

Fact Sheet for NPDES Permit WA0003699
Agrium Kennewick Fertilizer Operation – Hedges Facility

September 18, 2015

Purpose of this Fact Sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for Agrium U.S., Inc. (Agrium), Kennewick Fertilizer Operations – Hedges Facility.

This fact sheet complies with Section 173-220-060 of the Washington Administrative Code (WAC), which requires Ecology to prepare a draft permit and accompanying fact sheet for public evaluation before issuing an NPDES permit.

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 Hedges facility, NPDES permit WA0003699, are available for public review and comment from September 25, 2015 until October 27, 2015. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement Information**.

Agrium reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions regarding the facility's location, history, discharges, or receiving water prior to publishing this draft fact sheet for public notice. Agrium requested several substantial changes beyond factual comment to the permit. Ecology documented in **Appendix F - Response to Comments** any significant changes made in the proposed permit as a result of entity review.

After the public comment period closes, Ecology will summarize substantive comments and provide responses to them. Ecology will include the summary and responses to comments in this fact sheet as **Appendix F - Response to Comments**, and publish it when issuing the final NPDES permit. Ecology generally will not revise the rest of the fact sheet, but the full document will become part of the legal history contained in the facility's permit file.

Summary

The Hedges facility is one of three non-contiguous facilities that form the Agrium Kennewick Fertilizer Operations. There are currently no manufacturing or distribution activities at the Hedges facility. The facility does not store any materials or products. The only activity at the Hedges facility is groundwater pumping to supply basic sanitary needs for the neighboring Simplot property. Although Agrium does not plan to discharge any wastewater or stormwater from the Hedges facility during the next permit cycle, they would like to preserve their options for the future. The proposed permit has been structured to include requirements (monitoring, effluent limits, and other conditions) should Agrium restart operations at the Hedges facility.

The proposed permit requires Agrium to submit discharge monitoring reports electronically.

Table of Contents

| | | |
|--------------------|--|-----------|
| <i>I.</i> | <i>Introduction</i> | 6 |
| <i>II.</i> | <i>Background Information</i> | 7 |
| | A. Facility Description | 8 |
| | History | 9 |
| | Industrial Processes..... | 9 |
| | Wastewater Treatment Processes..... | 10 |
| | Solid Wastes | 10 |
| | Discharge Outfall..... | 10 |
| | B. Description of the Receiving Water | 10 |
| | C. Wastewater Characterization | 11 |
| | D. Summary of Compliance with Previous Permit Issued | 12 |
| | E. State Environmental Policy Act (SEPA) Compliance | 12 |
| <i>III.</i> | <i>Proposed Permit Limits</i> | 13 |
| | A. Design Criteria | 13 |
| | B. Technology-Based Effluent Limits | 14 |
| | C. Surface Water Quality-Based Effluent Limits | 14 |
| | Numerical Criteria for the Protection of Aquatic Life and Recreation..... | 15 |
| | Numerical Criteria for the Protection of Human Health..... | 15 |
| | Narrative Criteria | 15 |
| | Antidegradation | 15 |
| | Mixing Zones | 16 |
| | D. Designated Uses and Surface Water Quality Criteria | 20 |
| | E. Water Quality Impairments | 22 |
| | F. Evaluation of Surface Water Quality-Based Effluent Limits for Narrative Criteria | 22 |
| | G. Evaluation of Surface Water Quality-Based Effluent Limits for Numeric Criteria | 23 |
| | H. Human Health | 27 |
| | I. Sediment Quality | 27 |
| | J. Groundwater Quality Limits | 27 |
| | K. Whole Effluent Toxicity | 28 |
| | L. Comparison of Effluent Limits with the Previous Permit Issued on August 24, 2006 | 28 |

