State of Oregon
Department of
Environmental
Quality

National Pollutant Discharge Elimination System

PERMIT EVALUATION AND FACT SHEET

August 18, 2003

Oregon Department of Environmental Quality

Western Region
750 Front St NE, Suite 120
Salem OR 97301
(503) 378-8240

Permittee:	Evanite Fiber Corporation PO Box E Corvallis, OR 97339
Permit Information:	File Number: 28476 Permit Number: 101331 Expiration Date: May 31, 2000 EPA Reference Number: OR000029-9
Source Contact:	Jay Doyle (541) 753-1211 Environmental Manager
Source Location:	1185 SE Crystal Lake Drive Corvallis, OR 97338-0598
LLID	1227618456580-132.5-D
Receiving Stream	Willamette River – RM 132.5
Proposed Action:	Renew Permit Application Number: 989783 Date Received: November 22, 1999
Source Category	NPDES Major – Industrial
Permit Writer:	Steve Schnurbusch (503) 378-8240 ext. 284 Senior Water Quality Permitting Specialist

INTRODUCTION

The existing National Pollutant Discharge Elimination System (NPDES) Permit expired on May 31, 2000. The Department received renewal application number 989783 from Evanite Fiber Corporation on November 22, 1999. As this renewal application was submitted to the Department in a timely manner prior to the expiration date of the permit, the permit shall not be deemed to expire until final action has been taken on the renewal application to issue the new permit as per OAR 340-045-0040.

This permit evaluation report describes the basis and methodology used in developing the permit. The permit is divided into several sections:

Schedule A – Waste discharge limitations
Schedule B – Minimum monitoring and report requirements
Schedule C – Compliance conditions and schedules
Schedule D – Special conditions
Schedule F – General conditions

These sections are discussed in detail in this document.

This permit is a joint federal and state permit and subject to federal and state regulations. The Clean Water Act, the Code of Federal Regulations, and numerous guidelines of the Environmental Protection Agency provide the federal permit requirements. The Oregon Revised Statutes, Oregon Administrative Rules, and policies and guidelines of the Department of Environmental Quality provide the state permitting requirements.

FACILITY DESCRIPTION

The Evanite manufacturing facility is located on the west edge of the Willamette River and upstream from the mouth of Mary's River in Corvallis, Oregon (See Figure 1). Evanite first began operating in the 1950s. The Evanite mill was originally the site of a flour mill which was built before the turn of the 20th century. The entire mill employs approximately 190 full time workers in the production of hardboard and glass fiber.

Evanite manufactures hardboard wood products and fine glass fiber which results in about 700,000 gallons of wastewater per day. The facility previously included two battery separator manufacturing operations. These were known as the Battery Separator Plant and the Submicro Plant. Both of these were shutdown between 1994 and 1996. The battery separator building now houses glass plant number two which commenced operations in June of 1996. The Submicro Plant building is currently vacant. The only operation at the Submicro Plant is the groundwater Trichloroethylene (TCE) cleanup system which was installed in 1990 and which operates continuously. This results in a flow of about 100,000 gallons per day.

Primary materials and chemicals used in the production of hardboard are wood chips, phenol formaldehyde resin, wax, and latex paints. Raw materials used at the Glass Fiber Plant consist of sand, feldspar, soda ash, borax, syenite, potassium carbonate, zinc oxide, fluorspar, barium carbonate, and sodium sulfate.

Water is used extensively in the hardboard manufacturing process. The wastewater is brown in color and contains substantial concentrations of soluble and suspended constituents, primarily tannins and lignins from wood chips. The five-day biochemical oxygen demand (BOD_5) averages 3,200 milligrams per liter and total suspended solids (TSS) average around 600 mg/L.

The primary source of wastewater from the Glass Fiber Plants is blowdown water from the scrubbers used to capture and remove particulate from air discharge streams. This wastewater contains glass fiber particulate which settles out in the wastewater treatment system. The TSS concentration is approximately 20 mg/L.

The groundwater cleanup program at the former Submicro site consists of pumping groundwater from the uppermost aquifer and air stripping it to remove TCE and other associated volatile organic carbons (VOCs) which may be present. The treated groundwater is then routed to the wastewater treatment system. The TCE concentration of this water as it enters the treatment system is less than 0.5 mg/L.

All process wastewater from the Hardboard, Glass Fiber, and Submicro plants is treated in Evanite's wastewater treatment facility located on the Linn County side (east side) of the Willamette River. The wastewater is pumped to the treatment system through two buried pipelines. Upon reaching the treatment plant, Hardboard Plant wastewater gravity flows in series through all four treatment ponds. Pond 1 contains one 60-horsepower floating aerator and pond 2 contains two aerators. Pond 3 has one 60-horsepower aerator located near its influent end. This aerator will be removed because of the solids removed by the dissolved air flotation unit prior to entering the ponds. Glass Plant and Submicro Plant wastewater is introduced into the treatment system at Pond 3. The treatment system provides biological treatment in two aeration basins followed by settling in the final two ponds. The aeration basins have a total capacity of approximately 2.6 million gallons.

