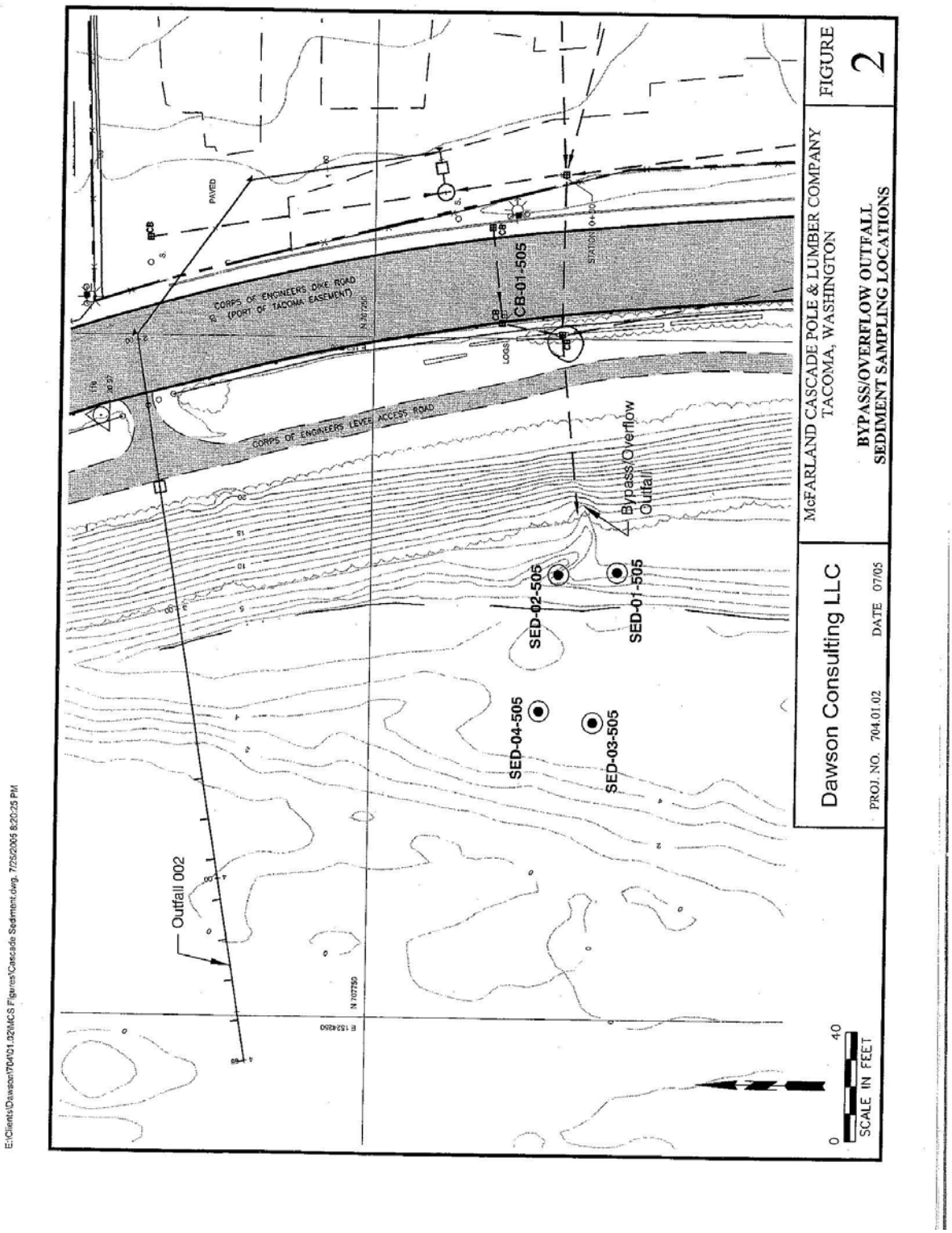

Figure 4. Locations of Outfall 002, the Bypass/Overflow Outfall, and the Dike Road.

Ecology issued the second modification on April 25, 2002. The previous permit placed effluent limits on outfalls 001 and 002 as shown in Tables 4 and 5.

Table 4. Discharge Limitations Established for Outfall 001 in Previous Permit (2nd Modification Issued April 25, 2002). (LIST)

	Outfall 001 Maximum Daily Limit	
Parameter	Final Limitations	Interim Limitations
Total Arsenic, µg/L	360	
Total Chromium, µg/L	138	660
Total Copper, µg/L	159	310
Pentachlorophenol, µg/L	81	215
Oil and Grease, mg/L	10	
pH, standard units (s.u.)	6 to 9	
PAHs, µg/L	100	
TSS, mg/L	50	

Table 5. Discharge Limitations Established for Outfall 002 in Previous Permit (2nd Modification Issued April 25, 2002).

	Outfall 002 Maximum Daily Limit	
Parameter	Final Limitations	Interim Limitations
Total Arsenic, µg/L	360	650
Total Chromium, µg/L	137	1030
Total Copper, µg/L	156	390
Pentachlorophenol, µg/L	20	63
Oil and Grease, mg/L	10	
pH, s.u.	6 to 9	
PAHs, µg/L	100	
TSS, mg/L	50	
Toxicity	No acute or chronic toxicity	

C. Summary of Compliance with Previous Permit Issued

Ecology staff last conducted a non- sampling compliance inspection on April 26, 2006.

MCPLC's stormwater treatment discharge has mostly complied with permit limits during the history of the previous permit (2nd modification issued on April 25, 2002)**.** There were two exceedances of Outfall 001's PCP limitation, four exceedances of Outfall 002's total copper limitation, and one exceedance of Outfall 002's arsenic limitation. The incidents of non-compliance are summarized below:

- February 2006 -- Exceeded the Outfall 001 PCP limit of 81 µg/L. Outfall 001 discharge concentration was 200 µg/L.
- November 2005 – Exceeded the Outfall 001 PCP limit of 81 µg/L. Outfall 001 discharge concentration was 100 µg/L. Exceeded the Outfall 002 total copper limit of 156 µg/L. Outfall 002 discharge concentration was reported to be 180 µg/L.
- February 2005 -- Exceeded the Outfall 002 total copper limit of 156 µg/L. Outfall 002 discharge concentration was reported to be 224 µg/L.
- December 2004 -- Exceeded the Outfall 002 total copper limit of 156 µg/L. Outfall 002 discharge concentration was reported to be 172 µg/L.

- November 2004 -- Exceeded the Outfall 002 total copper limit of 156 µg/L. Outfall 002 discharge concentration was reported to be 178 µg/L.
- June 2003 – Exceeded the Outfall 002 total arsenic limit of 360 µg/L. Outfall 002 discharge concentration was reported to be 397 µg/L.

The compliance history is based on our review of the facility's Discharge Monitoring Reports (DMRs) from March 2002 through September 2007.

The facility has made continuous improvements to its stormwater conveyance and treatment system and best management practices. They have been timely with submitting all of the permit required submittals.

D. Treated Stormwater Discharge and Bypass/Overflow Characterization

The concentration of pollutants in the discharge was reported in the NPDES permit renewal application (submitted September 1, 2006) and in DMRs (from October 2003 through September 2007). The time frame chosen for evaluating MCPLC's data was selected in an attempt to be the most representative of discharge conditions after stormwater treatment was implemented. It should be noted that the facility made new improvements many times during this time frame which resulted in a reduction of the concentration of pollutants discharged. The treated stormwater discharge during this time frame is characterized as follows:

Table 6. Wastewater Characterization for Outfall 001 Discharge.

Parameter	Average Concentration	Maximum Concentration
Total PAHs (µg/L)	5.71	27.8
Total Arsenic (µg/L)	25.9	110
Total Chromium (µg/L)	16.6	132
Total Copper (µg/L)	41.0	110
Flow (gpm)	238	558
Oil and Grease (mg/L)	4.3	5.6
PCP (µg/L)	20.1	200
pH (s.u.)	Range: 6.05 - 8.46; Average: 6.53	
TSS (mg/L)	4.4	12.0

Table 7. Wastewater Characterization for Outfall 002 Discharge.

Parameter	Average Concentration	Maximum Concentration
Total PAHs (µg/L)	10.3	53.4
Total Arsenic (µg/L)	35.2	124
Total Chromium (µg/L)	12.6	44.3
Total Copper (µg/L)	74.8	224
Flow (gpm)	281	475
Oil and Grease (mg/L)	4.3	5.0
PCP (µg/L)	2.0	10
pH (s.u.)	Range: 6.21 - 8.49; Average: 6.65	
TSS (mg/L)	7.7	27.0

The timeframe selected for estimating the pollutant loads released from bypasses is from March 2002 through September 2007. The loads were calculated by taking the average concentration from each bypass event and multiplying it by the total volume discharged from all bypass events.

Table 8. Wastewater Characterization for Outfall 002 Bypass/Overflow Discharge.

Parameter	Average Bypass Concentration	Total Pollutant Load from Bypasses (lbs) from 3/2002 – 9/2007	Other Value
Number of Bypasses			34
Total Volume Discharged—All Bypasses Combined (gallons)			2,514,966
Total PAHs (µg/L)	46.3	1.0 lbs	
Napthalene (µg/L)	0.456	4.3 g	
Acenaphthylene (µg/L)	0.255	2.4 g	
Acenaphthene (µg/L)	0.349	3.3 g	
Fluorene (µg/L)	0.339	3.2 g	
Phenanthrene (µg/L)	2.116	20.1 g	
Anthracene (µg/L)	0.960	9.1 g	
Fluoranthene (µg/L)	10.795	102.8 g	
Pyrene (µg/L)	7.867	74.9 g	
Benzo[a]anthracene (µg/L)	2.326	22.1 g	
Chrysene (µg/L)	4.894	46.6 g	
Benzo[a]pyrene (µg/L)	2.522	24.0 g	
Indeno[1,2,3-cd]pyrene (µg/L)	3.185	30.3 g	
Dibenz(a,h)anthracene (µg/L)	1.050	10.0 g	
Benzo[g,h,i]perylene (µg/L)	2.774	26.4 g	
Benzo[b]fluoranthene (µg/L)	6.220	59.2 g	
Benzo[k]fluoranthene (µg/L)	2.382	22.7 g	
Total Arsenic (µg/L)	73	1.5 lbs	
Total Chromium (µg/L)	100	2.1 lbs	
Total Copper (µg/L)	434	9.1 lbs	
Oil and Grease (mg/L)	4.9	102 lbs	
PCP (µg/L)	10.5	0.22 lbs	
TSS (mg/L)	32.3	678 lbs	
pH (s.u.)	Range: 6.2-7.0; Average: 6.5		

It should be noted that MCPLC has continued to make improvements to their stormwater management system by adding more storage capacity, additional stormwater treatment and capacity, and improving their best management practices. The stromwater characterization above does not fully take into account recent major improvements (completed in 2007).