| | | |
|-------------|---|-----------|
| IV. | <i>Monitoring Requirements</i> | 29 |
| A. | Wastewater Monitoring | 29 |
| B. | Lab Accreditation | 30 |
| V. | <i>Other Permit Conditions</i> | 30 |
| A. | Reporting and Record Keeping | 30 |
| B. | Operation and Maintenance Manual | 30 |
| C. | Solid Waste Control Plan | 31 |
| D. | Non Routine and Unanticipated Discharges | 31 |
| E. | Spill Plan | 31 |
| F. | Stormwater Pollution Prevention Plan | 32 |
| | Best Management Practices | 32 |
| | Ecology-Approved Stormwater Management Manuals..... | 33 |
| G. | Outfall Evaluation | 33 |
| H. | AKART Study | 33 |
| I. | Effluent Mixing Study | 33 |
| J. | General Conditions | 33 |
| VI. | <i>Permit Issuance Procedures</i> | 34 |
| A. | Permit Modifications | 34 |
| B. | Proposed Permit Issuance | 34 |
| VII. | <i>References for Text and Appendices</i> | 34 |
| | <i>Appendix A -- Public Involvement Information</i> | 36 |
| | <i>Appendix B -- Your Right to Appeal</i> | 37 |
| | <i>Appendix C -- Glossary</i> | 38 |
| | <i>Appendix D -- Ammonia Criteria Calculations</i> | 46 |
| | <i>Appendix E -- Reasonable Potential Calculations</i> | 47 |
| | <i>Appendix F -- Response to Comments</i> | 49 |
| | | |
| II. | <i>Background Information</i> | 7 |
| A. | Facility Description | 8 |
| | History | 9 |
| | Industrial Processes..... | 9 |
| | Wastewater Treatment Processes..... | 10 |
| | Solid Wastes | 10 |

| | | |
|-------------|--|------------------|
| | Discharge Outfall | 10 |
| B. | Description of the Receiving Water..... | 10 |
| C. | Wastewater Characterization | 11 |
| D. | Summary of Compliance with Previous Permit Issued..... | 12 |
| E. | State Environmental Policy Act (SEPA) Compliance | 12 |
| III. | <i>Proposed Permit Limits.....</i> | <i>13</i> |
| A. | Design Criteria | 13 |
| B. | Technology-Based Effluent Limits | 14 |
| C. | Surface Water Quality-Based Effluent Limits | 14 |
| | Numerical Criteria for the Protection of Aquatic Life and Recreation | 15 |
| | Numerical Criteria for the Protection of Human Health | 15 |
| | Narrative Criteria | 15 |
| | Antidegradation | 15 |
| | Mixing Zones | 16 |
| D. | Designated Uses and Surface Water Quality Criteria..... | 20 |
| E. | Water Quality Impairments..... | 22 |
| F. | Evaluation of Surface Water Quality-Based Effluent Limits for Narrative Criteria..... | 22 |
| G. | Evaluation of Surface Water Quality-Based Effluent Limits for Numeric Criteria..... | 23 |
| H. | Human Health | 27 |
| I. | Sediment Quality..... | 27 |
| J. | Groundwater Quality Limits | 27 |
| K. | Whole Effluent Toxicity | 28 |
| L. | Comparison of Effluent Limits with the Previous Permit Issued on August 24, 2006..... | 28 |
| IV. | <i>Monitoring Requirements.....</i> | <i>29</i> |
| A. | Wastewater Monitoring..... | 29 |
| B. | Lab Accreditation | 30 |
| V. | <i>Other Permit Conditions.....</i> | <i>30</i> |
| A. | Reporting and Record Keeping | 30 |
| B. | Operation and Maintenance Manual | 30 |
| C. | Solid Waste Control Plan | 31 |
| D. | Non Routine and Unanticipated Discharges | 31 |