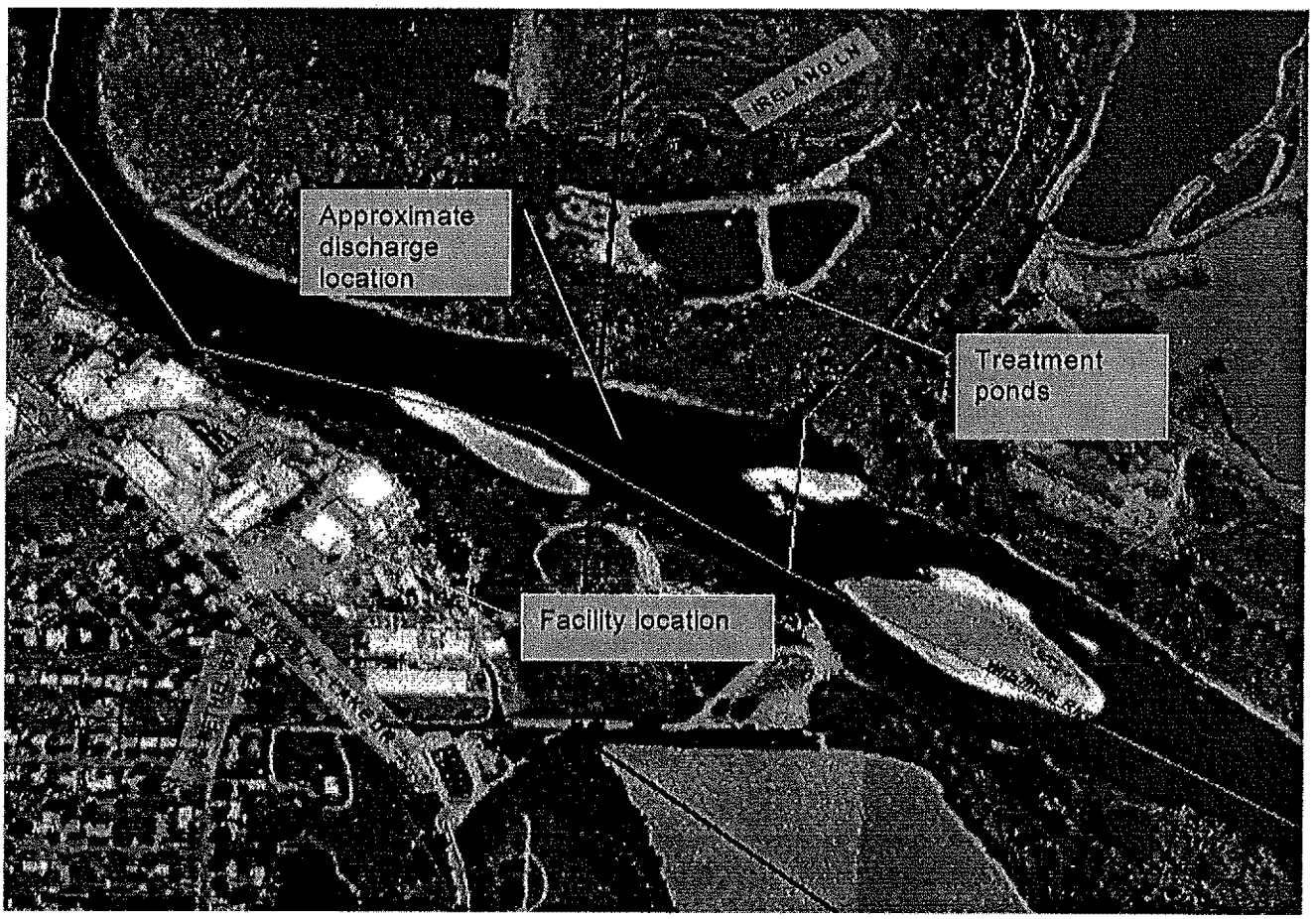

Figure 1: Facility Location

Minimum dissolved oxygen concentration in these ponds range from 1 to 2 mg/L. The two settling basins have capacities of 11 and 5.5 million gallons. At the current influent rate, wastewater averages more than 30 days residence time in the ponds.

Changes in Operation

During the course of the present permit, several operational changes have taken place. The Battery Separator Plant was shut down in September 1994 and the Submicro Plant was shut down in July 1996. The Glass Fiber Division was expanded in May 1996 for additional flow that approximately matched the flows from Battery Separator and Submicro. Evanite improved overall treatment and settling at the wastewater treatment facility by separating Glass Fiber flow, which does not require biological treatment, from Hardboard flow that does require biological treatment.

Evanite installed a new Dissolved Air Flotation (DAF) unit in September 2002 to help remove suspended solids. The DAF installation has resulted in the removal of about 40 tons of suspended solids per month. The DAF installation should also result in a reduction of metals and color. Initial results indicate reductions are occurring, but no conclusions can be drawn yet because the plant has reduced its operations due to the poor economy.

Groundwater Issues

Evanite submitted a preliminary groundwater characterization on December 19, 1997 in accordance with Schedule C.4 of their permit. An update was submitted on September 11, 1998. The Department has reviewed the report and determined that Evanite has satisfied their permit condition and there is no indication of adverse impacts to groundwater from this facility. No additional groundwater requirements are included in the proposed permit. Evanite's sludge management plan (see section below) will address any groundwater issues resulting from land application of their treatment pond sludge.

Storm Water

Storm water is not addressed in this permit. The General NPDES Storm water 1200-Z Permit regulates storm water discharges. A 1200-Z Permit has been assigned to this source.

Sludge Management

Solids from the treatment process accumulate primarily in pond three and to a lesser extent pond four. Historically solids are removed every year from pond three and beneficially applied to 24 irrigable acres located next to the treatment ponds. Solids are removed from pond four every four to six years.

Evanite is currently working with another company to find beneficial use for its sludge. They plan to dredge pond three and dewater the solids on site and store them until the dry season. The water from the dewatering process will be returned back to the ponds. This process is described in their alternate sludge management plan submitted to the Department on August 19, 2002. The proposed permit contains the same sludge management requirements as the current permit.

Compliance History

There have been no compliance issues regarding their individual NPDES permit since the permit was last renewed in November 1995. Two notices of non compliance were issued in 1998 with respect to their general storm water permit for exceeding limits for oil and grease. There are no other known compliance issues with respect to this facility.

RECEIVING WATER

Receiving Stream Water Quality

Evanite's effluent discharges to the Willamette River at river mile 132.5. The designated beneficial uses of the receiving stream are: public and private domestic water supply, industrial water supply, irrigation, livestock watering, anadromous fish passage, salmonid fish spawning and rearing, resident fish and aquatic life, wildlife, hunting, fishing, boating, water contact recreation, and aesthetic quality. The water quality standards for the Willamette Basin (OAR 340-041-0445) were developed to protect the beneficial uses for the basin.

Every two years the Department is required to evaluate the water quality of the State's waterbodies. Those waterbodies that are found to be violating water quality standards are placed on the State's list of impaired waterbodies known as the 303d list. The section of the Willamette River that Evanite discharges to has been found to be violating water quality standards for the following parameters:

1. Dissolved Oxygen: Spawning criteria – 11 mg/L (Oct 1 – May 31)
2. Fecal Coliform: Water contact recreation (Winter, Spring, Fall)
3. Mercury: Human Health – fish tissue (Year round)
4. Temperature: Cold water aquatic life – 64° F (Summer)

The Permit Limitations section below provides a discussion of Evanite's relative contribution pertaining to each parameter.

Mixing Zone Analysis

Evanite discharges to river mile 132.5 of the Willamette River through outfall 001. The outfall consists of a 14-inch diameter pipe with no diffuser. The effluent flows out of a 12 inch by 6 inch opening in the outfall pipe. The end of the pipe is buried. The current mixing zone language states, "The mixing zone shall not exceed a segment of the Willamette River extending 50 feet upstream and 1000 feet downstream from the point of discharge, and 100 feet from the east bank of the Willamette River measured perpendicular to the east bank out into the stream".

A dye study was conducted in September of 1991. The river flow rate measured at Harrisburg was 6080 cfs. The dye study indicated the effluent contacted the north river bank about 250 feet downstream. EPA mixing zone guidance states that "shore-hugging plumes" should be avoided to be protective of the aquatic biota inhabiting the shoreline. There is also narrative language to the affect that mixing zones must be as small as feasible and be protective of the waterbody as a whole. A 1000 foot mixing zone is much longer than the typical mixing zone of the other sources discharging to the Willamette River. The Department is proposing to reduce the length of the mixing zone to 250 feet downstream from the outfall.