E. SEPA Compliance

There are no known State Environmental Policy Act (SEPA) compliance issues at this time.

III. PROPOSED PERMIT CONDITIONS

Federal and State regulations require that effluent limits in an NPDES permit must be either technology - or water quality-based.

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and chapter 173-220 WAC).

- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC) or the National Toxics Rule (40 CFR 131.36).

- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

The limits in this permit reflect information received in the application. Ecology evaluated the permit application and determined the limits needed to comply with the rules adopted by the state of Washington. Ecology does not develop effluent limits for all reported pollutants. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation.

Nor does Ecology usually develop permit limits for pollutants that were not reported in the permit application but that may be present in the discharge. The permit does not authorize discharge of the non-reported pollutants. During the five-year permit term, the facility's effluent discharge conditions may change from those conditions reported in the permit application. The facility must notify Ecology, as described in 40 CFR 122.42(a), if significant changes occur in any constituent. Industries may be in violation of their permit until the permit is modified to reflect additional discharge of pollutants.

A. Technology-Based Effluent Limits

Process Water

EPA has promulgated effluent guidelines and standards for the timber products processing point source category in Code of Federal Regulations 40 CFR Part 429. MCPLC falls under Subcategory F of 40 CFR Part 429 (dealing with pressure wood preserving treatment processes employing water borne inorganic salts and all non-pressure wood preserving treatment processes); and Subcategory H of 40 CFR Part 429 (dealing with the Boulton process of conditioning wood prior to treatment). MCPLC uses the Boulton process for pressure treating poles with pentachlorophenol. The effluent limitation representing "best practicable control technology currently available" (BPT) and "best available technology economically achievable" (BAT) for direct dischargers within these two Subcategories is zero discharge of process wastewater pollutants into navigable waters. Ecology considers this equivalent to "all known, available, and reasonable methods of prevention, control, and treatment" (AKART) for this industry under State laws.

Process wastewater as defined in 40 CFR Part 429.11, specifically excludes non-contact cooling water, material storage yard runoff (either raw natural or process wood storage), and boiler blowdown. However, these wastewaters must be authorized in a permit prior to discharge into the waters of the state.

For the purposes of this permit, process wastewater includes all wastewaters generated as part of the conditioning of the wood in the treatment cylinder. Other sources of process wastewater include, but are not limited to, preservative formulation; recovery and regeneration wastewater; water used to wash excess preservative from the surface of preserved wood; and condensate from drying kilns used to dry preserved or surface protected lumber. Ecology also considers any rainwater or storm water which falls in the retort area, drip pad area, or tank farm area as process wastewater.

The proposed permit authorizes the discharge of only storm water from white wood or treated product storage areas.

Stormwater

Total Suspended Solids

Ecology proposed a technology-based limit for total suspended solids (TSS) of 50 mg/L in previous permit cycles but gave the facility an option to conduct a site specific study to evaluate control technology to reduce TSS. MCPLS chose not to conduct this evaluation. Thus, by default, the technology-based effluent limit for TSS is 50 mg/L.

Oil and Grease

The previous permits established a technology-based oil and grease daily maximum limit of 10 mg/L. Ecology proposes this limit in the permit. This limit reflects effluent quality that facilities can achieve when using a properly operated and maintained oil/water separator or other equivalent control technology.

Polynuclear Aromatic Hydrocarbons (PAHs)

A technology-based limit for PAH was proposed (100 µg/L) in previous permit cycles with an option provided in the previous permit for the Permittee to conduct a site specific study to evaluate control technology to reduce PAH. The Permittee chose not to conduct this evaluation. Thus, by default the technology-based effluent limitation for PAH will remain as 100 µg/L.

pH

Ecology proposes to retain a pH limit of 6.0 to 9.0 from the previous permit since this is a demonstrated categorical technology based limitation imposed on all NPDES permits. It should be noted that MCPLC's effluent has always been between a pH of 6.0 and 9.0 for both outfalls.

Arsenic

Ecology proposes to further reduce the treated stormwater effluent from the previous permit based on performance of the treatment system. Performance-based limits depend on the treatment capabilities of the treatment system and best management practices. Ecology frequently uses performance-based limits to prevent a discharge from back-sliding or to establish interim limits until such a time it can impose final limits. The proposed permit establishes a performance-based arsenic interim limit of 136 µg/L for Outfall 001 and 236 µg/L for Outfall 002. The facility's improved performance resulted from its phase out of CCA use to treat residential dimensional wood products and the installation, and consequent upgrades, to the stormwater treatment systems.

Chromium

Ecology established chromium interim limits based on performance of the treatment system during the previous permit cycle. The proposed interim chromium limits are at significantly reduced concentrations as compared to the final limits of the previous permit. Ecology proposes performance-based chromium interim limits of 66 µg/L for Outfall 001 and 45 µg/L for Outfall 002. This dramatic improvement in performance resulted from the facility's phase out of the use of CCA to treat residential lumber and the installation, and consequent upgrades, to the stormwater treatment systems.

Pentachlorophenol

Ecology identified performance-based interim pentachlorophenol limits for Outfall 002. It reduced the limit from 20 µg/L (in the previous permit) to 17.2 µg/L. Ecology proposes to retain the previous limit for Outfall 001 at 81 µg/L.

B. Surface Water Quality-Based Effluent Limits

The Washington State Surface Water Quality Standards (chapter 173-201A WAC) were designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. Waste discharge permits must include conditions that ensure the discharge will meet established surface water quality standards (WAC 173-201A-510). Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily loading study (TMDL).

Numerical Criteria for the Protection of Aquatic Life and Recreation

Numerical water quality criteria are published in the Water Quality Standards for Surface Waters (chapter 173-201A WAC). They specify the levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. Ecology uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

Numerical Criteria for the Protection of Human Health

The U.S. EPA has published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State (40 CFR 131.36). These criteria are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The Water Quality Standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

Narrative Criteria

Narrative water quality criteria (e.g., WAC 173-201A-240(1); 2006) limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge to levels below those which have the potential to:

- Adversely affect designated water uses.
- Cause acute or chronic toxicity to biota.
- Impair aesthetic values.
- Adversely affect human health.

Narrative criteria protect the specific designated uses of all fresh waters (WAC 173-201A-200; 2006) and of all marine waters (WAC 173-201A-210; 2006) in the state of Washington.

Antidegradation

The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330; 2006) is to:

- Restore and maintain the highest possible quality of the surface waters of Washington.
- Describe situations under which water quality may be lowered from its current condition.
- Apply to human activities that are likely to have an impact on the water quality of surface water.
- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).
- Apply three Tiers of protection (described below) for surface waters of the state.

Tier I ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions. Tier II ensures that waters of a higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities. Tier III prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

This facility must continue to meet Tier I requirements.

- Existing and designated uses must be maintained and protected. No degradation may be allowed that would interfere with, or become injurious to, existing or designated uses, except as provided for in this chapter.

A facility must prepare a Tier II analysis when all three of the following conditions are met:

- The facility is planning a new or expanded action.
- Ecology regulates or authorizes the action.
- The action has the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone.

The facility plans to expand their operations by extending Retort A and adding a fifth Retort E in the near future. This expansion will allow MCPLC to expand their operations seasonally to meet peak production demands. By providing for capability to meet seasonal production demands, the facility will reduce, but not eliminate the need to store treated lumber onsite. This reduces the amount of exposure of treated lumber to stormwater and should reduce the amount of pollutants being discharged. Therefore, Ecology determined that the proposed expansion does not trigger a Tier II analysis.

Mixing Zones

A mixing zone is the defined area in the receiving water surrounding the discharge port(s), where wastewater mixes with receiving water. Within mixing zones the pollutant concentrations may exceed water quality numeric criteria, so long as the diluting wastewater doesn't interfere with designated uses of the receiving water body (e.g., recreation, water supply, and aquatic life and wildlife habitat, etc.) The pollutant concentrations outside of the mixing zones must meet water quality numeric criteria.

State and federal rules allow mixing zones because the concentrations and effects of most pollutants diminish rapidly after discharge, due to dilution. Ecology defines mixing zone sizes to limit the amount of time any exposure to the end-of-pipe discharge could harm water quality, plants, or fish.

The state's water quality standards allow Ecology to authorize mixing zones for the facility's permitted wastewater discharges only if those discharges already receive all known, available, and reasonable

methods of prevention, control and treatment (AKART). Mixing zones typically require compliance with water quality criteria within 200 to 300 feet from the point of discharge; and use no more than 25 percent of the available width of the water body for dilution. We use modeling to estimate the amount of mixing within the mixing zone. Through modeling we determine the potential for violating the water quality standards at the edge of the mixing zone and derive any necessary effluent limits. Steady-state models are the most frequently used tools for conducting mixing zone analyses. Ecology chooses values for each effluent and for receiving water variables that correspond to the time period when the most critical condition is likely to occur (see Ecology's Permit Writer's Manual). Each critical condition parameter (by itself) has a low probability of occurrence and the resulting dilution factor is conservative. The term "reasonable worst-case" applies to these values.

The mixing zone analysis produces a numerical value called a dilution factor (DF). A dilution factor represents the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. For example, a dilution factor of 10 means the effluent comprises 10 percent by volume and the receiving water comprises 90 percent of the total volume at the boundary of the mixing zone. We use dilution factors with the water quality criteria to calculate reasonable potentials and effluent limits. Water quality standards include both aquatic life-based criteria and human health-based criteria. The former are applied at both the acute and chronic mixing zone boundaries; the latter are applied only at the chronic boundary. The concentration of pollutants at the boundaries of any of these mixing zones may not exceed the numerical criteria for that zone.

