# Fact Sheet for State Waste Discharge Permit ST 8088

**Northwest Alloys, Inc.**
**April 5, 2011**

## Purpose of This Fact Sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed State Waste Discharge permit for Northwest Alloys, Inc. (NWA) that will allow discharge of commingled wastewater to established forage fields on their property at 1560A Marble Valley Road, Addy, WA 99101.

State law requires any industrial facility to obtain a permit before discharging waste or chemicals to waters of the state, which includes groundwater.

Ecology makes the draft permit and fact sheet available for public review and comment at least thirty (30) days before issuing the final permit. Copies of the fact sheet and draft permit for the Northwest Alloys, Inc. State Waste Discharge Permit No. ST 8088, are available for public review and comment from April 13, 2011 until the close of business May 25, 2011. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement Information**.

NWA reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions about the facility's location, history, product type or production rate, discharges or receiving water prior to publishing this draft fact sheet for public notice.

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 E - Response to Comments**, and publish it when we issue the final State Waste Discharge permit. Ecology will not revise the rest of the fact sheet, but the full document including all appendices will become part of the legal history contained in the facility's permit file.

## Summary

NWA operated a magnesium mine and smelter in Addy, Washington between 1976 and 2001. In 2001, the smelter was temporarily shut down. Since then, mine and mine spoils reclamation have completed. NWA is working to sell the facility as an industrial site.

The proposed permit will allow NWA to use commingled wastewater from the site to irrigate forage fields on their property. Commingled wastewater includes: stormwater, groundwater from an onsite well, treated sanitary wastewater, neutralized water from a former slag pond, and groundwater from beneath the liners of Pond 3. The proposed permit does not allow land application of process wastewater from Pond 3.

The proposed permit requires NWA to: 1) apply the commingled wastewater in accordance with best management practices and setbacks established to protect surface waters and public exposure and 2) conduct and report monthly monitoring of wastewater and quarterly monitoring of groundwater wells onsite.

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# I. Introduction

The legislature defined Ecology's authority and obligations for the wastewater discharge permit program in the Water Pollution Control law, chapter 90.48 RCW (Revised Code of Washington). Ecology adopted rules describing how it exercises its authority:

- State waste discharge program (Chapter 173-216 WAC)
- Water quality standards for ground waters of the state of Washington (Chapter 173-200 WAC)
- Submission of plans and reports for construction of wastewater facilities (Chapter 173-240 WAC)

These rules require any industrial facility owner/operator to obtain a State Waste Discharge permit before discharging wastewater to state waters. They also help define the basis for limits on each discharge and for performance requirements imposed by the permit.

Under the State Waste Discharge permit program and in response to a complete and accepted permit application, Ecology must prepare a draft permit and accompanying fact sheet, and make it available for public review before final issuance. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments, during a period of thirty days. (See **Appendix A-Public Involvement Information** for more detail about the public notice and comment procedures). After the public comment period ends, Ecology may make changes to the draft State Waste Discharge permit in response to comment(s). Ecology will summarize the responses to comments and any changes to the permit in **Appendix E**.

# II. Background Information

**Table 1 General Facility Information**

| **Facility Information** | |
|---|---|
| Applicant | Northwest Alloys, Inc. |
| Facility Name and Address | Northwest Alloys<br>1560A Marble Valley Road<br>Addy, Washington 99101 |
| Contact at Facility | Name: Johnie McCanna<br>Telephone #: 509-935-3347 |
| Responsible Official | Name: Mark Stiffler<br>Title: President<br>Address: 201 Isabella St., Pittsburgh, PA 15212-5858 |

| **Facility Information** | |
|---|---|
| | Telephone #: 412-553-1658<br>FAX #: 215-359-0539 |
| Industry Type | Curtailed magnesium smelter |
| Type of Treatment | Sanitary wastewater – Extended aeration package plant<br>Commingled wastewater - Land application |
| SIC Codes | 3339 |
| NAIC Codes | 425110 |
| Facility Location | Latitude: 48.3575N<br>Longitude: 117.848333W |
| Legal Description of Application Area | 386.7 acres in Portions of Sections 11, 12, 13, 14, 23, and 24 - Township 33N, Range 39E<br><br>Latitude: 48.356667N<br>Longitude: 117.853333W |

| **Permit Status** | |
|---|---|
| Renewal - Date of Previous Permit | September 11, 2003 |
| Application for Permit Renewal Submittal Dates | March 2008; revised April 2009, June 2009, April 2010, and March 2011 |
| Date of Ecology Acceptance of Application | September 10, 2009 |

| **Inspection Status** | |
|---|---|
| Date of Last Non-sampling Inspection Date | July 6-7, 2009 |

**Figure 1 Facility Site Map**

## A. Facility Description

### History

Northwest Alloys, Inc. (NWA) operated a magnesium mining and refining operation in Addy, Washington from 1976 to 2001. The mine and mine spoils area reclamation activities were completed in 2003. Reclamation included grading and planting of grasses and trees.

The NWA facility was designed to be a zero discharge operation. The facility perimeter was bermed to collect all stormwater contacting the site. Onsite ponds were used to store and manage the collected water. When the plant was operating, stormwater, treated sanitary wastewater, and water from a dewatering well onsite were reused in the refining process, used to irrigate mine reclamation areas, or used as quench water when handling slag. After initial vegetation was established, irrigation of the mine reclamation area was greatly decreased. The Department of Natural Resources suggested that all irrigation water be eliminated from the mine area to encourage natural vegetation. When the plant was shut down, another use for these wastewaters was needed.

NWA began treating high pH water from the southern portions of the plant. The neutralized water was commingled with the stormwater, treated sanitary wastewater, and dewatering well water. These wastewaters are collectively known as commingled wastewater.

When the plant closed, wastewater leftover from the production process was stored in Pond 3. In 2003, NWA applied to the Department of Ecology to land apply Pond 3 water and the commingled wastewater on NWA-owned agricultural crops. Ecology issued a Temporary State Waste Discharge Permit No. ST 8088 to NWA authorizing the land application of both wastewater streams on September 11, 2003.