Available dilution at the edge of 250 feet under critical low flow conditions needed to be determined to evaluate the reasonable potential to contribute to an exceedance above a water quality criterion. The dye study provides some useful information in evaluating the dilution at 250 feet, but the data is inadequate. No samples were collected at 250 feet downstream during the dye study. In addition, only one sample was collected at each point. Effluent plumes are dynamic by nature and can contain pockets of higher concentrations or lower concentrations at any instant. In evaluating dilution within mixing zones, the average dilution at a particular point is what is of interest. When performing dye studies it is important to collect more than one sample at a given location or collect a continuous sample for a short period of time to obtain the average dye concentration at a given sampling location. The dye study was also performed when the Willamette River flow at Harrisburg was 6080 cfs. Mixing zone modeling is typically simulated under worst-case flow conditions that provide minimum dilution. For free flowing rivers EPA guidance suggests using the seven-day average low flow with a

ten year recurrence interval (7Q10). The 7Q10 flow for the Willamette River at Harrisburg is about 3600 cfs. Therefore a mixing zone model was used to simulate the discharge at this flow rate.

CORMIX, a USEPA supported mixing zone model, was used to simulate this discharge. CORMIX requires input data for river width, depth, and flow rate or velocity. The mixing zone study stated the depth was about five feet and the velocity was about two feet per second near the outfall. The flow rate in the river was about 6080 cfs. The width of the river near the outfall was estimated to be 540 feet based on measurements from a topographic map. Predicted dilutions are typically most sensitive to the ambient velocity. Ambient velocity is likely lower at a river flow of 3600 cfs compared to 6080 cfs. Therefore, CORMIX simulations were performed at velocities ranging from 1.5 ft/sec to 2 ft/sec. The simulated effluent flow rate was 0.8 mgd. Predicted dilutions at the edge of the mixing zone ranged from 105 to 125 at velocities of 1.5 ft/sec and 2 ft/sec respectively. This demonstrates the model's sensitivity to ambient velocity. Because of the uncertainties associated with the input data, a conservative dilution of 100 will be applied at the edge of the mixing zone (250 ft).

In addition, a wintertime dilution was needed for evaluating the impact of the discharge during the winter months. Winter months are considered to be from November to April. The month of November will have the lowest flow of any other winter months. The 7Q10 for November is 5000 cfs. CORMIX was used to predict the dilution at this flow rate and an effluent flow rate of 1 mgd. The resulting dilution at the edge of the mixing zone was 124.

The current permit does not contain language allowing for a zone of initial dilution (ZID). The proposed permit contains a ZID of 25 feet. This is based on the following criteria contained in EPA's Technical Support Document for sizing a ZID. EPA guidance states the size of the ZID should be restricted to the smallest of the following conditions:

1. Sized at 10 percent of the size of the mixing zone. (10% x 250ft = **25 ft)**
2. Sized at a distance equal to 50 times the discharge length scale. The discharge length scale is defined at the square root or the cross-sectional area of the outfall pipe. ($50x\sqrt{1.07} = 53ft$)
3. Size at 5 times the local water depth. (5 x 5ft = **25 ft)**

Based on the dye study results and the CORMIX model results, a dilution of ten will be assumed at the edge of the ZID for the summer critical period and a dilution of eleven for the winter critical period.

These estimated dilutions will be used in determining compliance with water quality standards and for setting any necessary permit limits for this permit renewal. These are assumed to be conservative estimates. The permit requires the permittee to submit a report evaluating the current state of the outfall pipe and verifying the available dilution (See Schedule C.1).

PERMIT LIMITATIONS

Two categories of effluent limitations exist for NPDES permits: 1) Technology based effluent limits, and 2) Water quality based effluent limits. Technology based effluent limits are developed by applying the national effluent limitation guidelines (ELGs) established by EPA for specific industrial categories. Technology based effluent limits were established to require a minimum level of treatment for industrial or municipal sources using available technology. Water quality based effluent limits are designed to be protective of the beneficial uses of the receiving water and are independent of the available treatment technology. In addition, when performing a permit renewal, there are existing permit limits. These may be technology-based limits, water quality-based limits, or limits based on best professional judgement. When renewing a permit, the most stringent of technology based, water quality based, and existing effluent limits apply.

Current Permit Limits

The current permit contains limits for the following parameters:

Parameter	Loadings (lb/day)	
	Monthly Avg	Daily Max
BOD_5		
May 1 – October 31	850	1300
November 1 – April 30	1400	2100
TSS		
May 1 –October 31	1200	1800
November 1 – April 30	2500	3500

pH	Shall not be outside the range of 6.0 – 9.0
Floating Solids	None visible

The current permit also contains a 1.0 mg/L TCE limit for the battery separator plant influent. This plant is not in operation any more.

Technology-Based Effluent Limits

Evanite's facility falls under the Timber Products category. They produce hardboard using a wet process which places them under section 40 CFR 429.60 Subpart E – Wet Process Harboard Subcategory. They are subject to Best Practicable Treatment limits for BOD_5, TSS, and pH. BOD5 and TSS limits are based on production rates and pH must be within the range of 6.0 – 9.0. This facility produces smooth-one-side hardboard so the following limits apply to them:

Parameter	Maximum	30-day Average
	lb/1000 lb of gross production	
BOD_5	20.5	10.7
TSS	37.3	24.5

EPA guidance suggests using the average of the past five years of production data to calculate the technology-based limits. Over the past five years the average hardboard production was 104 tons/day. Based on this production rate, the following technology-based limits would be:

Maximum BOD_5: (104 tons/day) x (2000 lb/ton) x (20.5 lb/1000 lb) / 1000 lb = 4,264 lb/day

Average BOD_5: (104 tons/day) x (2000 lb/ton) x (10.7 lb/1000 lb) / 1000 lb = 2,226 lb/day

Maximum TSS: (104 tons/day) x (2000 lb/ton) x (37.3 lb/1000 lb) / 1000 lb = 7,758lb/day

Average TSS: (104 tons/day) x (2000 lb/ton) x (24.5 lb/1000 lb) / 1000 lb = 5,117 lb/day

Water Quality-Based Effluent Limits

This section discusses the evaluation of this discharge relative to our water quality standards. This evaluation will include determining if there is a reasonable potential to violate any water quality standards within the Willamette River and how permit limits are calculated when there is a reasonable potential. The first section will evaluate those parameters that are water quality limited.

Water Quality Limited Parameters

Dissolved Oxygen

The Willamette River is water quality limited for dissolved oxygen during the months of October to May for not meeting the spawning criteria of 11 mg/L. Discussions with Steve Mamoyac of the Oregon Department of Fish and Wildlife, indicate there is no spawning of native salmonids in the mainstem of the Willamette River. Non-native fall Chinook may spawn in the mainstem but they are an introduced species and no more hatchery programs exist for them. Despite the fact there is no native salmonid spawning occurring in the mainstem of the Willamette River near the outfall, a dissolved oxygen analysis was performed to determine the impact from this source on dissolved oxygen.

Evanite's discharge contains organic matter that can lower dissolved oxygen levels in the Willamette River. This organic matter is a source of food for microorganisms, that in the process of consuming it, also consume dissolved oxygen. The strength of this organic material is measured as biochemical oxygen demand (BOD). This is the amount of oxygen consumed in the process of breaking down the organic material. Evanite's permit contains permit limitations for BOD. In addition, Evanite's effluent also contains ammonia. Ammonia is converted to nitrate and this process also consumes oxygen. Evanite does not have an effluent limitation for ammonia. These two parameters were considered when evaluating dissolved oxygen.