Each aquatic life **acute** criterion is based on the assumption that organisms are not exposed to that concentration for more than one-hour and more often than one exposure in three years. Each aquatic life **chronic** criterion is based on the assumption that organisms are not exposed to that concentration for more than four consecutive days and more often than once in three years.

The two types of human health-based water quality criteria distinguish between those pollutants linked to non-cancer effects (non-carcinogenic) and those linked to cancer effects (carcinogenic). The human health-based water quality criteria incorporate several exposure and risk assumptions. These assumptions include:

- A 70-year lifetime of daily exposures.
- An ingestion rate for fish or shellfish measured in kg/day.
- An ingestion rate of two liters/day for drinking water
- A one-in-one-million cancer risk for carcinogenic chemicals.

This permit authorizes a small acute mixing zone, surrounded by a chronic mixing zone around the point of discharge (WAC 173-201A-400; 2006). The water quality standards impose certain conditions before allowing the discharger a mixing zone:

1. Ecology must specify both the allowed size and location in a permit.

The proposed permit specifies the size and location of the allowed mixing zone.

2. The facility must fully apply "all known available and reasonable methods of prevention, control and treatment" (AKART) to its discharge.

Ecology has determined that the treatment provided and the pollution prevention activities practiced at MCPLC meet the requirements of AKART (see "Technology based Limits").

3. Ecology must consider critical discharge conditions.

Surface water quality-based limits are derived for the water body's critical condition, (the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or designated water body uses). The critical discharge condition is often pollutant-specific or water body-specific.

Critical discharge conditions are those conditions that result in reduced dilution or increased effect of the pollutant. Factors affecting dilution include the depth of water, the density stratification in the water column, the currents and the rate of discharge. Density stratification is determined by the salinity and temperature of the receiving water. Temperatures are warmer in the surface waters in summer. Therefore, density stratification is generally greatest during the summer months. Density stratification affects how far up in the water column a freshwater plume may rise. The rate of mixing is greatest when an effluent is rising. The effluent stops rising when the mixed effluent is the same density as the surrounding water. After the effluent stops rising, the rate of mixing is much more gradual. Water depth can affect dilution when a plume might rise to the surface when there is little or no stratification. Ecology's Permit Writer's Manual describes additional guidance on criteria/design conditions for determining dilution factors. The Manual can be obtained from Ecology's website at: http://www.ecy.wa.gov/biblio/92109.html.

The authorized mixing zones has been developed using the following critical conditions:

- 7Q10 river flow of 741 cfs.
- Stormwater discharge flowrate of 1.055 cfs
- Channel width at low flow conditions is 460 feet (City of Tacoma).
- River Velocity of approximately 1 ft per second (at low tide).
- Mean harmonic river flow of 2,386 cfs for human health carcinogen.

4. Supporting information must clearly indicate the mixing zone would not:

- Have a reasonable potential to cause the loss of sensitive or important habitat,
- Substantially interfere with the existing or characteristic uses,
- Result in damage to the ecosystem, or
- Adversely affect public health.

Ecology established Washington State water quality criteria for toxic chemicals using EPA criteria. EPA developed the criteria using toxicity tests with numerous organisms, and set the criteria to protect all aquatic species.

EPA sets acute criteria for toxic chemicals assuming organisms are exposed to the pollutant at the criteria concentration for 1-hour. They set chronic criteria assuming organisms are exposed to the pollutant at the criteria concentration for 4 days. Dilution modeling under critical conditions generally shows that both acute and chronic criteria concentrations are reached within minutes of being discharged.

The discharge plume does not impact drifting and non-strong swimming organisms because they cannot stay in the plume close to the outfall long enough to be affected. Strong swimming fish

could maintain a position within the plume, but they can also avoid the discharge by swimming away. Mixing zones generally do not affect benthic organisms (bottom dwellers) because the buoyant plume rises in the water column. Ecology has additionally determined that this effluent will not exceed 33 degrees C for more than 2 seconds after discharge; and that the temperature of the water will not create lethal conditions or blockages to fish migration.

Ecology evaluates the cumulative toxicity of an effluent by testing the discharge with whole effluent toxicity (WET) testing.

Ecology reviewed the above information, the specific information on the characteristics of the discharge, the receiving water characteristics and the discharge location. Based on this review we conclude that the discharge does not have a reasonable potential to cause the loss of sensitive or important habitat, substantially interfere with existing or characteristics uses, result in damage to the ecosystem or adversely affect public health

5. The discharge/receiving water mixture must not exceed water quality criteria outside the boundary of a mixing zone.

Ecology conducted a reasonable potential analysis, using procedures established by the EPA and by Ecology, for each pollutant. However, the reasonable potential analysis is inconclusive at this time. Background receiving water data is needed in order to verify that water quality criteria is not being exceeded outside of the boundary of the mixing zone. This proposed permit requires that a Receiving Water Study be conducted and has issued interim limits for a period of two years. It should be noted that the interim limits are the same, or more stringent than, the final limits issued in the previous permit.

6. The size of the mixing zone and the concentrations of the pollutants must be minimized.

At any given time, the effluent plume uses only a portion of the acute and chronic mixing zone, which minimizes the volume of water involved in mixing. The plume rises through the water column as it mixes therefore much of the receiving water volume at lower depths in the mixing zone is not mixed with discharge. Similarly, because the discharge may stop rising at some depth due to density stratification, waters above that depth will not mix with the discharge. Ecology determined it is impractical to specify in the permit the actual, much more limited volume in which the dilution occurs as the plume rises and moves with the current.

Ecology minimizes the size of mixing zones by requiring dischargers to install diffusers when they are appropriate to the discharge and the specific receiving waterbody. When a diffuser is installed the discharge and the receiving water is more completely mixed in a shorter time period. Ecology also minimizes the size of the mixing zone (in the form of the dilution factor) using design criteria with a low probability of occurrence. For example, Ecology uses the expected 95th percentile pollutant concentration, the 90th percentile background concentration, the centerline dilution factor and the lowest flow occurring once in every 10 years to perform the reasonable potential analysis.

Because of the above reasons, Ecology has effectively minimized the size of the mixing zone authorized in the proposed permit.

7. Maximum size of mixing zone.

The authorized mixing zone does not exceed the maximum size restriction in the Puyallup River. The acute and chronic mixing zones were based upon 2.5 percent and 25 percent, respectively, of the receiving water 7Q10 flow (741 cfs). The mixing zones identified meet the 25 percent river width requirement at low flow conditions (460 feet). These mixing zones were established in the previous permit.

The dilution factor authorized for the discharge to Lincoln Avenue Ditch is based on the ratio of basin drainage areas between the site and the drainage to Lincoln Avenue Ditch. At this time there are no criteria applicable for this type of dilution credit. The dilution factor for the discharge to Lincoln Avenue Ditch was established in the previous permit.

8. Acute Mixing Zone -

- **The discharge/receiving water mixture must comply with acute criteria as near to the point of discharge as practicably attainable.**

  Ecology is requiring the collection of additional water quality data on the receiving water in the Puyallup River and the Lincoln Avenue Ditch to confirm (or establish new effluent limitations which will) ensure that acute criteria is attainable. Ecology has issued interim effluent limitations for two years which provide MCPLC some time to collect the required background data. Once this data is available, Ecology will re-conduct a water quality analysis and define final effluent limitations. The final limitations will be incorporated into the permit by issuing a modification to the permit.

- **The pollutant concentration, duration and frequency of exposure to the discharge, will not create a barrier to migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.**

  As described above the toxicity of any pollutant depends upon the exposure, the pollutant concentration and the time the organism is exposed to that concentration. Authorizing a limited acute mixing zone for this discharge assures that it will not create a barrier to migration. The effluent from this discharge will rise as it enters the receiving water, assuring that the rising effluent will not cause translocation of indigenous organism near the point of discharge (below the rising effluent).

- **Comply with size restrictions.**

  The mixing zone authorized for this discharge complies with the size restrictions published in chapter 173-201A WAC.

9. Overlap of Mixing Zones.

The mixing zones authorized for Outfall 002 (to the Puyallup River) are not known to overlap other mixing zones from other sources.

Many industrial facilities discharge stormwater from roads and large areas of impervious surfaces into Lincoln Avenue Ditch. This creates a very complicated situation which is nearly impossible to understand completely. The proposed permit requires the facility to collect more data on the background receiving water. Ecology will use this data to re-evaluate the reasonable potential to exceed water quality standards, establish new effluent limit (if needed), and minimize mixing zones for individual pollutant parameters, as appropriate.

C. Description of the Receiving Water

The MCPLC discharges to the Blair Waterway via Lincoln Avenue Ditch and to the Puyallup River. Blair Waterway is a marine waterbody and one of the waterways comprising inner Commencement Bay.

Lincoln Avenue Ditch is a City of Tacoma stormwater drainage and conveyance line which runs along Lincoln Avenue and serves a heavy industrial area. Ecology considers the Lincoln Avenue Ditch as a freshwater waterbody.

Ecology originally considered the area of discharge into the Puyallup River as estuarine waters. However, based upon salinity data, Ecology has determined that the point of discharge to the river is subject to freshwater criteria as defined in WAC 173-201A-260(3). The Puyallup River is part of a protected Salmon migration corridor and sections of it are within Puyallup Indian Tribe jurisdiction.

In 1998, SECOR conducted two sampling events of the receiving waters receiving MCPLC's Outfall 001 and 002 discharges. The Table provided below provides a summary of the data collected during the two sampling events.

The receiving water sampling and testing events were performed under an Ecology approved Quality Assurance Project Plan (QAPP) in 1998. Since that time, data quality requirements (WQP Policy 1-11, revised September 2006) have been refined/established which suggest additional receiving water data should be collected to meet current minimum data quality requirements.

Ecology considers this data unrepresentative of the current receiving water conditions because SECOR only collected samples on two days and because the data is more than five years old. In order to establish current background receiving water conditions, this proposed permit requires MCPLC to conduct a new Receiving Water Study. The facility must collect upstream receiving water samples representing at least ten different discharge days to have the minimum amount of data for Ecology to evaluate water quality-based effluent limits.