In March 2008, NWA submitted an application to renew the state waste discharge permit for the Pond 3 water and commingled wastewater. In reviewing the application, Ecology conducted an extensive review of agronomic, soil, and groundwater information. During this review, Ecology requested that NWA not land apply either wastewater stream until a new permit was issued.

NWA has limited capacity to store commingled wastewater onsite. Ecology issued administrative orders to NWA in 2009 and 2010 to allow limited land application of commingled wastewater only to reduce the onsite inventory. The limited land application prevented water from overfilling ponds and potentially undoing mine reclamation work and impacting a nearby landfill.

Commingled water is collected year round and then used each summer for crop irrigation. The plant does not discharge a wastewater stream other than the field irrigation during the summer months.

### Pond 3 Water

Pond 3 water is not part of the commingled wastewater. Ecology has decided not to renew the state waste discharge permit to allow NWA to land apply Pond 3 water. NWA is evaluating

other options for treatment or reuse of this water. One of the options they are considering is evaporating the water in place.

**Commingled Wastewater**

Commingled wastewater is currently stored in three locations at NWA: Storm Lake #1, the Crusher Pond, and East Pit Pond. Storm Lake #3 is available for additional emergency storage capacity. NWA collects wastewater from a number of sources including:

- Water collected within the bermed boundaries of the plant site in a storm drain system – The main plant site is approximately 180 acres (155 acres of unpaved surface, 5 acres of paved surface, and 20 acres under roof). The majority of the wastewater collected onsite is stormwater (26 million gallons annually). The stormwater collection system drains into Storm Lake 1 and is managed by pumping to the Crusher Pond and East Pit Pond for short-term storage.

- Treated sanitary wastewater – NWA operates an onsite domestic sewage treatment facility. The facility is an extended aeration package plant installed during smelter construction. The package plant was designed to treat domestic sewage from approximately 384 individuals. It has a design flow of 20,000 gallons per day.

  With the smelter shut down, the package plant serves up to two full-time staff. Currently facility flows are <1 gallon per minute. The sanitary wastewater is disinfected using chlorine tablets prior to being discharged to the commingled wastewater system. The sanitary wastestream is a very small portion of the entire commingled wastewater volume (<2%).

  Sanitary wastewater flow is estimated to be 500,000 gallons annually due to excessive groundwater and stormwater infiltration into the sewer lines.

- Hydraulic control well discharge - NWA operates a dewatering well within the mine reclamation area at the closed environmental landfill. The well operates on a batch cycle and generates approximately 15 gallons per minute. This is the second largest source of commingled wastewater at 7 million gallons annually. The water from the hydraulic control is near neutral in pH and of low conductivity but has an elevated temperature and ammonia levels. Discharge from the well enters the Crusher Pond and is commingled with the other site waters prior to irrigation.

- Neutralized wastewater from the Covered Slag Pond – Reclamation activities in 2002 and water balance issues in 2003 created a high pH water issue within the excavated Covered Slag Pond at the south end of the plant. Precipitation and stormwater runoff came into contact with alkaline materials piled in this area and was collected in the old pond. The overfilling of the commingled wastewater storage ponds in 2002 caused the Covered Slag Pond to overflow. The high pH water from the pond drained to an infiltration ditch on NWA's south perimeter.

NWA began removing the high pH water from the ditch and the pond and neutralized it with sulfuric acid. The neutralized water flows into the storm drain system and commingles with the other wastewater from the site. Seasonal water in the ditch no longer requires neutralization. Approximately 1.8 million gallons of neutralized wastewater is generated each year from the excavated covered slag pond.

**Water Under Pond 3**

NWA is proposing to add another waste stream to the commingled wastewater , the ground water under Pond 3. The bottom of the triple-lined Pond 3 lies below the natural groundwater table. As the wastewater in Pond 3 is reduced, groundwater from outside the pond is able to enter the basin area under the liners and cause the liners to raise/float up. In some places, the liners are already raised above the water level in the rest of the pond. This water must be extracted to prevent it from impacting the integrity of the liner or preventing success of a potential evaporative treatment option being considered for the Pond 3 water.

NWA will extract this water with an existing sump at a rate of approximately 10 gallons per minute or approximately 5.3 MG annually. This water is near neutral in pH but elevated in conductivity and salts.

There is a leak detection system under Pond 3. There is no evidence that the triple-lined pond has ever leaked. The elevated conductivity and salts in the ground water under Pond 3 are from historic plant activities.

**Potable Water**

Fresh (potable) water is available to help meet crop water demand if the commingled wastewater is not sufficient. This water is drawn from the NWA production wells onsite. Potable water may be blended into the commingled wastewater in Storm Lake 1. The total amount of potable water applied annually to the site has ranged from 17.2 MG in 2006 to 29 MG in 2009. The quality of the potable water is shown in Appendix D.

NWA anticipates using less potable water to meet crop irrigation needs with the additional volume of ground water from underneath Pond 3.

**Land Treatment and Distribution System**

The spray irrigation fields used by Northwest Alloys are owned by NWA and operated under contract by private parties. The fields are used to primarily grow alfalfa and other forage crops with triticale used as a rotational crop. Currently the forage crops are sold at a minimal cost to the State Department of Fish and Wildlife as winter feed for elk. The fields are located west and south of the smelter (see Figure 1). Approximately 154 acres of farm land is irrigated in fields 3-9 with a wheel line irrigation system and/or hand lines. An additional 65 acres of crops are grown in fields 10 and 11. These fields are not currently irrigated but may be irrigated in the future.

The commingled wastewater used for irrigation is blended from three onsite ponds. Water enters the system through Storm Lake 1. From Storm Lake 1, water is managed by pumping it to the Crusher Pond and then into the East Pit Pond. Storm Lake 1 is an unlined storage and transfer pond with an estimated capacity of 7 million gallons. The Crusher Pond is also an unlined pond with an estimated capacity of 7 million gallons. The East Pit Pond is unlined with an estimated capacity of 25 million gallons. The plant has storage capacity for one season's worth of stormwater.