| | | |
|-------------|---|-----------|
| E. | Spill Plan | 31 |
| F. | Stormwater Pollution Prevention Plan | 32 |
| | Best Management Practices | 32 |
| | Ecology-Approved Stormwater Management Manuals | 33 |
| G. | Outfall Evaluation | 33 |
| H. | AKART Study | 33 |
| I. | Effluent Mixing Study | 33 |
| J. | General Conditions | 33 |
| VI. | <i>Permit Issuance Procedures</i> | 34 |
| A. | Permit Modifications | 34 |
| B. | Proposed Permit Issuance | 34 |
| VII. | <i>References for Text and Appendices</i> | 34 |
| | <i>Appendix A -- Public Involvement Information</i> | 36 |
| | <i>Appendix B -- Your Right to Appeal</i> | 37 |
| | <i>Appendix C -- Glossary</i> | 38 |
| | <i>Appendix D -- Ammonia Criteria Calculations</i> | 46 |
| | <i>Appendix E -- Reasonable Potential Calculations</i> | 47 |
| | <i>Appendix F -- Response to Comments</i> | 49 |
| | | |
| | Table 1 General Facility Information | 7 |
| | Table 2 Ambient Background Data | 11 |
| | Table 3 Groundwater Characterization | 11 |
| | Table 4 Non-Contact Cooling Water Characterization..... | 12 |
| | Table 5 Potential Discharge Flow Rates | 14 |
| | Table 6 Freshwater Aquatic Life Uses and Associated Criteria | 21 |
| | Table 7 Recreational Uses and Associated Criteria | 22 |
| | Table 8 Comparison of Previous and Proposed Effluent Limits | 29 |
| | | |
| | Figure 1 Facility Location Map | 8 |

I. Introduction

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

The following regulations apply to industrial NPDES permits:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC)
- Water quality criteria for ground waters (chapter 173-200 WAC)
- Whole effluent toxicity testing and limits (chapter 173-205 WAC)
- Sediment management standards (chapter 173-204 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 an NPDES 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 NPDES permit program and in response to a complete and accepted permit application, Ecology must prepare a draft permit and accompanying fact sheet, and make them 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 (WAC 173-220-050). (See **Appendix A** for more detail about the public notice and comment procedures.) After the public comment period ends, Ecology may make changes to the draft NPDES permit in response to comment(s). Ecology will summarize the responses to comments and any changes to the permit in **Appendix F**.