Table 9. Ambient Background Data

Parameter	Value
Lincoln Avenue Ditch (SW-1)	
Maximum Temperature (deg. C)	14.7
Minimum Dissolved Oxygen (mg/L)	4.12
pH range (s.u.)	6.97-7.30
10^{th} %ile Hardness (mg/L)	77.7
90^{th} %ile Total Arsenic (µg/L)	3.5
90^{th} %ile Total Chromium (µg/L)	2.2
90^{th} %ile Total Copper (µg/L)	9.1
90^{th} %ile Pentachlorophenol (µg/L)	0.09
Puyallup River (SW-2)	
Maximum Temperature (deg. C)	12.9
Minimum Dissolved Oxygen (mg/L)	10.52
pH range (s.u.)	7.39-8.13
10^{th} %ile Hardness (mg/L)	35.8
90^{th} %ile Total Arsenic (µg/L)	3.7

Parameter	**Value**
90th %ile Total Chromium (µg/L)	1.3
90th %ile Total Copper (µg/L)	5.8
90th %ile Pentachlorophenol (µg/L)	<0.08

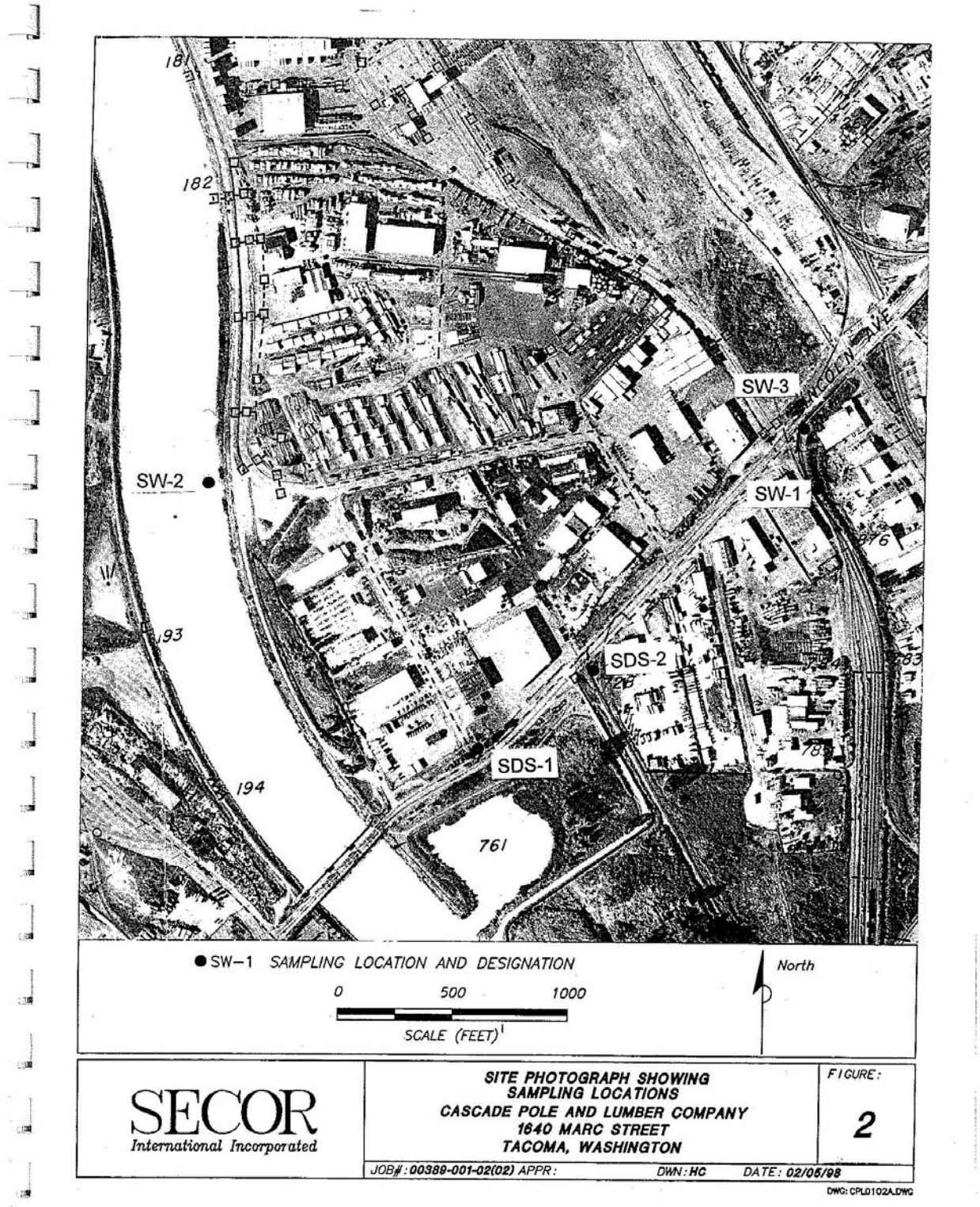

Figure 5. Background Data Sampling Locations.

D. Designated Uses and Surface Water Quality Criteria

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. In addition, the U.S. EPA set human health criteria for toxic pollutants (40 CFR 131.36). Criteria applicable to this facility's discharge are summarized below.

- Aquatic Life Uses are designated based on the presence of, or the intent to provide protection for, the key uses. All indigenous fish and non-fish aquatic species must be protected in waters of the state in addition to the key species. The Aquatic Life Uses for this receiving water are identified below.

Table 10. Lincoln Avenue Ditch (Outfall 001) and Puyallup River (Outfall 002) Aquatic Life Uses & Associated Criteria

Salmonid Rearing And Migration Only	
Temperature Criteria – Highest 7DAD MAX	17.5°C (63.5°F)
Dissolved Oxygen Criteria – Lowest 1 Day Minimum	6.5 mg/L
Turbidity Criteria	• 10 NTU over background when the background is 50 NTU or less; or • A 20 percent increase in turbidity when the background turbidity is more than 50 NTU
Total Dissolved Gas Criteria	Total dissolved gas shall not exceed 110 percent of saturation at any point of sample collection
pH Criteria	pH shall be within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units

- The recreational uses are extraordinary primary contact recreation, primary contact recreation, and secondary contact recreation. The recreational uses for this receiving water are identified below.

Table 11. Recreational Uses & Associated Criteria

Recreational use	**Criteria**
Lincoln Avenue Ditch (Outfall 001)	
Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 14 colonies/100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 43 colonies /100 mL.
Puyallup River (Outfall 002)	
Secondary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 200 colonies/100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 400 colonies /100 mL

- The **water supply uses** are for agricultural, industrial, and stock watering for Outfall 002. Outfall 001 has the same water supply uses but must, as defined by WAC 173-201A-600 be protected for domestic uses as well.

- The **miscellaneous fresh water use**s are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

Ecology completed a TMDL for dissolved oxygen for the Puyallup River. Ecology did not identify MCPLC as a contributor of dissolved oxygen demanding wastes in the TMDL Study and as such did not allocate it a pollutant load. Ecology has no pending TMDL studies at this time for either the Puyallup River or the Lincoln Avenue Ditch and neither water body is included on the 303(d) list for any other parameter at this location.

E. Evaluation of Surface Water Quality - Based Effluent Limits for Numeric Criteria

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as biological oxygen demand (BOD) is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

Pollutant concentrations in the proposed discharge exceed water quality criteria despite using technology-based controls which Ecology determined fulfills AKART. Ecology therefore authorizes a mixing zone in accordance with the geometric configuration, flow restriction, and other restrictions imposed on mixing zones described in chapter 173-201A WAC.

The discharge at Outfall 001 is to the City storm sewer which eventually discharges to the Lincoln Avenue Ditch via the City Outfall. The percentage of MCPLC's flow to the total drainage-area flow at the City Outfall represents the degree of dilution that MCPLC's discharge receives before draining to the Lincoln Avenue Ditch. Ecology established a dilution factor of 9.0 based on a ratio of total drainage area for the City Outfall at Lincoln Avenue Ditch and the contribution from MCPLC's 001 drainage area to this outfall (SEACOR, 1998).

The facility conducted a Mixing Zone Study for Outfall 002 in 1997 (EMCON). Using a Puyallup River low flow of 2,510 cfs, the consultant recommended an acute dilution factor of 20. As part of the renewal of the NPDES Permit issued February 7, 2002, Ecology determined that the 7Q10 flow of the river is 741 cfs. It determined that by using 25 percent of the river flow in combination with a 1.055 cfs stormwater discharge flowrate, the resultant plume would meet the minimum criteria for mixing zones. As a result of Ecology's analysis, it established an acute and chronic dilution factor of 10.0 and 89.0, respectively.

The dilution factors for Outfalls 001 and 002 are summarized in Table 12:

Table 12. Dilution Factors (DF)

Criteria	Acute	Chronic
Outfall 001		
Aquatic Life	9.0	9.0
Human Health, Carcinogen		9.0
Human Health, Non-carcinogen		9.0
Outfall 002		
Aquatic Life	10.0	89.0
Human Health, Carcinogen		89.0
Human Health, Non-carcinogen		89.0

Ecology evaluated the impacts of temperature, pH, turbidity, arsenic, chromium, copper and pentachlorophenol as described below, using the dilution factors in the above table. The derivation of surface water quality-based limits also takes into account the variability of pollutant concentrations in both the effluent and the receiving water.

Temperature: MCPLC is only authorized to discharge treated stormwater to surface receiving waters. Ecology has determined that the temperature is not a significant stormwater pollutant parameter and therefore is not requiring temperature limitations and/or monitoring for stormwater dischargers at this time. Ecology may elect to develop procedures and guidance for regulating the effects of stormwater to comply with temperature water quality criteria in the future.

MCPLC's temperature data supports this determination. Temperature data collected in May 2006 shows that the temperature for Outfall 001 was 12 ºC and for Outfall 002 was 13 ºC.

pH: Ecology predicts no violation of the pH criteria under critical conditions. Therefore, Ecology placed the technology-based effluent limits for pH in the permit.

Turbidity: Due to the nature of the stormwater treatment system and the amount of dilution, Ecology expects no violations of the turbidity criteria outside the designated mixing zones.

However, the proposed permit requires MCPLC to routinely monitor for turbidity at Outfalls 001 and 002, Lincoln Avenue Ditch upstream of Outfall 001 and bypass/overflow events. If data shows water quality criteria exceedances, Ecology may establish a turbidity limit in future permits.