NWA transfers commingled wastewater from Storm Lake 1 to the Crusher and East Pit Ponds for storage during the normal collection season (October-April). Storm Lake 1 serves as the supply point for water during the normal irrigatin season (May-September). Water from Storm Lake 1 is pumped to a distribution manifold and from there sprayed onto the fields. Water stored in the Crusher and East Pit Ponds are pumped back to Storm Lake 1 during the summer and then used again as storage in the fall and winter.

**Water and Nutrient Loading**

The commingled wastewater is primarily stormwater and ground water with low concentrations of crop nutrients. Essential and valuable plant nutrients contained in the commingled wastewater are nitrogen, potassium, calcium, magnesium, and sulfate-sulfur. The low nutrient concentrations as well as the low levels of BOD, TSS, and salts in the commingled wastewater make it well suited for use as irrigation water.

The commingled wastewater applied to NWA crops has been analyzed for constituents know or believed to be toxic. Ecology reviewed the projected water quality and nutrient loading to the sprayfields presented in the *Updated Engineering Report Commingled Wastewater Re-use Northwest Alloys Inc. Addy, Washington*, dated March 2011 and the annual crop and irrigation management reports for years 2006 - 2009.

Water Loading

The total growing season volume of commingled wastewater blended with potable water was approximately 52 MG in 2006, 62.7 MG in 2007, and 54 MG in 2008. Potable water makes up the largest single component of the blended water at approximately 39%. Approximately 29 MG of potable was applied to fields in 2009. No Pond 3 water was placed on the fields in 2009. Blended wastewater is generally sprayed on the fields to meet crop demand during May, June, July, and August. A total of 53.8 MG of blended stormwater was irrigated across Fields 3 through 9 in 2008 with loadings ranging from 6.2 to 21.8 inches per acre.

Nitrogen Loading

The nitrogen in the commingled wastewater is mostly in the form of ammonia and nitrate/nitrite. With the addition of the water from under Pond 3, the nitrogen content is projected to be low at a concentration of 8.0 mg/L. The nitrogen mass loading calculated from the water analysis is

2,679 lbs per year or 17 lbs per acre per year. In 2008, the total net annual wastewater nitrogen loading to the crops in the sprayfields ranged from 2 to 8 lbs per acre

Phosphorus Loading

The projected phosphorus concentration in the commingled wastewater is low at 0.04 mg/L. Phosphorus loadings in 2008 were less than 0.1 lbs per acre per year for the entire site. This amount of phosphorus is insufficient to be considered a fertilizer source for crops. The addition of a fertilizer containing phosphorus may be required to maintain a healthy crop.

Potassium

Potassium is a crop macronutrient vital to plant function. Potassium loading with the commingled wastewater is projected to be 84 lbs per acre at an application rate of 9.5 inches. This loading is significantly less than the expected crop removal rate for potassium of 200–300 lbs per acre. The crop removal rate for potassium in 2008 ranged from 195 to 328 lbs per acre and averaged 243 lbs per acre across irrigated fields 3-9. Potassium exceeded removal on some fields, but because potassium is strongly immobilized by soil clays, it will remain in the upper soil profile as a nutrient resource for future plant uptake.

Sulfur

Sulfur is a secondary crop nutrient required in moderate amounts by crops. Sulfur is in the form of sulfate in the commingled wastewater, so the loading is expressed in terms of sulfate-sulfur. Average sulfate-sulfur loading is projected at 181 lbs per acre. In 2008, sulfate-sulfur loading from blended commingled wastewater ranged from 52 lbs per acre to 185 lbs per acre. Sulfur-sulfate loading will not negatively impact the land application site soils or groundwater since the soil at the NWA site has a capacity to store and treat large amounts of sulfur such as in the form of gypsum through immobilization and chemical precipitation. The crop yields in past years have not shown any adverse effects for sulfur loadings up to 655 lbs per acre on average across the site.

Total Dissolved Solids

The average total dissolved solids (salts ) concentration of the comingled stormwater is moderate at 874 mg/L. The average annual mass loading is projected to be low at 1890 lbs per acre at the normal irrigation rate of 9.5 inches of water per year. The total salt mass in the commingled wastewater resulted in a positive salt load to the sprayfields site every year. Soluble salt concentrations in soil are estimated by measuring the soil electrical conductivity (ECe). Comparing fall and spring conductivity along a soil profile allows for management of salts in the soil column.

Soil conductivity that exceeds 2 millimhos per centimeter can inhibit the growth of sensitive plants. Soil ECe has increased in the sprayfields since the introduction of Pond 3 water in 2004. The average soil ECe in the spring of 2004 was 0.4 mmhos/cm at all three soil depths . This level can be compared to the 2008 average soil ECe of 1.0, 0.9, and 1.0 mmhos/cm at each soil

depth in the spring and 1.3, 1.4, and 1.3 mmhos/cm at each soil depth in the fall. Established alfalfa may tolerate salinity up to 3-4 mmhos/cm and more tolerant crops such as wheat and barley grow in salinity as high as 8 mmohs/cm. Currently, there is no plan for salts management.

Crop yields and soil salinity will be monitored annually to determine the potential for negative impact on crop yields and ground water. The development of a salts management plan will depend on this monitoring activity. Best management practices for salt management include using fresh supplemental water and/or precipitation for leaching and leaching only during the non-growing season. Since Pond 3 water will no longer be land applied and the volume of water from underneath Pond 3 is relatively low, a salts management plan may not needed.

Soil Testing

The current permit requires NWA to report annually on the land application at the site. The report summarizes sprayfield operations including blended commingled wastewater quality and quantity, hydraulic and constituent loadings, crop management, nutrient balances, and soil monitoring results.

Soil sampling is conducted in the spring and fall. Spring soil sampling results are used to identify the need for plant nutrients during the current operational year and identify the extent of any nutrient transport through the soil during the winter months. The fall sampling data are used to interpret crop nutrient removal and the extent of any nutrient transport within the soil profile during the current season.

The soil monitoring results provide insight on nutrient availability for crops, nutrient removal by crops, changes in soil nutrient status, the potential for nutrient leaching, and as a guide for additional fertilizer requirements. Nitrogen is the controlling factor in additional water or fertilizer application.