The widely used Streeter-Phelps dissolved oxygen model was used to predict the impact of this discharge on dissolved oxygen levels in the Willamette River. This model takes into account effluent discharge, effluent BOD and ammonia concentrations, and hydrodynamic river characteristics (depth, flow, velocity, etc). This model is contained in an Excel spreadsheet.

The water quality limited time period is from October – May. The critical time period for evaluating impacts on dissolved oxygen is during the warmer low flow months. The month of October will have the lowest flow rate for the water quality limited time period. Therefore the model was run to simulate critical low flows in October. In addition, BOD permit limits change from October to November so it was necessary to evaluate the discharge during November. Therefore, two conditions were simulated:

1) Under 7Q10 flows for October (7Q10 = 4500 cfs) and

2) Under 7Q10 flows for November (7Q10 = 5000 cfs).

During October the daily maximum permitted limit of 1300 lb/day was simulated along with an ammonia concentration of 12 mg/L. The model predicts a maximum dissolved oxygen depression of 0.01 mg/L under this low flow condition in October. During November the daily maximum BOD permit limit increases to 2100 lb/day. Assuming the same ammonia concentration, the model predicts a maximum dissolved oxygen depression of about 0.02 mg/L. The results of the modeling exercise are available in Appendix A.

Based on this modeling exercise, there is no potential for this source to have an adverse impact on dissolved oxygen in the Willamette River. The permit contains a condition in Schedule D.2 that allows the permit to be reopened and modified if the Willamette River dissolved oxygen Total Maximum Daily Load (TMDL) develops more stringent BOD limits or limits for other oxygen demanding pollutants.

Fecal Coliform

The Willamette River is water quality limited for fecal coliform bacteria during the winter, spring, and fall months. Evanite's waste stream contains no domestic sources and therefore should not contain any fecal coliform bacteria. However, Evanite reported a single fecal coliform concentration of 1600 cts/100 ml in their renewal application. This result could be due to a false positive that can occur from the bacteria klebsiella often associated with wood waste. It could also be the result of a cross connection of domestic waste or due to natural conditions (i.e. water fowl in the treatment ponds). The existing bacteria standard is based on E. coli. E. coli testing will not produce a false positive from klebsiella. The proposed permit will require E. coli

monitoring quarterly for the first year. If the sampling demonstrates compliance with the bacteria standard, no further monitoring will be required. If sampling demonstrates noncompliance, Evanite will be required to monitor the glass fiber plant influent prior to entering the ponds to determine if there is a cross connection. Upon completion of all monitoring, Evanite Fiber will provide a report on the results of the monitoring.

Mercury

The Willamette River is water quality limited for mercury based on levels of mercury found in fish tissue. Evanite was required to submit a sample result for mercury as part of their NPDES application. The reported sample was a non-detect. The detection limit was reported as 0.3 µg/L.

Very low levels of mercury are causing the build up of mercury in fish tissue. Because of this, all sources discharging to the Willamette River and its tributaries are being required to monitor for mercury. Evanite will be required to monitor mercury for one year. This data will be reviewed to determine if additional monitoring needs to be performed and if the discharge is causing or contributing to a mercury water quality standard violation.

Temperature

The Willamette River is water quality limited for temperature during the summer based on not meeting the criteria of 64° F. Any source discharging to a water quality limited water body must develop a temperature management plan (TMP) unless the effluent temperature is less than the criterion. The Department's TMP Internal Management Directive summarizes what the content of a TMP must contain based on the relative impact of the source. If the discharge is below the incipient lethal temperature (77° F) within the mixing zone, and does not have a measurable increase (defined as 0.25° F) at the edge of the mixing zone, the TMP should contain the following information:

1. Description of the seasonal presence and life stages of salmonid species, especially those stocks that are listed as threatened or endangered.
2. Development of current site specific data sets that describe ambient stream temperatures and flow rates and effluent temperature and flow rates.
3. Discussion of the effluent mixing characteristics within the mixing zone.
4. An analysis demonstrating there is not a measurable increase at the edge of the mixing zone.

The discharge does not produce incipient lethal temperatures (77°F) within the mixing zone and the mixing zone analysis demonstrates there is no measurable increase in temperature at the edge of the mixing zone. Evanite developed a TMP that satisfies the requirements listed above. The Department proposes to approve the TMP as part of this permit action.

Other Pollutants

Biochemical Oxygen Demand

The evaluation under the dissolved oxygen section above was performed to determine if there was a reasonable potential to violate the dissolved oxygen spawning criterion during times when the Willamette River was water quality limited for dissolved oxygen. This section evaluates whether there is reasonable potential to violate during other times of the year. The most critical condition is during the warmer summer months when the river is at its lowest flow.

The widely used Streeter-Phelps dissolved oxygen model was used to verify that the current BOD limits do not adversely impact dissolved oxygen concentrations downstream. Modeling was performed at the summer low flow of 3600 cfs. Using conservative inputs in the model, the model predicts a maximum dissolved oxygen

depression downstream of about 0.02 mg/L. Based on this analysis, the current BOD limits do not cause or contribute to a dissolved oxygen violation and there is no need to develop more stringent permit limits for BOD. Model results can be viewed in Appendix A.

Temperature – Thermal Load

The Department's Antidegradation Policy does not allow for increased discharged loads as stated in Oregon Administrative Rule (OAR) 340-41-026(2). Furthermore it is the Department's policy to reverse warming trends as stated in OAR 340-41-026(3)(D)(i). Therefore, all permits now contain thermal load limits that are based on historical loadings. The permit will limit thermal loads to those discharged previously and no increase above those loads is allowed.

The term "excess thermal load" is used by the Department to describe the thermal load based on the temperature difference between the effluent and the applicable ambient numeric criterion. The excess thermal load (ETL) is calculated using the following equation:

$$ETL = \Delta T * Q * C_p * SW * 0.252$$

Where:
ΔT = Effluent temperature – Temperature criterion (64 °F)
Q = Effluent flow rate (mgd)
C_p = Specific heat of water (1 Btu/lb °F)
SW = Specific weight in lb/gallon (8.34 lb/gallon)
0.252 = conversion from million BTU/day to Kcals/day
ETL = Million Kcals/day

The maximum summer effluent temperature and flow rate were used to calculate the maximum 7-day average ETL limit. The maximum temperature recorded was 77°F and the maximum daily flow rate was 0.83 mgd resulting in an ETL of 23 million Kcals/day.

$$ETL = (77 - 64) * 0.83 * 1 * 8.34 * 0.252 = 23 \text{ million Kcals/day}$$

These limits will be applied during the summer months of May through October. No limits were developed for the winter months because their effluent temperature does not exceed the criterion of 64°F. Upon completion of the Willamette River temperature TMDL, stricter limits may be developed and incorporated into the permit (See Schedule D.2).