Toxic Pollutants: --Federal regulations (40 CFR 122.44) require Ecology to place limits in NPDES permits on toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. Ecology does not exempt facilities with technology-based effluent limits from meeting the surface water quality standards.

The following toxic pollutants are present in the discharge: arsenic, chromium, copper, and pentachlorophenol. A reasonable potential analysis (See Appendix C) on these parameters was conducted to determine whether effluent limits would be required in this permit. Procedures established in EPA's TSD Document, 1991 were used to determine whether or not a reasonable potential to exceed the water quality criteria exists. Based on limited background data, it appears that water quality-based limits for copper for both outfalls and pentachlorophenol limits for Outfall 001 may be needed.

In light of the recent major improvements to MCPLC's stormwater treatment system and the issues regarding defining background receiving water conditions, Ecology decided to issue interim limitations for two years and require MCPLC to conduct a Receiving Water Study to collect data upstream from the point of discharge from Outfalls 001 and 002. Once the facility completes the Study, Ecology will re-conduct the water quality analyses and modify the proposed permit. Ecology reserves the right to establish final limitations in the future that may be more stringent.

As explained previously in this fact sheet several of the interim limits have been ratcheted down from the previous permit's final limitations based on performance data.

F. Whole Effluent Toxicity

The water quality standards for surface waters forbid discharge of effluent that causes toxic effects in the receiving waters. Many toxic pollutants cannot be measured by commonly available detection methods. However, laboratory tests can measure toxicity directly, by exposing living organisms to the wastewater

and measuring their responses. These tests measure the aggregate toxicity of the whole effluent, so this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

- *Acute toxicity tests measure mortality as the significant response* to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests find early indications of any potential lethal effect of the effluent on organisms in the receiving water.

- *Chronic toxicity tests measure various sublethal toxic responses* such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test on an organism with an extremely short life cycle, or a partial life cycle test during a critical stage of a test organism's life. Some chronic toxicity tests also measure organism survival.

Ecology-accredited WET testing laboratories use the proper WET testing protocols, fulfill the data requirements, and submit results in the correct reporting format. Accredited laboratory staff know about WET testing and how to calculate an NOEC, LC_{50}, EC_{50}, IC_{25}, etc. Ecology gives all accredited labs the most recent version of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* (http://www.ecy.wa.gov/biblio/9580.html), which is referenced in the permit. Ecology recommends that MCPLC send a copy of the acute or chronic toxicity sections(s) of its NPDES permit to the laboratory.

Acute Toxicity

WET testing conducted during the previous permit term showed the facility's effluent has a reasonable potential to cause acute toxicity in the receiving water for both Outfalls 001 and 002. The proposed permit will impose acute toxicity limits for both Outfall 001 and 002.

The effluent limit for acute toxicity is: No acute toxicity detected in a test sample representing the acute critical effluent concentration (ACEC). The acute critical effluent concentration (ACEC) is the concentration of effluent at the boundary of the acute mixing zone during critical conditions. ACEC for Outfall 001 is established as 11 percent and for Outfall 002 is established as 10 percent.

Compliance with an acute toxicity limit is measured by an acute toxicity test comparing test organism survival in the ACEC (using a sample of effluent diluted to equal the ACEC) to survival in nontoxic control water. MCPLC is in compliance with the acute toxicity limit if there is no statistically significant difference in test organism survival between the ACEC sample and the control sample.

MCPLC has continued to conduct regular acute toxicity testing at Outfall 002 and has been in compliance with acute toxicity limits.

WET testing conducted during the last permit cycle for Outfall 002 showed compliance with the WET Rule for Chronic toxicity. Therefore this proposed permit will not impose a chronic WET limit. However, MCPLC must retest the effluent once during the summer and once during the winter before submitting an application for permit renewal. In addition,

- If this facility makes process or material changes which, in Ecology's opinion, increase the potential for effluent toxicity, then Ecology may (in a regulatory order, by permit modification, or in the permit renewal) require the facility to conduct additional effluent characterization

- If WET testing conducted for submittal with a permit application fails to meet the performance standards in WAC 173-205-020, Ecology will assume that effluent toxicity has increased.

MCPLC may demonstrate to Ecology that effluent toxicity has not increased by performing additional WET testing after the process or material changes have been made.

G. Human Health

Washington's water quality standards include 91 numeric human health-based criteria that Ecology must consider when writing NPDES permits. These criteria were established in 1992 by the U.S. EPA in its National Toxics Rule (40 CFR 131.36). The National Toxics Rule allows states to use mixing zones to evaluate whether discharges comply with human health criteria.

Ecology conducted a determination of the discharge's potential to violate the water quality standards as required by 40 CFR 122.44(d). We followed the procedures published in the Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) and Ecology's Permit Writer's Manual (Ecology Publication 92-109, July, 2006) to make this reasonable potential determination. Our evaluation showed that the existing data resulted in an ambiguous determination since major upgrades were recently completed to the stormwater conveyance and treatment systems which will further reduce the amount of pollutants being discharged. The discharger will be required in this permit to continue to monitor for these pollutants for the next five years. The facility's compliance with the human health criteria will be reassessed again when the permit is evaluated for reissuance in the future.

Ecology determined the effluent may contain chemicals of concern posing a risk to human health. Ecology determined this because data or process information indicates regulated chemicals occur in the discharge. The data shows that the following human-health regulated pollutants exist in the discharge: arsenic (inorganic), pentachlorophenol, acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, pyrene.

Of these parameters, only arsenic exceeds human health criteria at both of the outfalls. Of the organic polyaromatic hydrocarbons (PAHs) only benzo(b)flouranthene, benzo(k)flouranthene, and indeno(1,2,3-cd)pyrene slightly exceed the human health criteria at the edge of the chronic mixing zone boundary for Outfall 001. Based on data submitted during the last permit cycle, there were no exceedances of the PAHs in Outfall 002. Although the data showed a reasonable potential to violate human health criteria, Ecology decided not to include limits in this permit cycle based on a limited and unrepresentative dataset so far.

The facility has made major upgrades to the treatment system and its BMPs and the data collected does not adequately reflect those improvements. The permit requires monthly monitoring of PAHs and Ecology will evaluate the additional data at the next permit cycle. In support of Ecology's decision, it should be noted that a review of polyaromatic hydrocarbon (PAH) data before and after the 2007 treatment system upgrades have resulted in significant effluent quality improvements. Comparing data over the last 22 months reveal PAH reductions of 88.9 and 97.9 percent at Outfalls 001 and 002, respectively.

The following table summarizes these data:

Table 13. Polyaromatic Hydrocarbon Data Summary.

	Average Total PAH Concentration (µg/L)	
Data Time Period	Outfall 001	Outfall 002
Before 2007 Upgrades (Sep-06 to Aug-07)	3.466	3.291

After 2007 Upgrades (Sep-07 to June 08)	0.385	0.398

The human health based criteria for arsenic is 0.018 µg/L (freshwater) and 0.14 µg/L (marine water) based on consumption of water and fish. This is based on the inorganic fraction of arsenic only. The criterion is applicable at the edge of the chronic mixing zone boundary. The arsenic human health criterion is based on a 70-year lifetime of daily exposures, two liters/day ingestion rate for drinking water, 6.5 grams/day ingestion rate for fish or shellfish, and a one-in-one million excess cancer risk.

The arsenic human health based criteria of 0.018 µg/L as established in the National Toxics Rule differs from the maximum contaminant level (MCL) of 50 µg/L established in the Safe Drinking Water Act (SDWA). The August 5, 1997 Federal Register (California Toxics Rule) cited an EPA document entitled: Issues Related to Health Risk of Arsenic. In this document, EPA summarized the controversial health risk issues associated with regulation of arsenic, but most importantly the document contains a risk management decision made by the EPA assistant administrators of the different offices that deal with arsenic regulation. This decision is written as follows (direct excerpt from document):

> *Publish a notice which announces that as a risk management decision, EPA is in the process of conducting a reassessment in order to reconcile the CWA and SDWA criteria. The result of this reassessment would be presented in a risk characterization. During the reassessment, the existing criteria would remain in place. EPA would work with NTR States and others to resolve special problems in the implementation of those criteria through special regulatory relief mechanisms.*

The December 10, 1998 Federal Register (Vol. 63, No. 237, pages 68354-68363) reiterated EPA's position that the criteria for arsenic was currently being re-assessed and that upon completion of the reassessment, EPA would publish the revised criteria as appropriate.

At the present time, the Department does not have an implementation policy on arsenic criteria established in the National Toxics Rule as it applies to stormwater discharge and, as such, it will not be included as an effluent limitation in the Permit at this time. However, best management practices should be continued to be implemented and/or improved to reduce arsenic concentrations in the discharge.

It should also be noted that stormwater is a discontinuous discharge and occurs approximately nine months of the year. It is thus not clear how the human health criteria (or a modification thereof to allow for a discontinuous exposure) should be applied to a stormwater discharge.

H. Sediment Quality

The aquatic sediment standards (chapter 173-204 WAC) protect aquatic biota and human health. Under these standards Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400).

Ecology previously suspected that the discharge from the bypass/overflow outfall has potential to cause a violation of the sediment quality standards and have required sediment monitoring in the previous discharge permit. The data from the sediment sampling surrounding the outfall performed on May 27, 2005, suggest that the discharge does not result in non-compliance with the Sediment Management Standards.

This permit requires the facility to take another sediment monitoring "snapshot" in September 2009 (late summer). After it completes this monitoring, Ecology may have enough information to definitively determine whether or not this outfall impacts sediment quality. Ecology may elect to require further sediment toxicity or monitoring studies, establish limits to protect sediment quality, or eliminate sediment monitoring in the next permit cycle.

I. Ground Water Quality Limits

The Ground Water Quality Standards, (chapter 173-200 WAC), protect beneficial uses of ground water. Permits issued by Ecology must not allow violations of those standards (WAC 173-200-100).

MCPLC does not discharge wastewater to ground and therefore Ecology imposed no permit limits to protect ground water.