**Solid Wastes**

There are currently two stockpiles of byproduct materials stored outside on the NWA facility property, dicalcium silicate and fumed silica. Both products are stored within the bermed and fenced containment of the industrial site. Stormwater runoff from these stockpiles is contained within the facility and is included as part of the commingled wastewater. Impacts to stormwater runoff from these materials are expected to be minor and are reflected in the analytical results for the commingled wastewater quality.

## B. Description of the Ground Water

Local geology of the site is characterized as glacial sediments overlying sedimentary bedrock. Glacial sediments include various combinations of gravel, sand, silt, and clay. The sedimentary layer consists of limestone and dolomite. The types of soils found onsite are predominantly silt loam in the agricultural areas and clay, sand, and gravel in the reclaimed mine areas.

NWA has conducted ground water monitoring along the plant perimeter since 1985. Ground water appears to flow away from the plant in a south to southeasterly direction in the southern portion of the plant and in a west to southwesterly direction in the western portion of the plant. The depth to ground water in wells screened in the upper portion of the glacial sediments at the site ranges from 2 to 29 feet below the ground surface. In the sprayfield area during December 2009 to December 2010, shallow ground water ranged between 4 to 11 feet deep during the wet season and up to 15 feet deep during the dry season.

There are two aquifer systems beneath the sprayfield site: a confined water bearing zone that is located approximately 200 to 250 feet deep and an unconfined aquifer located 2 to 13 feet deep. Seasonal variation of the unconfined aquifer is a 2–8 foot fluctuation that occurs annually. The Colville River aquifer is located east of the plant. It is approximately 300-500 feet deep. Most of the drinking water wells in the area are located in this aquifer.

There are 17 ground water monitoring wells in the vicinity of the sprayfields, nine of which comprise the sprayfield monitoring network. The first set of wells (MW 4–MW 30) were constructed in the mid – 1980s. Five additional monitoring wells were constructed in 2009 (MW 34-38). NWA expanded the monitoring network in 2009 to better determine any groundwater impact of the land application of wastewater and to differentiate from any ground water impacts caused by historic plant activities.

Groundwater quality in the monitoring wells along the plant boundary show the effects of both 25 years of magnesium production at the site and the sprayfield irrigation. In addition, specific wells along the plant boundary serve as upgradient wells to the sprayfields. The wells installed downgradient of the sprayfields in 2009 will provide information on the effects in groundwater from the sprayfield application.

**Ground Water Quality**

Ecology reviewed the groundwater data submitted by Northwest Alloys during the current permit cycle: September 2003 through October 2010. During the 2003-2009 time period, the groundwater was analyzed for ammonia, nitrate, sulfate, chloride, conductivity, and pH. The network consisted of 13 wells along the boundary of the smelter.

In 2009, the groundwater monitoring network was modified to better evaluate the downgradient impact of the land application of commingled wastewater. Four new downgradient wells and one new background well were installed. The network was decreased to nine wells.

The analyte list was also increased in 2009. The following analytes are currently measured in groundwater at the site: $NH_3$ as N, $NO_3$ as N, TKN, total dissolved solids, pH, conductivity, As, Na, Ca, Mg, Zn, Ni, K, $SO_4S$, and Cl.

The groundwater monitoring network shows the effects of spray irrigation and paste plant activities. During the 2009-2010 monitoring period, total dissolved solids, arsenic, chloride and

sulfate results were above maximum contaminant levels (MCLs) for drinking water. All other analytes are below the MCLs.

Total dissolved solids (TDS) levels in the downgradient groundwater wells range from 293 to 1850 mg/L. TDS has been detected in the upgradient well at the MCL (500 mg/l) and is elevated in many of the network monitoring wells. Elevated sulfate levels were found in two of the upgradient wells which are adjacent to areas of paste plant contamination from the former smelter. Sulfate in the groundwater in these areas ranges from 84 – 486 mg/L (MCL 250 mg/L). Arsenic is elevated in one well in the southeast corner of field 11. This field received no irrigation water in 2009 or 2010.

In the areas of active crop management, both sulfate and total dissolved solids levels are within the agronomic rates for the crop. Downgradient wells installed in 2009 show groundwater chemistry that would be typical of fields irrigated with the plant's commingled wastewater. The proposed permit requires a continuous 5-year trend analysis to track salt levels (sodium, chloride, TDS, and sulfate) in groundwater. The permit also requires the implementation of a salt management plan (leaching requirement) as necessary to control soil salinity and impacts to groundwater. Currently ground water analysis does not indicate that a salt management plan is necessary.

## C. Wastewater Characterization

### Commingled Wastewater

NWA reported the concentration of pollutants in the commingled wastewater (without groundwater under Pond 3) in their updated engineering report dated March 2011. The tabulated data represents the quality of the commingled wastewater prior to land application in 2006-2008 and 2010. The average quality of the commingled wastewater was calculated from the proportion of water stored in each of the three storage ponds then averaged over the last four years. The percentages are as follows: East Pit Pond – 64%, Storm Lake 1 – 18%, and the Crusher Pond – 18%.

**Table 2 Wastewater Characterization**

| Parameter | Maximum Concentration (mg/L) | Average Concentration (mg/L) |
|---|---|---|
| BOD | 9.9 | 5.4 |
| COD | 29 | 21 |
| TSS | 15 | 8 |
| TDS | 719 | 594 |
| Conductivity (umohs/cm) | 1130 | 970 |

| Parameter | Maximum Concentration (mg/L) | Average Concentration (mg/L) |
|---|---|---|
| Ammonia-N | 0.4 | 0.2 |
| pH | 8.6 | 8.5 |
| Total Residual Chlorine | 0.3 | 0.2 |
| Fecal Coliform (MPN/100 ml) | 217 | 81 |
| Total Coliform (MPN/100ml) | 240 | 76 |
| Dissolved Oxygen | 12 | 10 |
| Nitrate + Nitrite-N | 4 | 3 |
| Total N | 4 | 3 |
| Ortho-phosphate-P | 0.02 | <25 |
| Total phosphate-P | 0.07 | 0.05 |
| Total Oil & Grease | 1 | 1 |
| TPH | <1.0 | 0.8 |
| Calcium | 113 | 72 |
| Chloride | 142 | 95 |
| Fluoride | 3.5 | 1.4 |
| Magnesium | 82 | 65 |
| Potassium | 36 | 28 |
| Sodium | 39 | 35 |
| Sulfate | 245 | 185 |
| Arsenic | <0.050 | 0.015 |
| Barium | 0.1 | 0.08 |
| Cadmium | 0.05 | <0.02 |