Toxic Pollutants

Evanite has sampled monthly for copper, iron, and zinc since the previous permit renewal. Other toxics have only been sampled a few times during Department inspections or submitted with the permit renewal application. The Department is required to determine whether the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality criterion. EPA has developed a method to make this determination for toxic pollutants called a reasonable potential analysis (RPA). An RPA relies on statistical probability to determine the likelihood that a discharge will violate an instream criterion based on the effluent data, its variability, available dilution, and the receiving water background concentration. The Department has developed an RPA spreadsheet that employs EPA's methodology (Results of the RPA are in Appendix B).

Effluent data, receiving water data, and dilution were entered into the spreadsheet. The only receiving water available was from one sampling event conducted by USGS in the summer of 1993. Effluent data was available from discharge monitoring reports, the application submittal, and from inspection results performed by the Department.

Monthly copper, iron, and zinc data was available from the DMRs. Data prior to the installation of the dissolved air flotation (DAF) system was compared to data after the installation to determine if there was a

significant difference. If a significant difference was observed then only the data after the DAF installation would be used to perform the RPA.

The mean values for copper prior to and after installation were 0.054 mg/L and 0.029 mg/L respectively. The variation of the data was much less after the DAF installation as well. A t-test was used to determine if there was a statistically significant difference between the mean values prior to the DAF installation and the mean values after the installation for copper. The t-test demonstrated a significant difference between the means at a p value of 2.19 E-07. This demonstrates a strong statistical significance that there is a difference between the mean values. Because of the statistical difference, only copper data after the DAF installation was used for the RPA.

The iron data had similar results to the copper data. The result of the t-test demonstrated a significant difference between the means at a p value of 0.038. There was no reasonable potential for iron toxicity using data prior to the DAF, so this analysis was unnecessary. But it demonstrated the DAF's ability to reduce some iron loadings in the effluent.

For zinc, the average values were about the same (0.129 and 0.130 mg/L prior to and after DAF respectively), but the variances appeared significantly different (0.0057 and 0.0003 mg/L prior to and after DAF respectively). A statistically significant difference was found between the variance of both data sets. The maximum value prior to the DAF installation was 0.353 mg/L and after was only 0.149 mg/L. Because the RPA relies on using the maximum value, only data after the DAF installation was used in the RPA. Using this data, no reasonable potential to violate instream zinc toxicity was found.

Additional copper and zinc monitoring is required in the proposed permit to verify the results of the statistical analysis. One year of monitoring is required. If the additional year of monitoring demonstrates there is no reasonable potential to violate instream toxicity criteria, no additional monitoring will be necessary. If there is reasonable potential, the permit will be reopened and permit limits will be incorporated into the permit. Additional lead monitoring is also proposed in this permit because only two lead samples prior to the DAF installation were available. This is not enough data to perform a robust reasonable potential analysis.

Ammonia can be toxic to aquatic life and the toxicity varies with pH and temperature. The effective toxicity is greater at higher pH and temperature. Worst case summer conditions of high pH and temperature were assumed for the RPA. The analysis demonstrated there was no reasonable potential to violate ammonia toxicity.

Nutrients

The current permit required Evanite to monitor for nitrate, nitrite, total kjeldahl nitrogen and total phosphorous during the first year the permit was issued for the months August – November. This was required to provide the Department information on nutrient loading as part of a larger synoptic survey on the Willamette River studying the nutrient and algal growth dynamics. This study was concerned primarily with the summer months. The Willamette is currently water quality limited for dissolved oxygen during the winter months (October – May). In the future, as the Department begins working on the Willamette River dissolved oxygen TMDL, the Department may require nutrient monitoring of all sources discharging to the Willamette River. This may include both summer and winter monitoring. No nutrient monitoring is being required under the proposed permit.

Color

Color is a parameter that primarily affects the aesthetics of the river. The current permit requires Evanite to monitor for color. A review of this data indicates reductions in color have occurred due to the glass fiber plant effluent (which is clear) and possibly due to the installation of the DAF unit. The Department inspected the facility and did not observe excessive color in the Willamette River at the outfall location. The Department will require Evanite to monitor color for the first year after permit issuance to determine the impact the DAF unit is

having on color reductions. After one year the Department will review the data to determine if any further actions are necessary.

Human Health Considerations

Iron and arsenic data was reviewed for their reasonable potential to violate human health criteria. The Willamette River is water quality limited for iron about thirteen miles downstream. A reasonable potential analysis was performed using EPA's methodology. Based on the results there is no reasonable potential to cause or contribute to a violation of the human health criteria for iron (See Appendix B). The lack of arsenic data precluded the Department from performing an arsenic reasonable potential analysis. Because the discharge of arsenic is of concern, Evanite is required to perform arsenic monitoring for the first year of the permit. The arsenic monitoring requires the source to use ultra clean methods to achieve detection limits below the human health criterion.

Whole Effluent Toxicity

Whole Effluent Toxicity (WET) is a term used to describe the aggregate toxic effect of an aqueous sample (e.g., whole effluent wastewater discharge) as measured by an organism's response upon exposure to the sample (e.g., lethality, impaired growth or reproduction). WET tests replicate, to the greatest extent possible, the total effect and actual environmental exposure of aquatic life to toxic pollutants in an effluent without requiring the identification of the specific pollutants. WET testing is a vital component of the water quality standards implementation through the NPDES permitting process.

EPA's promulgated WET test methods include two basic types of WET tests: an acute test (96 hours or less, endpoint: mortality), and a chronic test (7 day life-cycle test, endpoints: growth, reproduction, and mortality). EPA has developed WET test protocols using both freshwater and marine and estuarine test species. EPA recommends running tests using an invertebrate, vertebrate and a plant to identify the most sensitive species for developing NPDES WET permit limits or testing requirements. Organisms used in WET tests (e.g., Ceriodaphnia dubia - freshwater flea and Pimephales promelas - fathead minnow) are indicators or surrogates for the aquatic community to be protected, and a measure of the real biological impact from exposure to the toxic pollutants. To protect water quality, EPA recommends that WET tests be used in NPDES permits together with requirements based on chemical-specific water quality criteria.

WET tests are designed to predict the impact and toxicity of effluents discharged from point sources into waters of the United States. WET monitoring requirements are included in NPDES permits to generate data for use in assessing whether a WET limit has been exceeded (i.e. compliance monitoring) or to assess if a WET limit is needed. The tests are used to determine the percentage of effluent that produces an adverse effect on a group of test organisms. The measured effect may be fertilization, growth, reproduction, or survival. The effluent percentage that causes an adverse effect is compared to the available dilution at the edge of the zone of initial dilution (ZID) and the dilution at the edge of the mixing zone.

In Evanite's case, the available dilution at the edge of the ZID and mixing zone is 10 and 100 respectively under 7Q10 flow conditions. This corresponds to an effluent concentration of 10% (1/10) and 1% (1/100) at the edge of the ZID and mixing zone respectively. If a WET test resulted in chronic adverse effects at less than 1% effluent, this would indicate chronic toxicity may exist outside the mixing zone. Likewise, if the test resulted in acute adverse effects at less than 10% effluent, this would indicate acute toxicity may exist outside the ZID.