J. Comparison of Proposed Discharge Limitations with the Previous Permit Modified on April 25, 2002

Table 14. Comparison of Discharge Limitations for Outfall #001

Parameter	Previous Limits	Proposed Interim Limits
Arsenic, µg/L	360	136
Chromium, µg/L	138 (660)	66
Copper, µg/L	159 (310)	159
Pentachlorophenol, µg/L	81 (215)	81
PAHs, µg/L	100	74
Oil and Grease, mg/L	10	10
TSS, mg/L	50	50
pH, s.u.	6 to 9	6.0 to 9.0
WET Toxicity Limit		No Acute Toxicity

Note: All limits are maximum daily limits. Proposed interim limits are effective from September 1, 2008, through August 31, 2010.

Table 15. Comparison of Discharge Limitations for Outfall #002

Parameter	Previous Limits	Proposed Interim Limits
Arsenic, µg/L	360 (650)	236
Chromium, µg/L	137 (1030)	45
Copper, µg/L	156 (390)	156
Pentachlorophenol, µg/L	20 (63)	17.2
PAHs, µg/L	100	100
Oil and Grease, mg/L	10	10
TSS, mg/L	50	50
pH, s.u.	6 to 9	6.0 to 9.0
WET Toxicity Limit	No Acute or Chronic Toxicity	No Acute Toxicity

Note: All limits are maximum daily limits. Proposed interim limits are effective from September 1, 2008, through August 31, 2010.

IV. MONITORING REQUIREMENTS

Ecology requires monitoring, recording, and reporting (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and that the discharge complies with the permit's effluent limits.

The monitoring schedule is detailed in the proposed permit under Special Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

MCPLC is required to monitor discharge from both Outfalls for the parameters: arsenic, chromium, copper, pentachlorophenol, total PAHs, TSS, hardness, turbidity, oil and grease, pH, and flow. Monitoring of the Outfalls is required on a monthly basis.

The facility must also monitor the Lincoln Avenue Ditch (upstream of the Outfall 001) monthly for the first two years of the permit cycle followed by quarterly monitoring. The Lincoln Avenue Ditch monitoring parameters include: arsenic, chromium, copper, pentachlorophenol, hardness, turbidity, conductivity, and pH.

MCPLC must monitor all bypass/overflow events. The parameters it must monitor and report include: arsenic, chromium, copper, pentachlorophenol, total PAHs, TSS, turbidity, oil and grease, pH, flow, duration, date(s) of bypass, and 24-hr rainfall.

Additional monitoring required include: conducting a Receiving Water Study - Puyallup River and Lincoln Avenue Ditch (Special Condition S7), a Sediment Monitoring Study (Special Condition S12), 2,3,4,6-Trichlorophenol, Dioxin, and Furan Study (Special Condition S13), and acute and chronic toxicity testing (Special Conditions S10 and S11).

A. Lab Accreditation

Ecology requires that all monitoring data (with the exception of certain parameters) must be prepared by a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories.*

V. OTHER PERMIT CONDITIONS

A. Reporting and Recordkeeping

Ecology based Special Condition S3 on our authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

B. Operations and Maintenance Manual

This proposed permit requires this facility to update the Operations and Maintenance Manual (as needed). The updated manual must be submitted to Ecology for approval.

C. Solid Waste Plan

MCPLC could cause pollution of the waters of the state through inappropriate disposal of solid waste or through the release of leachate from solid waste.

This proposed permit requires this facility to update the approved solid waste plan (as needed) designed to prevent solid waste from causing pollution of waters of the state. The updated plan must be submitted to Ecology for approval (RCW 90.48.080).

D. Spill Plan

This facility stores a quantity of chemicals on-site that have the potential to cause water pollution if accidentally released. Ecology can require a facility to develop best management plans to prevent this accidental release [section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080].

MCPLC developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the facility to update this plan (as needed) and submit it to Ecology.

E. Receiving Water Study (Puyallup River)

MCPLC is required to conduct a Receiving Water Study of the Puyallup River to assess the reasonable potential to exceed copper water quality criteria from Outfall 002. A Quality Assurance Project Plan (QAPP) must be submitted to Ecology for approval. Upon approval, the facility will collect data from the effluent and the receiving water. After completion of the Study, Ecology may adjust the copper discharge limitations for Outfall 002, as necessary. This may result in lower limits.

F. Sediment Monitoring

MCPLC developed a Sediment Analysis Plan and performed sediment monitoring as specified under this plan. This proposed permit requires MCPLC to conduct another round of sediment monitoring to ensure that no residual contamination is occurring to sediments in the vicinity of Outfall 002 and the bypass/overflow outfall.

G. 2,3,4,6-Trichlorophenol, Dioxin, and Furan Study

MCPLC developed a 2,3,4,6-Trichlorophenol, Dioxin, and Furan Study during the previous permit cycle. The proposed permit requires the facility to conduct another round of 2,3,4,6-Trichlorophenol, Dioxin, and Furan monitoring and submit a monitoring report to Ecology for assessment.

H. Outfall Evaluation

Ecology requires MCPLC to conduct an outfall inspection and submit a report detailing the findings of that inspection (Permit Special Condition S11). The facility must inspect its discharge pipe and diffusers to determine their physical condition, and to evaluate the extent of sediment accumulations in the vicinity of the outfall.

I. Stormwater Pollution Prevention Plan (SWPPP)

Ecology requires MCPLC to continually maintain and update the SWPPP for the facility. A copy of the updated SWPPP shall be submitted to Ecology for review (as required by the permit).

J. Application for Permit Renewal

Ecology requires MCPLC submit an application for permit renewal no later than **September 30, 2011**.

K. General Conditions

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual industrial NPDES permits issued by Ecology.

VI. PERMIT ISSUANCE PROCEDURES

A. Permit Modifications

Ecology may modify this permit to impose numerical limits, if necessary to comply with water quality standards for surface waters, with sediment quality standards, or with water quality standards for ground waters, after obtaining new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit to comply with new or amended state or federal regulations.

B. Proposed Permit Issuance

This proposed permit includes all statutory requirements for Ecology to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes to issue this permit for a term of 5 years.

VII. REFERENCES FOR TEXT AND APPENDICES

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Laws and Regulations(http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information
(http://www.ecy.wa.gov/programs/wq/wastewater/index.html

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APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to reissue a permit to McFarland Cascade and Pole Company (MCPLC). The permit prescribes operating conditions and wastewater discharge limits. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on June 20, 2008, and June 27, 2008, in the *Tacoma News Tribune* to inform the public about the submitted application and to invite comment on the reissuance of this permit.

Ecology will place a Public Notice on August 11, 2008, in the *Tacoma News Tribune* to inform the public and to invite comment on the proposed reissuance of this National Pollutant Discharge Elimination System permit as drafted.

The Notice –

- Tells where copies of the draft Permit and Fact Sheet are available for public evaluation (a local public library, the closest Regional or Field Office, posted on our website.).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Asks people to tell us how well the proposed permit would protect the receiving water.
- Invites people to suggest fairer conditions, limits, and requirements for the permit.
- Invites comments on Ecology's determination of compliance with antidegradation rules.
- Urges people to submit their comments, in writing, before the end of the Comment Period
- Tells how to request a public hearing of comments about the proposed NPDES Permit.
- Explains the next step(s) in the permitting process.

Ecology has published a document entitled **Frequently Asked Questions about Effective Public Commenting** which is available on our website at http://www.ecy.wa.gov/biblio/0307023.html.

You may obtain further information from Ecology by telephone, **360-407-6280**, or by writing to the permit writer at the address listed below.

Industrial Unit Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, Washington 98504-7775

The primary author of this permit and fact sheet is John Y. Diamant, P.E.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD5 is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor (DF)--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report must contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the pollutant concentration is above zero and is determined from analysis of a sample in a given matrix containing the pollutant.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7.0 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)--A calculated value five times the MDL (method detection level).

Responsible Corporate Officer-- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to receiving waters may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into receiving waters.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on Ecology's homepage at http://www.ecy.wa.gov.

001 ARSENIC PERFORMANCE-BASED EFFLUENT LIMITS

USE EXCEL TO PERFORM THE LOGNORMAL TRANSFORMATION
AND CALCULATE THE TRANSFORMED MEAN AND VARIANCE

LOGNORMAL TRANSFORMED MEAN =	2.9448
LOGNORMAL TRANSFORMED VARIANCE =	0.7143
NUMBER OF SAMPLES/MONTH FOR COMPLIANCE MONITORING =	1
AUTOCORRELATION FACTOR(ne)(USE 0 IF UNKNOWN) =	0
E(X) =	27.1671
V(X) =	769.649
VARn	0.7143
MEANn=	2.9448
VAR(Xn)=	769.649
MAXIMUM DAILY EFFLUENT LIMIT =	136
AVERAGE MONTHLY EFFLUENT LIMIT =	76
76.33738 72.80362	

Month	Conc. (ug/L)	LN(Conc)	Month	Conc. (ug/L)	LN(Conc)
Oct-03	39.60	3.678829	Jun-06	22.00	3.091042
Nov-03	35.80	3.577948	Sep-06	3.70	1.308333
Dec-03	60.90	4.109233	Oct-06	12.00	2.484907
Jan-04	32.80	3.490429	Nov-06	38.00	3.637586
Feb-04	40.10	3.691376	Dec-06	9.00	2.197225
Mar-04	54.00	3.988984	Jan-07	9.00	2.197225
Apr-04	21.70	3.077312	Feb-07	9.00	2.197225
May-04	14.80	2.694627	Mar-07	29.00	3.367296
Jun-04	5.14	1.637053	Apr-07	4.00	1.386294
Aug-04	27.30	3.306887	May-07	2.00	0.693147
Sep-04	30.50	3.417727	Jun-07	36.00	3.583519
Oct-04	16.70	2.815409	Jul-07	23.00	3.135494
Nov-04	20.00	2.995732	Aug-07	110.00	4.70048
Dec-04	10.30	2.332144	Sep-07	18.00	2.890372
Jan-05	10.70	2.370244			
Feb-05	19.30	2.960105		*Column1*	
Mar-05	16.00	2.772589			
Apr-05	31.80	3.459466		Mean	2.94
May-05	23.50	3.157		Standard Error	0.13
Jun-05	5.00	1.609438		Median	3.08
Jul-05	7.62	2.030776		Mode	2.20
Sep-05	39.40	3.673766		Standard Deviation	0.85
Oct-05	13.00	2.564949		Sample Variance	0.71
Nov-05	33.00	3.496508		Kurtosis	0.37
Dec-05	11.00	2.397895		Skewness	-0.47
Jan-06	98.00	4.584967		Range	4.01
Feb-06	29.00	3.367296		Minimum	0.69
Mar-06	27.00	3.295837		Maximum	4.70
Apr-06	18.00	2.890372		Sum	129.57
May-06	26.00	3.258097		Count	44.00

Note: Light blue concentrations represent values reported as below detection limits. In these cases, the method detection limit was used in the calculations.