| Parameter | Maximum Concentration (mg/L) | Average Concentration (mg/L) |
|---|---|---|
| Chromium | <0.05 | <0.01 |
| Cobalt | <0.05 | <0.02 |
| Copper | <0.05 | 0.01 |
| Iron | 0.37 | 0.3 |
| Lead | <0.05 | <0.01 |
| Manganese | 0.05 | 0.03 |
| Mercury | <0.0001 | <0.0002 |
| Molybdenum | <0.05 | 0.018 |
| Nickel | <0.05 | 0.017 |
| Selenium | <0.05 | 0.003 |
| Silver | <0.05 | <0.02 |
| Zinc | <0.05 | 0.018 |

**Ground Water Under Pond 3**

The table in Appendix D includes sample results for the ground water under Pond 3. The table also shows the calculated concentration if the ground water under Pond 3 were added to the commingled wastewater. NWA Pond 3 wastewater and potable water are not included in the calculation of the blended commingled wastewater quality.

**D. Summary of Compliance with Previous Permit Issued**

NWA has complied with the permit conditions throughout the duration of the temporary permit issued on September 11, 2003. Ecology assessed compliance based on annual inspections and its review of the facility's discharge monitoring reports (DMRs), groundwater reports, and annual reports of water usage, field loading, and crop harvest.

**E. State Environmental Policy Act (SEPA) Compliance**

Ecology issued a temporary permit to NWA in September 2003. The proposed permit is a permanent authorization to discharge industrial wastewater to land. To meet the intent of SEPA,

the proposed action must undergo SEPA review during the permitting process. The facility filed a SEPA checklist with Ecology on November 29, 2009 and an amended checklist on March 30, 2011. Ecology issued a mitigated determination of non-significance for the project on April 5, 2011.

# III. Proposed Permit Limits

State regulations require that Ecology base limits in a State Waste Discharge permit on the:

- Technology and treatment methods available to treat specific pollutants (technology-based). Dischargers must treat wastewater using all known, available, reasonable methods of prevention, control, and treatment (AKART). Ecology has developed guidance describing technology-based (AKART) criteria for industrial/commercial systems that discharge to ground (Ecology, 1993 and 2004).

- Operations and best management practices necessary to meet applicable water quality standards to preserve or protect existing and future beneficial uses of the ground waters.

- Ground Water Quality Standards (Ecology, 1996).

- Applicable requirements of other local, state and federal laws.

Ecology applies the most stringent of technology and water quality-based limits to each parameter of concern and further describes the proposed limits below.

The limits in this permit reflect information received in the application and from supporting reports (engineering, hydrogeology, monitoring, and irrigation/crop management). 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, and are not listed in regulation.

Ecology does not usually develop permit limits for pollutants not reported in the permit application but may be present in the discharge. The permit does not authorize the 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 if significant changes occur in any constituent. Until Ecology modifies the permit to reflect additional discharges of pollutants, a permitted facility could be violating its permit.

## A. Technology-Based Effluent Limits

Waste discharge permits issued by Ecology specify conditions requiring the facility to use AKART before discharging to waters of the state (RCW 90.48).

Ecology approved the engineering report titled *Updated Engineering Report Commingled Wastewater Re-use Northwest Alloys Inc. Addy, Washington,* dated March 2011 and prepared by Cascade Earth Sciences.

Ecology evaluated the report using the:

- *Guidelines for the Preparation of Engineering Reports for Industrial Wastewater Land Application Systems,* Ecology, May 1993.

- *Guidance on Land Treatment of Nutrients in Wastewater, with Emphasis on Nitrogen, Ecology,* November 1994 (http://www.ecy.wa.gov/biblio/0410081.html).

Ecology determined that the facility meets the minimum requirements demonstrating compliance with the AKART standard if NWA operates the treatment systems as described in the approved engineering report and any subsequent Ecology approved reports.

**B. Sanitary Wastewater Treatment Requirements**

NWA must meet the permit limits for the sanitary wastewater in Condition S1. to satisfy the requirement for AKART. There are two sets of effluent limits for the sanitary wastewater: one set that apply during curtailment and a second set that apply during operations. NWA will need to further evaluate the excessive infiltration of stormwater and ground water into the

**C. Land Treatment Requirements**

NWA must meet the following permit limits to satisfy the requirement for AKART:

1. Application of wastewater via spray irrigation must not exceed agronomic rates (as defined in Ecology's ground water implementation guidance) for total nitrogen and water. Wastewater application rates for other wastewater constituents must protect the background ground water quality.

2. Apply total nitrogen and water to the sprayfields as determined by an Ecology approved and current irrigation and crop management plan.

3. Operate the system to protect the existing and future beneficial uses of the ground water and not cause a violation of the ground water standards.

**C. Ground Water Quality-Based Effluent Limits**

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the ground water quality standards. The goal of the ground water quality standards is to maintain the highest quality of the State's ground waters and to

protect existing and future beneficial uses of the ground water through the reduction or elimination of the discharge of contaminants to ground water [WAC 173-200-010(4)]. Ecology achieves this goal by:

- Applying all known available and reasonable methods of prevention, control and treatment (AKART) to any discharge.
- Applying the antidegradation policy of the ground water standards.
- Establishing numeric and narrative criteria for the protection of human health and the environment in the ground water quality standards.

**Antidegradation Policy**

The State of Washington's Ground Water Quality Standards (GWQS) require preservation of existing and future beneficial uses of ground water through the antidegradation policy, which includes the two concepts of antidegradation and non-degradation. Antidegradation is not the same as non-degradation (see below).