Evanite Fiber's current permit requires Whole Effluent Toxicity (WET) testing twice per year – once in the summer and once in the fall. These tests have been reviewed to determine whether acute or chronic toxicity exists at concentrations less than those present within the (ZID) and the mixing zone respectively. The results of these tests indicate there is no acute or chronic whole effluent toxicity at the edge of the ZID or mixing zone. However, several of the tests have demonstrated adverse chronic effects slightly above the allowable 1%

effluent concentration. The proposed permit requires Evanite to continue at the same WET testing frequency as in the current permit.

Antidegradation

An Antidegradation Review was performed for this discharge. The Department has determined the proposed discharge complies with the Antidegradation Policy for Surface Waters found in OAR 340-041-0026 (see Appendix C).

PERMIT DRAFT DISCUSSION

Face Page

The face page of the permit describes the legal name of the facility, the type of waste generated at the facility, and the facility's outfall location where the wastewater enters into the State's receiving waters.

Schedule A, Waste Discharge limitations

The wastewater limits for this permit were determined using the most stringent limits generated from the technology based limits, water quality based limits, and existing limits. The development of these limits is described above. The following tables list the permit limits that are contained in the proposed permit.

a. Outfall 001

May 1 – October 31

Parameter	Effluent Loadings	
	Monthly Average lbs/day	Daily Maximum lbs/day
BOD_5	850	1300
TSS	1200	1800

Other Parameters	
Excess Thermal Load	Shall not exceed a weekly average of 23 Million Kcals/day

November 1 – April 30

Parameter	Effluent Loadings	
	Monthly Average lb/day	Daily Maximum lbs/day
BOD_5	1400	2100
TSS	2500	3500

Other Parameters (Year Round)	
pH	Shall not be outside the range of 6.0 – 9.0
Floating Solids	None visible

Schedule B - Minimum Monitoring and Reporting Requirements

Schedule B describes the minimum monitoring and reporting that is required to demonstrate compliance with the conditions of this permit.

The authority to require periodic reporting by permittees is included in ORS 468.065(5). The proposed monitoring frequencies for all parameters correspond to those of facilities of similar size and complexity in Oregon. The Department recognizes that some tests do not accurately reflect the performance of a treatment facility due to quality assurance/quality control problems. These tests should not be considered when evaluating the compliance of the facility with the permit limitations. Thus, the Department is also proposing to include in the opening paragraph of Schedule B a statement recognizing that some test results may be inaccurate, invalid or do not adequately represent the facility's performance and should not be used in calculations required by the permit. The following tables list the minimum monitoring and reporting that are contained in the proposed permit.

a. Treated Effluent Outfall 001

Item or Parameter	Minimum Frequency	Type of Sample
BOD_5	2/Week	24-hour composite
TSS	2/Week	24-hour composite
pH	2/Week	Grab
Copper, Lead, Zinc (See Note 2)	1/month	24-hour composite
Mercury (See Note 2)	1/month	24-hour composite
Arsenic (See Note 2)	1/month	24-hour composite
WET Testing (See Note 3)	Quarterly	24-hour composite

b. Temperature Monitoring

Item or Parameter	Minimum Frequency	Type of Sample
Effluent Temperature, Daily Max	Daily	Continuous (See Note 4)
Excess Thermal Load	Daily	Calculation (See Note 5)

c. Influent from Glass Fiber Plant Prior to Entering the Ponds

Item or Parameter	Minimum Frequency	Type of Sample
E. Coli	2/month	Grab (See Note 1)

2. Sludge Monitoring (See Note 6)

Item or Parameter	Minimum Frequency	Type of Sample
Average depth of sludge in pond three	1/year (approximately 12 months apart)	Calculated Estimate
Amount of sludge land applied (dry weight, tons)	Annually (when land applying)	Calculation

Notes:

1. Bacteria monitoring shall be conducted at the specified frequency for four months after permit issuance. Unless otherwise notified in writing by the Department, no additional monitoring will be required during this permit cycle. The Department's determination will be based on the results of the evaluation report as described in Schedule C.1.

2. Mercury monitoring must be conducted in accordance with EPA Method 1631 or according to any test procedure that the Department has authorized and approved in writing. Arsenic monitoring must be conducted in accordance with EPA Method 1632 or according to any test procedure that the Department has authorized and approved in writing. Copper, lead, zinc, mercury and arsenic testing will be required for one year unless otherwise notified in writing by the Department. The Department may reopen this permit at any time to add, delete or change permit limits, monitoring requirements or other conditions concerning these metals. For all metals results, the result, method detection limit, and laboratory method used shall be reported for each test conducted.

3. Permittee shall conduct quarterly whole effluent toxicity (WET) for the first year. Testing shall be conducted in accordance with the requirements outlined in Schedule D. WET testing shall be conducted during the winter (December-February), spring (March-May), summer (June-August) and the fall (September – November). If the first year of tests show no acute or chronic toxicity, no more testing shall be required until the permit renewal period. At the time of permit renewal, permittee shall submit one WET test with their permit application conducted during the summer or fall immediately prior to permit expiration.

4. By no later than April 1, 2004, permittee shall have equipment in place to measure temperature continuously. Until that time, permittee shall measure the effluent temperature manually twice per week with a traceable thermometer when the other samples are collected.

5. The daily excess thermal load shall be calculated using the following equation:

$$ETL = \Delta T * Q * C_p * SW * 0.252$$

Where: ΔT = Daily Maximum Effluent temperature – Temperature criterion (64 °F)
Q = Daily Effluent flow rate (mgd)
C_p = Specific heat of water (1 Btu/lb °F)
SW = Specific weight in lb/gallon (8.34 lb/gallon)
0.252 = conversion from million BTU/day to Kcals/day
ETL = Million Kcals/day

The weekly average excess thermal load shall be calculated based on the weekly average of the daily excess thermal loads.

6. All sludge shall be handled in accordance with their Sludge Management Plan (including the alternate sludge management plant received August 21, 2002). Monitoring and reporting of sludge activities shall be in accordance with the sludge management plan and this schedule.

Schedule C, Compliance Schedules and Conditions

The permit contains three compliance conditions with deadlines.

1. A condition to submit a report evaluating the results of the bacteria sampling.
2. The final condition states the permittee must meet all compliance schedules and submit a notice to the Department regarding compliance schedule deadlines.

Schedule D - Special Conditions

The permit contains three special conditions:

1. To maintain an adequate contingency plan for prevention and handling of spills and unplanned discharges.
2. A condition to allow the Department to incorporate new permit limits or conditions based on the results of the Willamette River TMDL.
3. Requirements for Whole Effluent Toxicity (WET) testing.

Schedule F, NPDES General Conditions

All NPDES permits issued in the State of Oregon contain certain conditions that remain the same regardless of the type of discharge and the activity causing the discharge. These conditions are called General Conditions. These conditions can be changed or modified only on a statewide basis. The latest edition of the NPDES General Conditions is December 1, 1995 and this edition is included as Schedule F of the draft permit.