001 CHROMIUM PERFORMANCE-BASED EFFLUENT LIMITS

USE EXCEL TO PERFORM THE LOGNORMAL TRANSFORMATION
AND CALCULATE THE TRANSFORMED MEAN AND VARIANCE

				LOGNORMAL TRANSFORMED MEAN =			2.4648
				LOGNORMAL TRANSFORMED VARIANCE =			0.5481
NUMBER OF SAMPLES/MONTH FOR COMPLIANCE MONITORING =							1
	AUTOCORRELATION FACTOR(ne)(USE 0 IF UNKNOWN) =						0
						E(X) =	15.4697
						V(X) =	174.683
						VARn	0.5481
						MEANn=	2.4648
						VAR(Xn)=	174.683
			MAXIMUM DAILY EFFLUENT LIMIT =				66
			AVERAGE MONTHLY EFFLUENT LIMIT =				40
			39.75275	37.21123			

Month	Conc. (ug/L)	LN(Conc)			Month	Conc. (ug/L)	LN(Conc)
Oct-03	18.20	2.901422			Jun-06	21.00	3.044522
Nov-03	32.20	3.471966			Sep-06	16.00	2.772589
Dec-03	132.00	4.882802			Oct-06	11.00	2.397895
Jan-04	7.73	2.045109			Nov-06	11.00	2.397895
Feb-04	14.50	2.674149			Dec-06	7.00	1.94591
Mar-04	8.28	2.113843			Jan-07	7.00	1.94591
Apr-04	14.80	2.694627			Feb-07	7.00	1.94591
May-04	7.02	1.948763			Mar-07	7.00	1.94591
Jun-04	7.49	2.013569			Apr-07	7.00	1.94591
Aug-04	12.40	2.517696			May-07	7.00	1.94591
Sep-04	3.05	1.115142			Jun-07	7.00	1.94591
Oct-04	3.49	1.249902			Jul-07	7.00	1.94591
Nov-04	10.00	2.302585			Aug-07	7.00	1.94591
Dec-04	4.66	1.539015			Sep-07	6.00	1.791759
Jan-05	24.40	3.194583					
Feb-05	16.60	2.809403				*Column1*	
Mar-05	14.60	2.681022					
Apr-05	20.10	3.00072				Mean	2.46
May-05	26.30	3.269569				Standard Error	0.11
Jun-05	5.00	1.609438				Median	2.35
Jul-05	7.82	2.056685				Mode	1.95
Sep-05	17.30	2.850707				Standard Deviation	0.74
Oct-05	20.00	2.995732				Sample Variance	0.55
Nov-05	19.00	2.944439				Kurtosis	1.81
Dec-05	8.10	2.091864				Skewness	0.99
Jan-06	74.00	4.304065				Range	3.77
Feb-06	8.50	2.140066				Minimum	1.12
Mar-06	28.00	3.332205				Maximum	4.88
Apr-06	13.00	2.564949				Sum	108.45
May-06	25.00	3.218876				Count	44.00

001 POLYAROMATIC HYDROCARBONS PERFORMANCE-BASED EFFLUENT LIMITS

USE EXCEL TO PERFORM THE LOGNORMAL TRANSFORMATION
AND CALCULATE THE TRANSFORMED MEAN AND VARIANCE

				LOGNORMAL TRANSFORMED MEAN =			1.0429
				LOGNORMAL TRANSFORMED VARIANCE =			1.9582
NUMBER OF SAMPLES/MONTH FOR COMPLIANCE MONITORING =							1
	AUTOCORRELATION FACTOR(ne)(USE 0 IF UNKNOWN) =						0
						E(X) =	7.5536
						V(X) =	347.263
						VARn	1.9582
						MEANn=	1.0429
						VAR(Xn)=	347.263
			MAXIMUM DAILY EFFLUENT LIMIT =				74
			AVERAGE MONTHLY EFFLUENT LIMIT =				28
			28.35655	38.20812			

Month	Conc. (ug/L)	LN(Conc)			Month	Conc. (ug/L)	LN(Conc)
Oct-03	5.77	1.752672			Jun-06	10.37	2.338917
Nov-03	0.62	-0.474815			Sep-06	6.54	1.877937
Dec-03	23.27	3.147165			Oct-06	13.59	2.609334
Jan-04	1.77	0.57098			Nov-06	6.40	1.856298
Feb-04	16.35	2.794228			Dec-06	3.64	1.291984
Mar-04	5.25	1.658228			Jan-07	10.59	2.35991
Apr-04	6.04	1.798404			Feb-07	7.50	2.014903
May-04	4.33	1.465568			Mar-07	4.49	1.501853
Jun-04	0.10	-2.302585			Apr-07	0.79	-0.235722
Aug-04	0.10	-2.302585			May-07	0.14	-1.966113
Sep-04	0.82	-0.200893			Jun-07	0.60	-0.510826
Oct-04	1.94	0.662688			Jul-07	0.25	-1.386294
Nov-04	4.42	1.48614			Aug-07	1.6	0.470004
Dec-04	4.39	1.479329			Sep-07	1.6	0.470004
Jan-05	6.62	1.890095					
Feb-05	1.58	0.457425				*Column1*	
Mar-05	5.94	1.781709					
Apr-05	4.37	1.474763				Mean	1.04
May-05	1.19	0.173953				Standard Error	0.21
Jun-05	3.60	1.280934				Median	1.47
Jul-05	3.65	1.294727				Mode	-2.30
Sep-05	1.31	0.270027				Standard Deviation	1.40
Oct-05	1.00	0				Sample Variance	1.96
Nov-05	8.11	2.093098				Kurtosis	0.16
Dec-05	10.66	2.366498				Skewness	-0.72
Jan-06	22.04	3.092859				Range	5.63
Feb-06	7.78	2.051556				Minimum	-2.30
Mar-06	0.68	-0.385662				Maximum	3.33
Apr-06	1.64	0.494696				Sum	45.89
May-06	27.82	3.325755				Count	44.00

002 ARSENIC PERFORMANCE-BASED EFFLUENT LIMITS

USE EXCEL TO PERFORM THE LOGNORMAL TRANSFORMATION
AND CALCULATE THE TRANSFORMED MEAN AND VARIANCE

				LOGNORMAL TRANSFORMED MEAN =			3.1673
				LOGNORMAL TRANSFORMED VARIANCE =			0.9761
NUMBER OF SAMPLES/MONTH FOR COMPLIANCE MONITORING =							1
	AUTOCORRELATION FACTOR(ne)(USE 0 IF UNKNOWN) =						0
						E(X) =	38.6818
						V(X) =	2474.783
						VARn	0.9761
						MEANn=	3.1673
						VAR(Xn)=	2474.783
			MAXIMUM DAILY EFFLUENT LIMIT =				236
			AVERAGE MONTHLY EFFLUENT LIMIT =				121
			120.6057	120.5159			

Month	Conc. (ug/L	LN(Conc)			Month	Conc. (ug/L)	LN(Conc)
Oct-03	21.20	3.054001			Jun-06	46.00	3.8286414
Nov-03	13.40	2.595255			Sep-06	14.00	2.6390573
Dec-03	109.00	4.691348			Oct-06	62.00	4.1271344
Jan-04	5.59	1.720979			Nov-06	12.00	2.4849066
Feb-04	2.00	0.693147			Dec-06	10.00	2.3025851
Mar-04	83.00	4.418841			Jan-07	11.00	2.3978953
Apr-04	124.00	4.820282			Feb-07	40.00	3.6888795
May-04	64.60	4.168214			Mar-07	12.00	2.4849066
Jun-04	36.30	3.591818			Apr-07	57.00	4.0430513
Aug-04	37.30	3.618993			May-07	14.00	2.6390573
Sep-04	71.30	4.266896			Jun-07	76.00	4.3307333
Oct-04	31.20	3.440418			Jul-07	19.00	2.944439
Nov-04	33.80	3.520461			Aug-07	11.00	2.3978953
Dec-04	22.50	3.113515			Sep-07	12.00	2.4849066
Jan-05	2.00	0.693147					
Feb-05	28.20	3.339322				*Column1*	
Mar-05	4.55	1.515127					
Apr-05	16.70	2.815409				Mean	3.17
May-05	30.70	3.424263				Standard Error	0.15
Jun-05	30.10	3.404525				Median	3.30
Jul-05	55.30	4.012773				Mode	2.48
Sep-05	55.60	4.018183				Standard Deviation	0.99
Oct-05	31.00	3.433987				Sample Variance	0.98
Nov-05	61.00	4.110874				Kurtosis	0.16
Dec-05	26.00	3.258097				Skewness	-0.60
Jan-06	21.00	3.044522				Range	4.13
Feb-06	94.00	4.543295				Minimum	0.69
Mar-06	9.10	2.208274				Maximum	4.82
Apr-06	5.90	1.774952				Sum	139.36
May-06	26.00	3.258097				Count	44.00

002 CHROMIUM PERFORMANCE-BASED EFFLUENT LIMITS

USE EXCEL TO PERFORM THE LOGNORMAL TRANSFORMATION
AND CALCULATE THE TRANSFORMED MEAN AND VARIANCE

				LOGNORMAL TRANSFORMED MEAN =			2.3292
				LOGNORMAL TRANSFORMED VARIANCE =			0.4028
NUMBER OF SAMPLES/MONTH FOR COMPLIANCE MONITORING =							1
	AUTOCORRELATION FACTOR(ne)(USE 0 IF UNKNOWN) =						0
						E(X) =	12.5615
						V(X) =	78.261
						VARn	0.4028
						MEANn=	2.3292
						VAR(Xn)=	78.261
			MAXIMUM DAILY EFFLUENT LIMIT =				45
			AVERAGE MONTHLY EFFLUENT LIMIT =				29
			29.17305	27.11404			