**Antidegradation**

Antidegradation applies to calculation of permit limits in ground water when background (see below) contaminant concentrations are less than criteria in the GWQS. Ecology has discretion to allow the concentrations of contaminants at the point of compliance to exceed background concentrations but not exceed criteria in the GWQS. Ecology grants discretion through an approved AKART engineering analysis of treatment alternatives.

If the preferred treatment alternative predicts that discharges to ground water will result in contaminant concentrations that fall between background concentrations and the criteria, then the preferred treatment alternative should protect beneficial uses and meet the antidegradation policy. In this case, the predicted concentrations become the permit limits. If the preferred alternative will meet background contaminant concentrations, background concentrations become the permit limits. Permit limits must protect ground water quality by preventing degradation beyond the GWQS criteria. If discharges will result in an exceedance of the criteria, facilities must apply additional treatment before Ecology can permit the discharge.

**Non-degradation**

Non-degradation applies to permit limits in ground water when background contaminant concentrations exceed criteria in the GWQS. Non-degradation means that discharges to ground water must not further degrade existing water quality. In this case, Ecology considers the background concentrations as the water quality criteria and imposes the criteria as permit limits. To meet the antidegradation policy, the facility must prepare an AKART engineering analysis that demonstrates that discharges to ground water will not result in increasing background concentrations. Ecology must review and approve the AKART engineering analysis.

You can obtain more information on antidegradation and non-degradation by referring to the *Implementation Guidance for the Ground Water Quality Standards (Implementation Guidance)*, Ecology Publication #96-02 (available at http://www.ecy.wa.gov/biblio/9602.html).

**Background Water Quality**

Background water quality is determined by a statistical calculation of contaminant concentrations without the impacts of the proposed activity. The calculation requires an adequate amount of ground water quality data and determining the mean and standard deviation of the data, as described in the *Implementation Guidance*.

Following the procedure in the *Implementation Guidance,* Ecology then defines background water quality for most contaminants as the 95 percent upper tolerance limit. This means that Ecology is 95 percent confident that 95 percent of future measurements will be less than the upper tolerance limit. There are a few exceptions to the use of the upper tolerance limit. For pH, Ecology will calculate both an upper and a lower tolerance limit resulting in an upper and lower bound to the background water quality. If dissolved oxygen is of interest, Ecology will calculate a lower tolerance limit without an upper tolerance limit.

Applicable ground water criteria as defined in chapter 173-200 WAC and in RCW 90.48.520 for this discharge include those in the following table:

**Table 3 Ground Water Quality Criteria**

| Parameter | Units | Ground Water Criteria |
|---|---|---|
| Total Coliform | colonies/ 100 mL | 1 |
| Total Dissolved Solids | mg/L | 500 |
| Chloride | mg/L | 250 |
| Sulfate | mg/L | 250 |
| Nitrate (as nitrogen) | mg/L | 10 |
| pH (Maximum / Minimum) | standard units | 6.5 to 8.5 |
| Toxics | No toxics in toxic amounts | |

Ecology reviewed the records for the facility's land treatment site and is unable to determine background ground water quality. NWA installed five additional groundwater monitoring wells adjacent to the sprayfields in 2009. One of these wells is a new upgradient (background) well. Until Ecology establishes background water quality, the facility must operate within the approved design parameters and comply with all conditions in the permit.

# IV. Monitoring Requirements

Ecology requires monitoring, recording, and reporting (WAC 173-216-110) to verify that the treatment process functions correctly, the discharge meets ground water criteria, and that the discharge complies with the permit's effluent limits.

## A. Lab Accreditation

Ecology requires that facilities use a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, Accreditation of Environmental Laboratories, to prepare all monitoring data (with the exception of certain parameters).

## B. Sanitary Wastewater Monitoring

Ecology details the proposed monitoring schedule for sanitary wastewater in 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.

## C. Irrigation Wastewater Monitoring

The quality and quantity of the irrigation water is required to be monitored at the distribution manifold on a monthly basis. This information will provide water and nutrient loadings to compare to the land application site's nutrient and hydraulic capacities, the crop irrigation water need, and the soil's water holding capacity. An evaluation of the data gathered will dictate future commingled wastewater loading rates.

## D. Potable Water Monitoring

The proposed permit requires annual sampling of potable water for the same parameters as the irrigation wastewater monitoring.

## E. Ground Water Monitoring

Ecology requires ground water monitoring at the site in accordance with the Ground Water Quality Standards, Chapter 173-200 WAC. Ecology has determined that this discharge has a potential to pollute the ground water. Therefore, the Facility must evaluate the impacts on ground water quality. Ecology considers ground water monitoring at the site boundaries and within the site an integral component of such an evaluation.

### F. Soil Monitoring

Ecology details the proposed monitoring schedule in Condition S2. The facility and Ecology use the soil monitoring data to monitor and evaluate wastewater application rates and to determine if salts and nutrients are leaching through the root zone to the ground water. The presence and concentration of certain wastewater related parameters in the soils (e.g., nitrogen and salts) can indicate over application of wastewater. The facility must follow the analytical methods provided in Soil, Plant And Water Reference Methods For the Western Region (2003).

### G. Crop Monitoring

Ecology details the proposed monitoring schedule for crop monitoring under Condition S2. The facility and Ecology use the crop monitoring data to develop the nutrient and salt balances that are necessary to demonstrate compliance with the agronomic rate limitation in Condition S1.

## V. Other Permit Conditions

### A. Reporting and Recordkeeping

Ecology based Condition S3. on its authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-216-110).

### B. Irrigation and Crop Management Plan

Ecology requires submittal of an annual irrigation and crop management plan to support the engineering report and operations and maintenance manual. This plan must include a consideration of wastewater application at agronomic rates as required by Special Condition S1. and should describe and evaluate various irrigation controls.

Plans must comply with the requirements for an irrigation and crop management plan given in Ecology's guidance, *Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems.* (1993).

### C. Operation and Maintenance Manual

Ecology requires dischargers to take all reasonable steps to properly operate and maintain their wastewater treatment system in accordance with state regulations (WAC 173-240-080 and WAC 173-216-110). The facility must prepare and submit an operation and maintenance (O&M) manual for the sanitary wastewater treatment facility and for the commingled wastewater management and irrigation system.