Section A contains standard conditions which include compliance with the permit, assessment of penalties, mitigation of noncompliance, permit renewal application, enforcement actions, toxic discharges, property rights and referenced rules and statutes. Section B contains requirements for operation and maintenance of the pollution control facilities. This section includes conditions for proper operation and maintenance, duty to halt or reduce activity in order to maintain compliance, bypass of treatment facilities, upset conditions, treatment of single operational events, overflows from wastewater conveyance systems and associated pump stations, public notification of effluent violation or overflow, and disposal of removed substances. Section C contains requirements for monitoring and reporting. This section includes conditions for representative sampling, flow measurement, monitoring procedures, penalties of tampering, reporting of monitoring results, additional monitoring by the permittee, averaging of measurements, retention of records, contents of records, and inspection and entry. Section D contains reporting requirements and includes conditions for reporting planned changes, anticipated noncompliance, permit transfers, progress on compliance schedules, noncompliance which may endanger public health or the environment, other noncompliances, and other information. Section D also contains signatory requirements and the consequences of falsifying reports. Section E contains the definitions used throughout the permit.

PERMIT PROCESSING/PUBLIC COMMENT/APPEAL PROCESS

The beginning and end date of the public comment period to receive written comments regarding this permit, and the contact name and telephone number are included in the public notice. The permittee is the only party having standing to file a permit appeal. If the Permittee is dissatisfied with the conditions of the permit when issued, they may request a hearing before the EQC or its designated hearing officer, within 20 days of the final permit being mailed. The request for hearing must be sent to the Director of the Department. Any hearing held shall be conducted pursuant to regulations of the Department.

APPENDIX A – Dissolved Oxygen Analysis

Streeter-Phelps Dissolved Oxygen Model - October Model Simulation

Effluent		
Temp (C)	21	
DO(mg/L)	0.3	
BOD_5(mg/L)	195	
NH_3-N(mg/L)	12	
Q (mgd)	0.8	
K_1(@20 C)	0.07	0.0728
River		
Temp (C)	20	
DO	9.09	
BOD5	1	
NH3	0.1	
NH_3-0_2 uptake	4.57	
Q (cfs)	4500	
K_d	0.07	0.070
K_n	0.75	0.750
K_s	0	
K_r	0.070	
Depth(ft)	6	
Width (ft)	400	
U (fps)	1.88	
U (mpd)	30.69	
K_a (see comment)	na	na
K_a (see comment)	1.065	1.065
S_B g O2/m2 day	2	2.000

Temperature coefficients		
Theta CBOD	1.047	
Theta O2	1.024	
Theta SOD	1.065	
Theta NBOD	1.08	

note:

black = entered values
blue = calculated values

RM counter	5

Calculations		
Tmix	20.0	293.2
UBODe	659.8	
NBODe	54.8	
UBODr	3.386	
NBODr	0.457	
UBODf (L_o)	3.57	
NBODf (L_N)	0.5	
Dosat mix	9.09	
DO mix	9.09	
DOo	0.00	

Rearation equations	
O'Connor Dobbins	1.202
Churchill (1962)	1.065
Owens (1964)	1.202

DO 100% sat mg/L	
9.09	
0	Salt
0	Elevation

Results						
RM (mi)	Time (days)	Deficit (mg/L)	DO (mg/L)	Source-Ambient Deficit (mg/L)	Remaining CBOD	Remaining NBOD
0.00	**0.00**	0.00	9.09	**0.002**	3.57	0.47
5.00	**0.16**	0.25	8.84	**0.005**	3.53	0.42
10.00	**0.33**	0.46	8.63	**0.008**	3.49	0.37
15.00	**0.49**	0.62	8.47	**0.010**	3.45	0.33
20.00	**0.65**	0.76	8.33	**0.011**	3.41	0.29
25.00	**0.81**	0.87	8.23	**0.012**	3.37	0.26
30.00	**0.98**	0.95	8.14	**0.013**	3.33	0.23
35.00	**1.14**	1.02	8.07	**0.013**	3.29	0.20
40.00	**1.30**	1.08	8.01	**0.014**	3.26	0.18
45.00	**1.47**	1.12	7.97	**0.014**	3.22	0.16
50.00	**1.63**	1.16	7.93	**0.014**	3.18	0.14
55.00	**1.79**	1.19	7.91	**0.014**	3.15	0.12
60.00	**1.96**	1.21	7.89	**0.014**	3.11	0.11
65.00	**2.12**	1.22	7.87	**0.013**	3.08	0.10
70.00	**2.28**	1.23	7.86	**0.013**	3.04	0.09
75.00	**2.44**	1.24	7.85	**0.013**	3.01	0.08
80.00	**2.61**	1.25	7.85	**0.013**	2.97	0.07
85.00	**2.77**	1.25	7.84	**0.013**	2.94	0.06
90.00	**2.93**	1.25	7.84	**0.012**	2.90	0.05
95.00	**3.10**	1.25	7.84	**0.012**	2.87	0.05
100.00	**3.26**	1.25	7.84	**0.012**	2.84	0.04
105.00	**3.42**	1.25	7.84	**0.012**	2.81	0.04
110.00	**3.58**	1.25	7.85	**0.011**	2.78	0.03
115.00	**3.75**	1.24	7.85	**0.011**	2.74	0.03
120.00	**3.91**	1.24	7.85	**0.011**	2.71	0.03
125.00	**4.073**	1.24	7.85	**0.011**	2.68	0.02

Streeter-Phelps Dissolved Oxygen Model - November Model Simulation

Effluent		
Temp (C)	21	
DO(mg/L)	0.3	
BOD_5(mg/L)	315	
NH_3-N(mg/L)	12	
Q (mgd)	0.8	
K_1(@20 C)	0.07	0.0728
River		
Temp (C)	20	
DO	9.09	
BOD5	1	
NH3	0.1	
NH_3-0_2 uptake	4.57	
Q (cfs)	5000	
K_d	0.07	0.070
K_n	0.75	0.750
K_s	0	
K_r	0.070	
Depth(ft)	6.5	
Width (ft)	400	
U (fps)	1.92	
U (mpd)	31.48	
K_a (see comment)	na	na
K_a (see comment)	0.954	0.954
S_B g O2/m2 day	2	2.000

Temperature coefficients		
Theta CBOD	1.047	
Theta O2	1.024	
Theta SOD	1.065	
Theta NBOD	1.08	

note:

black = entered values
blue = calculated values

RM counter	5

Calculations		
Tmix	20.0	293.2
UBODe	1065.8	
NBODe	54.8	
UBODr	3.386	
NBODr	0.457	
UBODf (L_o)	3.65	
NBODf (L_N)	0.5	
Dosat mix	9.09	
DO mix	9.09	
DOo	0.00	

Rearation equations	
O'Connor Dobbins	1.080
Churchill (1962)	0.954
Owens (1964)	1.054