Month	Conc. (ug/L	LN(Conc)			Month	Conc. (ug/L)	LN(Conc)
Oct-03	6.96	1.940179			Jun-06	22.00	3.0910425
Nov-03	3.30	1.193922			Sep-06	12.00	2.4849066
Dec-03	44.30	3.790985			Oct-06	9.60	2.2617631
Jan-04	3.87	1.353255			Nov-06	15.00	2.7080502
Feb-04	4.54	1.512927			Dec-06	7.00	1.9459101
Mar-04	19.40	2.965273			Jan-07	7.00	1.9459101
Apr-04	26.60	3.280911			Feb-07	7.00	1.9459101
May-04	18.40	2.912351			Mar-07	7.00	1.9459101
Jun-04	7.50	2.014903			Apr-07	7.00	1.9459101
Aug-04	5.02	1.61343			May-07	7.00	1.9459101
Sep-04	17.50	2.862201			Jun-07	7.00	1.9459101
Oct-04	11.70	2.459589			Jul-07	7.00	1.9459101
Nov-04	25.60	3.242592			Aug-07	7.00	1.9459101
Dec-04	19.10	2.949688			Sep-07	7.00	1.9459101
Jan-05	29.50	3.38439					
Feb-05	29.40	3.380995				*Column1*	
Mar-05	4.00	1.386294					
Apr-05	10.10	2.312535				Mean	2.33
May-05	7.70	2.04122				Standard Error	0.10
Jun-05	7.40	2.00148				Median	2.03
Jul-05	15.30	2.727853				Mode	1.95
Sep-05	17.90	2.884801				Standard Deviation	0.63
Oct-05	7.30	1.987874				Sample Variance	0.40
Nov-05	28.00	3.332205				Kurtosis	-0.69
Dec-05	6.20	1.824549				Skewness	0.41
Jan-06	12.00	2.484907				Range	2.60
Feb-06	4.90	1.589235				Minimum	1.19
Mar-06	7.00	1.94591				Maximum	3.79
Apr-06	9.70	2.272126				Sum	102.49
May-06	17.00	2.833213				Count	44.00

Reasonable Potential to Exceed Calculations

This spreadsheet calculates the reasonable potential to exceed state water quality standards for a small number of samples. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, March, 1991 (EPA/505/2-90-001) on page 56. User input columns are shown with red headings. Corrected formulas in col G and H on 5/98 (GB)

CALCULATIONS

				State Water Quality Standard		Max concentration at edge of...									
	Metal Criteria Translator as decimal	Metal Criteria Translator as decimal	Ambient Concentration (metals as dissolved)	Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone	LIMIT REQ'D?	Effluent percentile value	Max effluent conc. measured (metals as total recoverable)	Coeff Variation	# of samples	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor
Parameter	Acute	Chronic	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*			*ug/L*	*CV*	*n*			
Outfall 001 (Lincoln Ave Ditch)															
Arsenic	1.00	1.00	3.50	360	190	10.68	10.68	NO	0.95	60	1.17	44	1.14	9	9
Copper	0.996	0.996	9.10	13.42	9.15	18.40	18.40	**YES**	0.95	82	1.17	44	1.14	9	9
Chromium (Hex)	0.993	0.993	2.20	15	10	5.92	5.92	NO	0.95	32	1.01	44	1.12	9	9
PCP			0.09	8.80	5.56	9.19	9.19	**YES**	0.95	76	0.60	44	1.08	9	9
Outfall 002 (Puyallup River)															
Arsenic	1.00	1.00	3.700	360	190	13.26	4.77	NO	0.95	92	0.60	44	1.08	10	89
Copper	0.996	0.996	5.800	6.46	4.72	24.24	7.87	**YES**	0.95	177	0.60	44	1.08	10	89
Chromium (Hex)	0.993	0.993	1.300	15	10	4.28	1.63	NO	0.95	29	0.60	44	1.08	10	89
PCP			0.0800	13.42	8.47	0.55	0.13	NO	0.95	4.4	0.60	44	1.08	10	89

Permit Limit Calculation

Dilution (Dil'n) factor is the inverse of the percent effluent concentration at the edge of the acute or chronic mixing zone.

Permit Limit Calculation Summary

Statistical variables for permit limit calculation

	Acute Dil'n Factor	Chronic Dil'n Factor	Metal Criteria Translator	Metal Criteria Translator	Ambient Concentration	Water Quality Standard Acute	Water Quality Standard Chronic	Average Monthly Limit (AML)	Maximum Daily Limit (MDL)	Coeff. Var. (CV)	AML Prob'y Basis	MDL Prob'y Basis	# of Samples per Month	
PARAMETER			Acute	Chronic	*ug/L*	*ug/L*	*ug/L*	ug/L	ug/L	*decimal*	*decimal*	*decimal*	*n*	
Outfall 001														
Copper	9.0	9.0	0.996	0.996		13.42	9.15	**83.1**	**121.2**	0.60	0.95	0.99	1.00	1.00
PCP	9.0	9.0				8.80	5.56	**54.3**	**79.2**	0.60	0.95	0.99	1.00	1.00
Outfall 002														
Copper	10	89	0.996	0.996		6.46	4.72	**44.5**	**64.9**	0.60	0.95	0.99	1.00	1.00

This spreadsheet calculates water quality based permit limits based on the two value steady state model using the State Water Quality standards contained in WAC 173-201A. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, March, 1991 (EPA/505/2-90-001) on page 99. Last revision date 9/98. Written by G. Shervey

Human Health Reasonable Potential to Exceed Calculations											
Revised 3/00	Ambient Concentration (Geometric Mean)	Water Quality Criteria for Protection of Human Health	Max concentration at edge of chronic mixing zone.	LIMIT REQ'D?	AVERAGE MONTHLY EFFLUENT LIMIT	MAXIMUM DAILY EFFLUENT LIMIT	Estimated Percentile at 95% Confidence	Coeff Variation	# of samples from which # in col. K was taken	Calculated 50th percentile Effluent Conc. (When n>10)	Dilution Factor
Parameter	*ug/L*	*ug/L*	*ug/L*		*ug/L*	*ug/L*		*CV*	*n*		
Outfall 001											
ARSENIC (inorganic)	0.00	0.018	3.189	YES	0.2	0.2	0.50	0.0179	61	28.7	9.0
Pentachlorophenol	0.00	8.20	0.560	NO	NONE	NONE	0.50	1.8441	61	5.04	9.0
Acenaphthene	0.00	990.00	0.011	NO	NONE	NONE	0.50	0.715	61	0.100	9.0
Anthracene	0.00	9600	0.02	NO	NONE	NONE	0.50	0.575	61	0.180	9.0
Benzo(a)anthracene	0.00	0.031	0.022	NO	NONE	NONE	0.50	1.07	61	0.198	9.0
Benzo(a)pyrene	0.00	0.031	0.030	NO	NONE	NONE	0.50	1.03	61	0.269	9.0
Benzo(b)fluoranthene	0.00	0.031	0.073	YES	0.3	1.2	0.50	1.13	51	0.65	9.0
Benzo(k)fluoranthene	0.00	0.031	0.033	YES	0.3	1.2	0.50	1.08	51	0.300	9.0
Chrysene	0.00	0.031	0.028	NO	NONE	NONE	0.50	1.26	61	0.255	9.0
Dibenzo(a,h)anthracene	0.00	0.031	0.021	NO	NONE	NONE	0.50	0.884	61	0.190	9.0
Fluoranthene	0.00	370	0.04	NO	NONE	NONE	0.50	1.65	61	0.34	9.0
Fluorene	0.00	14000	0.01	NO	NONE	NONE	0.50	0.5419	61	0.100	9.0
Indeno(1,2,3-cd)pyrene	0.00	0.031	0.040	YES	0.3	1.1	0.50	1.03	61	0.359	9.0
Pyrene	0.00	11000	0.03	NO	NONE	NONE	0.50	1.59	61	0.290	9.0
Outfall 002											
ARSENIC (inorganic)	0.00	0.018	0.351	YES	1.6	3.0	0.50	1.151	61	31.20	89.0
Pentachlorophenol	0.00	8.20	0.021	NO	NONE	NONE	0.50	1.271	61	1.90	89.0
Acenaphthene	0.00	990.00	0.001	NO	NONE	NONE	0.50	1.289	61	0.100	89.0
Anthracene	0.00	9600	0.00	NO	NONE	NONE	0.50	1.228	61	0.132	89.0
Benzo(a)anthracene	0.00	0.031	0.00	NO	NONE	NONE	0.50	1.378	61	0.286	89.0
Benzo(a)pyrene	0.00	0.031	0.00	NO	NONE	NONE	0.50	1.459	61	0.277	89.0
Benzo(b)fluoranthene	0.00	0.031	0.01	NO	NONE	NONE	0.50	1.487	51	0.475	89.0
Benzo(k)fluoranthene	0.00	0.031	0.00	NO	NONE	NONE	0.50	1.886	51	0.257	89.0
Chrysene	0.00	0.031	0.01	NO	NONE	NONE	0.50	1.415	61	0.535	89.0
Dibenzo(a,h)anthracene	0.00	0.031	0.00	NO	NONE	NONE	0.50	1.388	61	0.190	89.0
Fluoranthene	0.00	370	0.01	NO	NONE	NONE	0.50	1.409	61	0.790	89.0
Fluorene	0.00	14000	0.00	NO	NONE	NONE	0.50	1.302	61	0.100	89.0
Indeno(1,2,3-cd)pyrene	0.00	0.031	0.00	NO	NONE	NONE	0.50	1.346	61	0.420	89.0
Pyrene	0.00	11000	0.01	NO	NONE	NONE	0.50	1.485	61	0.570	89.0
Note: This analysis provides a snapshot of conditions from the past permit cycle. Further monitoring is recommended before establishing limits based on human-health criteria. MCPLC has just completed major upgrades to their stormwater collection, storage and treatment systems. For reasons explained in the Fact Sheet arsenic human-health criteria will not be evaluated at this time.											

APPENDIX D--RESPONSE TO COMMENTS