Implementation of the procedures in the operation and maintenance manual ensures the facility's compliance with the terms and limits in the permit and ensures the facility provides AKART to the commingled wastewater.

**D. Solid Waste Management**

NWA 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 handle and dispose of all solid waste material in such a manner as to prevent its entry into state ground or surface water. The Permittee must not allow leachate from its solid waste material to enter state waters without providing all known, available, and reasonable methods of treatment, nor allow such leachate to cause violations of the state water quality standards.

**E. Best Management Practices and Setbacks for Land Treatment Site**

Best management practices (BMPs) are the actions identified to manage commingled wastewater to prevent contamination of ground water. BMPs include 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. The list below describes best management practices applicable for land treatment sites.

The Permittee must:

1. Not allow spray irrigation practices to result in runoff of wastewater to any surface waters of the state or to any land not owned by or under its control.

2. Not apply wastewater during windy conditions that could cause wastewater to drift onto public roads, surface water, or onto lands not owned by or under its control.

3. Not apply wastewater within 25 feet of any property lines, local access roads, restricted access roads, or highways.

4. Not apply wastewater within 100 feet of surface waters. Surface water bodies on or near the plant site include Stanger Creek, a tributary of Stanger Creek, Stensgar Creek, and the Colville River.

5. Not apply wastewater within 500 feet of any residence or domestic well.

6. Not apply wastewater within 1000 feet of any school or playground areas.

7. Make every reasonable effort to minimize public exposure when applying wastewater.

8. Not apply wastewater to the irrigation lands in quantities that:

    a. Would cause soil erosion.
    b. Significantly reduce or destroy the long-term infiltration rate of the soil.

c. Would cause long-term anaerobic conditions in the soil.

d. Would cause ponding of wastewater on the soil surface that would cause runoff or support insects or vectors.

e. Would cause leaching losses of constituents of concern beyond the treatment zone or in excess of the approved design. Constituents of concern are constituents in the wastewater, partial decomposition products, or soil constituents that would alter ground water quality in amounts that would affect current and future beneficial uses.

9. Maintain a viable and healthy cover crop on all fields that receive wastewater.

10. Use fresh water or precipitation to meet the leaching requirement to control soil salinity. Perform scheduled leaching only when necessary and only during the non-growing season.

11. Adjust irrigation plans during high precipitation events to minimize percolate losses.

12. Not apply wastewater during the months of October-April.

### F. General Conditions

Ecology bases the standardized general conditions on state law and regulations. They are included in all individual industrial state waste discharge 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 ground water quality standards. This modification would be based on new information from sources such as inspections and soil and ground water monitoring results.

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

### B. Proposed Permit Issuance

This proposed permit meets 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

Gavlak, R., D. Horneck , R.O. Miller, and J. Kotuby-Amacher.
3rd edition 2005. *Soil, Plant And Water Reference Methods For The Western Region*
http://cropandsoil.oregonstate.edu/wera103/soil_methods

Washington State Department of Ecology.
1993. *Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems*, Ecology Publication Number 93-36. 20 pp.
http://www.ecy.wa.gov/pubs/9336.pdf

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 )

Revised October 2005. *Implementation Guidance for the Ground Water Quality Standards, Ecology Publication* Number 96-02. http://www.ecy.wa.gov/biblio/9602.html

November 2010. *Permit Writer's Manual*, Publication Number 92-109
(http://www.ecy.wa.gov/biblio/92109.html)

November 2004. *Guidance on Land Treatment of Nutrients in Wastewater, with Emphasis on Nitrogen*, Ecology Publication #04-10-081; http://www.ecy.wa.gov/biblio/0410081.html

# Appendix A - Public Involvement Information

Ecology proposes to issue a permit to Northwest Alloys, Inc. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on March 23, 2011 and March 30, 2011 in *The Colville Statesman Examiner* and *The Spokane Spokesman Review* to inform the public about the submitted application and to invite comment on the reissuance of this permit.

Ecology will place a Public Notice of Draft on April 13, 2011 in *The Colville Statesman Examiner* and *The Spokane Spokesman Review* to inform the public and to invite comment on the proposed draft State Waste Discharge permit and fact sheet.

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.
- Urges people to submit their comments, in writing, before the end of the Comment Period
- Tells how to participate in a public meeting and hearing on the proposed state waste discharge 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 at 360-407-6931 or by writing to the address listed below:

Kim Wigfield
Department of Ecology
Industrial Section
PO Box 47706
Olympia, WA 98504-7706

The primary author of this permit and fact sheet is Kim Wigfield.

# Appendix B --Your Right to Appeal

You have a right to appeal this permit to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of the final permit. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2) (see glossary).

To appeal you must do the following within 30 days of the date of receipt of this permit:

- File your appeal and a copy of this permit with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this permit on Ecology in paper form - by mail or in person. (See addresses below). E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

## ADDRESS AND LOCATION INFORMATION

| Street Addresses | Mailing Addresses |
|---|---|
| **Department of Ecology**<br>Attn: Appeals Processing Desk<br>300 Desmond Drive SE<br>Lacey, WA 98503 | **Department of Ecology**<br>Attn: Appeals Processing Desk<br>PO Box 47608<br>Olympia, WA 98504-7608 |
| **Pollution Control Hearings Board**<br>1111 Israel RD SW<br>STE 301<br>Tumwater, WA 98501 | **Pollution Control Hearings Board**<br>PO Box 40903<br>Olympia, WA 98504-0903 |

# Appendix C – Glossary

**1-DMax or 1-day maximum temperature** -- The highest water temperature reached on any given day. This measure can be obtained using calibrated maximum/minimum thermometers or continuous monitoring probes having sampling intervals of thirty minutes or less.

**7-DADMax or 7-day average of the daily maximum temperatures** -- The arithmetic average of seven consecutive measures of daily maximum temperatures. The 7-DADMax for any individual day is calculated by averaging that day's daily maximum temperature with the daily maximum temperatures of the three days prior and the three days after that date.