DO 100% sat mg/L	
9.09	
0	Salt
0	Elevation

Results						
RM (mi)	Time (days)	Deficit (mg/L)	DO (mg/L)	Source-Ambient Deficit (mg/L)	Remaining CBOD	Remaining NBOD
0.00	**0.00**	0.00	9.09	**0.002**	3.65	0.47
5.00	**0.16**	0.24	8.85	**0.006**	3.61	0.42
10.00	**0.32**	0.43	8.66	**0.009**	3.57	0.37
15.00	**0.48**	0.60	8.49	**0.011**	3.53	0.33
20.00	**0.64**	0.73	8.36	**0.013**	3.49	0.29
25.00	**0.79**	0.84	8.25	**0.015**	3.45	0.26
30.00	**0.95**	0.94	8.16	**0.016**	3.41	0.23
35.00	**1.11**	1.01	8.08	**0.017**	3.38	0.20
40.00	**1.27**	1.08	8.02	**0.018**	3.34	0.18
45.00	**1.43**	1.13	7.97	**0.018**	3.30	0.16
50.00	**1.59**	1.17	7.93	**0.019**	3.27	0.14
55.00	**1.75**	1.20	7.89	**0.019**	3.23	0.13
60.00	**1.91**	1.23	7.87	**0.019**	3.19	0.11
65.00	**2.07**	1.25	7.85	**0.019**	3.16	0.10
70.00	**2.22**	1.26	7.83	**0.019**	3.12	0.09
75.00	**2.38**	1.28	7.82	**0.019**	3.09	0.08
80.00	**2.54**	1.28	7.81	**0.019**	3.05	0.07
85.00	**2.70**	1.29	7.80	**0.019**	3.02	0.06
90.00	**2.86**	1.30	7.80	**0.018**	2.99	0.06
95.00	**3.02**	1.30	7.79	**0.018**	2.95	0.05
100.00	**3.18**	1.30	7.79	**0.018**	2.92	0.04
105.00	**3.34**	1.30	7.79	**0.018**	2.89	0.04
110.00	**3.49**	1.30	7.79	**0.017**	2.86	0.03
115.00	**3.65**	1.30	7.79	**0.017**	2.83	0.03
120.00	**3.81**	1.30	7.80	**0.017**	2.79	0.03
125.00	**3.9712**	1.29	7.80	**0.017**	2.76	0.02

APPENDIX B – Reasonable Potential Analysis

Ammonia RPA

Facility Name: Evanite Fiber

Date: 3/12/2003

Dilution Values? (Y/N)	Y	calculated
Low Flow Dilution @ ZID =	10	*
Low Flow Dilution @ MZ =	100	*
High Flow Dilution @ ZID =	*	*
High Flow Dilution @ MZ =	*	*
Enter data below if no dilution data is available		
Data to estimate dilution	**Summer**	**Winter**
7Q10 (CFS) =	*	*
1Q10 (CFS) =	*	*
% dilution at MZ =	25	25
% dilution at ZID =	10	10
Effluent Flow (mgd) =	*	*

Confidence Level =	99	%
Probability Basis =	95	%

Summer data	Effluent	Stream	Mixed		
			ZID	MZ	
pH * =	9	7.5	7.6	7.5	(6.5-9)
Temp * =	22	22	22.0	22.0	° C
Alkalinity =	50	25			
Salmonids Present? (Y/N)		y			
Fresh Water ? (Y/N)		y			

PARAMETER	# of Samples	Highest Conc. mg/l	Coef. of Variance	Maximum Effluent Conc. mg/l	Background Conc. mg/l	Maximum Conc. at ZID mg/l	Maximum Conc. at MZ mg/l	WQ CRITERIA 1 Hour (CMC) mg/l	WQ CRITERIA 4 Day (CCC) mg/l	REASONABLE POTENTIAL ? ACUTE	REASONABLE POTENTIAL ? CHRONIC
Low Flow Season											
CHLORINE	*	1.00	0.60	*	0.00	*	*	0.019	0.011	*	*
AMMONIA*	100	14.60	0.60	14.60	0.60	2.000	0.740	9.35	1.07	**NO**	**NO**

* -NOTES :

Temperature must be between 0 and 30 ° C
pH must be between 6.5 and 9
Ammonia is total ammonia as NH3

Facility Name: Evanite Fiber

Metals RPA

Date: 06/02/2003

Dilution Values? (Y/N)	Y	calculated
Dilution @ ZID	10	*
Dilution @ MZ	100	*
If no dilution values enter info below		
Facility Effluent Flow	*	MGD
7Q10	*	CFS
1Q10	*	CFS
% dilution at ZID	10	%
% dilution at MZ	25	%

Hardness	mg/L $CaCO_3$
Effluent	50
Stream	25
Mixed	
ZID	28
MZ	25

Confidence Level	99	%
Probability Basis	95	%

PARAMETER	# of Samples	Highest Conc.	Coef. of Variance	Maximum Effluent Conc.	Background Conc.	Maximum Conc. at ZID	Maximum Conc. at MZ	WQ CRITERIA		REASONABLE POTENTIAL ?	
								1 Hour (CMC)	4 Day (CCC)		
		µg/l		µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	ACUTE	CHRONIC
ARSENIC V	1	48.90	0.60	440.10	0.5	44.46	4.90	850	48	NO	NO
ARSENIC III	1	48.90	0.60	440.10	0.5	44.46	4.90	360	190	NO	NO
CADMIUM *	4	2.80	0.60	8.96	0.000	0.90	0.09	0.91	0.38	NO	NO
TOTAL CHROMIUM * †	3	24.90	0.60	97.11	0.25	9.94	1.22	619.2	78.0	NO	NO
COPPER *	9	38	0.17	49.40	0.25	5.17	0.74	5.25	3.65	NO	NO
IRON ‡	9	2580	0.11	3096.00	130	426.60	159.66	2000	1000	NO	NO
NICKEL *	3	2.35	0.60	9.17	0.50	1.37	0.59	476.4	49.2	NO	NO
SILVER *	3	0.05	0.60	0.20	0.06	0.07	0.06	0.44	0.12	NO	NO
ZINC *	9	149	0.13	178.80	5.00	22.38	6.74	39.19	33.02	NO	NO

NOTES :

* - Hardness Dependant

† - Not DEQ Criteria

‡ - No acute standard. The CMC is estimated as 2X the CCC.

^ Criterion values are recommended guidance levels - no criterion has been developed by EPA or DEQ

Iron Human Health RPA

Facility Name: Evanite Fiber

Date: 03/12/2003

Use Calculated Dilution?	N
Harmonic Mean Flow (cfs)	*
Facility Effluent Flow (mgd)	*
Calculated Dilution	*
Customized Dilution	190.0

Confidence Level	99	%
Probability Basis	95	%

PARAMETER	# of Samples	Highest Conc.	Coef. of Variance	Maximum Effluent Conc.	Background Conc.	Maximum Conc. at complete mix	WQ CRITERIA		Reasonable Potential?	
							Water and Fish Ingestion	Fish Consumption	Water and Fish Ingestion	Fish Consumption
		µg/l		µg/l	µg/l	µg/l	µg/l	ug/L		
IRON	7	2580.00	0.12	3096.00	250.00	264.98	300.000	*	**NO**	**NO**