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

**AKART** -- The acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART is a technology-based approach to limiting pollutants from wastewater discharges, which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

**Alternate point of compliance** -- An alternative location in the ground water from the point of compliance where compliance with the ground water standards is measured. It may be established in the ground water at locations some distance from the discharge source, up to, but not exceeding the property boundary and is determined on a site specific basis following an AKART analysis. An "early warning value" must be used when an alternate point is established. An alternate point of compliance must be determined and approved in accordance with WAC 173-200-060(2).

**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.

**Annual average design flow** (AADF -- average of the daily flow volumes anticipated to occur over a calendar year.

**Average monthly discharge limit** -- The average of the measured values obtained over a calendar month's time.

**Background water quality** -- The concentrations of chemical, physical, biological or radiological constituents or other characteristics in or of ground water at a particular point in

time upgradient of an activity that has not been affected by that activity, [WAC 173-200-020(3)]. Background water quality for any parameter is statistically defined as the 95% upper tolerance interval with a 95% confidence based on at least eight hydraulically upgradient water quality samples. The eight samples are collected over a period of at least one year, with no more than one sample collected during any month in a single calendar year.

**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 five-day 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 $BOD_5$ 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.

**Categorical pretreatment standards** -- National pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties, which may be discharged to a POTW by existing or new industrial users in specific industrial subcategories.

**Chlorine** -- A chemical 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 for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations. In addition it includes 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. Ecology may conduct additional sampling.

**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.

**Date of receipt** – This is defined in RCW 43.21B.001(2) as five business days after the date of mailing; or the date of actual receipt, when the actual receipt date can be proven by a preponderance of the evidence. The recipient's sworn affidavit or declaration indicating the date of receipt, which is unchallenged by the agency, constitutes sufficient evidence of actual receipt. The date of actual receipt, however, may not exceed forty-five days from the date of mailing.

**Detection limit** -- See Method Detection Level.

**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, for example, a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

**Distribution uniformity** -- The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

**Early warning value** -- The concentration of a pollutant set in accordance with WAC 173-200-070 that is a percentage of an enforcement limit. It may be established in the effluent, ground water, surface water, the vadose zone or within the treatment process. This value acts as a trigger to detect and respond to increasing contaminant concentrations prior to the degradation of a beneficial use.

**Enforcement limit** -- The concentration assigned to a contaminant in the ground water at the point of compliance for the purpose of regulation, [WAC 173-200-020(11)]. This limit assures that a ground water criterion will not be exceeded and that background water quality will be protected.

**Engineering report** -- A document that 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.

**Ground water** -- Water in a saturated zone or stratum beneath the surface of land or below a surface water body.

**Industrial user** -- A discharger of wastewater to the sanitary sewer that is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

**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.

**Interference** -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

**Local limits** -- Specific prohibitions or limits on pollutants or pollutant parameters developed by a POTW.

**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 limit** -- 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.

**Maximum day design flow (MDDF**) -- The largest volume of flow anticipated to occur during a one-day period, expressed as a daily average.

**Maximum month design flow (MMDF)** -- The largest volume of flow anticipated to occur during a continuous 30-day period, expressed as a daily average.

**Maximum week design flow (MWDF**) -- The largest volume of flow anticipated to occur during a continuous 7-day period, expressed as a daily average.

**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 permit specifies the area of the authorized mixing zone that Ecology defines following 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. It is the negative logarithm of the hydrogen ion concentration. A pH of 7 is defined as neutral and large variations above or below this value are considered harmful to most aquatic life.

**Pass-through** -- A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit

(including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

**Peak hour design flow (PHDF)** -- The largest volume of flow anticipated to occur during a one-hour period, expressed as a daily or hourly average.

**Peak instantaneous design flow (PIDF)** -- The maximum anticipated instantaneous flow.

**Point of compliance** -- The location in the ground water where the enforcement limit must not be exceeded and a facility must comply with the Ground Water Quality Standards. Ecology determines this limit on a site-specific basis. Ecology locates the point of compliance in the ground water as near and directly downgradient from the pollutant source as technically, hydrogeologically, and geographically feasible, unless it approves an alternative point of compliance.

**Potential significant industrial user (PSIU)** --A potential significant industrial user is defined as an Industrial User that does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).
Ecology may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

**Quantitation level (QL)** -- Also known as Minimum Level of Quantitation (ML) – The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that the lab has used all method-specified sample weights, volumes, and cleanup procedures. The QL is calculated by multiplying the MDL by 3.18 and rounding the result to the number nearest to (1,2,or 5) x $10^n$, where n is an integer. (64 FR 30417).
ALSO GIVEN AS:
The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. (Report of the Federal Advisory Committee on Detection and Quantitation Approaches and Uses in Clean Water Act Programs Submitted to the US Environmental Protection Agency December 2007).

**Reasonable potential** -- A reasonable potential to cause a water quality violation, or loss of sensitive and/or important habitat.

**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).

**Significant industrial user (SIU)** --

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

**Slug discharge** -- Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge to the POTW. This may include any pollutant released at a flow rate that may cause interference or pass through with the POTW or in any way violate the permit conditions or the POTW's regulations and local limits.

**Soil scientist** -- An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

**Solid waste** -- All putrescible and non-putrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and

construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials.

**Soluble $BOD_5$** -- Determining the soluble fraction of Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of soluble organic material present in an effluent that is utilized by bacteria. Although the soluble $BOD_5$ test is not specifically described in Standard Methods, filtering the raw sample through at least a 1.2 um filter prior to running the standard $BOD_5$ test is sufficient to remove the particulate organic fraction.

**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.

**Technology-based effluent limit** -- A permit limit based on the ability of a treatment method to reduce the pollutant.

**Total coliform bacteria**--A microbiological test, which detects and enumerates the total coliform group of bacteria in water samples.

**Total dissolved solids**--That portion of total solids in water or wastewater that passes through a specific filter.

**Total suspended solids (TSS)** -- Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water 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.

**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 imposed on the concentration of an effluent parameter to prevent the concentration of that parameter from exceeding its water quality criterion after discharge into receiving waters.

# Appendix D – Commingled Wastewater and Potable Water Quality

# Appendix E - Response to Comments