II. Background Information

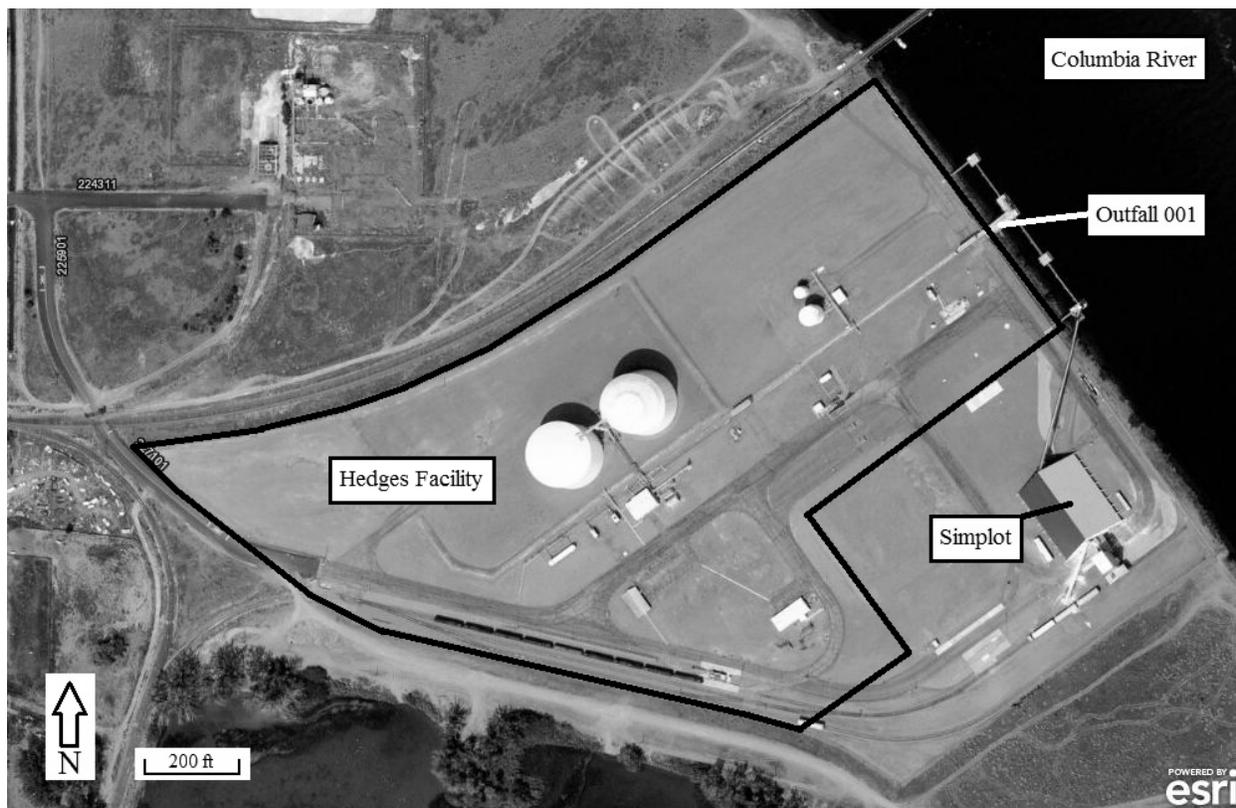
Table 1 General Facility Information

| Facility Information | |
|--|---|
| Applicant | Agrium U.S., Inc. |
| Facility Name and Address | Agrium Kennewick Fertilizer Operations Hedges Facility 227108 East Hedges Road Kennewick, WA 99337 |
| Contact at Facility | Thomas Klein, Environmental Specialist (509) 586-5488 |
| Responsible Official | Jon Berg, Plant Manager 227515 East Bowles Road Kennewick, WA 99337 (509) 586-5500 |
| Industry Type | Ammonia storage and transfer |
| Type of Treatment | No treatment, direct discharge |
| SIC Code | 5191 – Farm Supplies (wholesale distribution of fertilizer) |
| NAIC Code | 424910 – Farm Supplies Merchant Wholesalers |
| Facility Location (NAD83/WGS84 reference datum) | Latitude: 46.17403 Longitude: -119.02301 |
| Discharge Waterbody Name and Location (NAD83/WGS84 reference datum) | Outfall 001: Columbia River Latitude: 46.17555 Longitude: -119.02021 |
| Permit Status | |
| Renewal Date of Previous Permit | September 1, 2006 |
| Application for Permit Renewal Submittal Date | February 28, 2011 |
| Date of Ecology Acceptance of Application | May 11, 2011 |

Table 1 General Facility Information

| Inspection Status | |
|---|--------------------|
| Date of Last Sampling Inspection | September 11, 2012 |
| Date of Last Non-sampling Inspection Date | March 5, 2015 |

Figure 1 Facility Location Map



A. Facility Description

In this fact sheet, Ecology will refer to the Agrium facilities as the Kennewick Fertilizer Operations (KFO). The following describes the KFO, located southeast of Kennewick, Washington in rural Benton County. Ecology considers each area a separate facility for NPDES permitting, hazardous waste management, and most other regulatory purposes. Agrium operates the three areas of the KFO using an integrated and interactive approach. Raw material and product pipelines link the three areas.

The three operating areas of the KFO include:

- Kennewick area, located at the east end of Bowles Road (227515 East Bowles Road).

- Finley area, located at the east end of Game Farm Road (231610 East Game Farm Road).
- Hedges area, located at the east end of Perkins Road (227108 East Hedges Road).

This fact sheet only covers the Hedges facility at 227108 East Hedges Road.

The Columbia River borders the Hedges facility on the east with the Columbia River backwater on the south and farmland on the north. Simplot, a distributor of chemical fertilizer, lies to the southeast of the Hedges facility (see Figure 1).

History

Collier Chemical, a subsidiary of Unocal, constructed the Hedges facility in 1968. Unocal, also known as the Union Oil Company of California, operated the Hedges facility primarily as an ammonia storage and transfer terminal. The Hedges facility received anhydrous ammonia by barge and rail car. The “Hedges” and “Columbia” barges transported up to a total of 4,600 tons per shipment. The facility compressed and condensed ammonia to a temperature of -28°F and stored it in two insulated 25,000-ton atmospheric tanks. The company shipped ammonia offsite via tank truck, rail car, and barges. The facility heated ammonia to about 37°F before off-loading and routed ammonia through pipelines to the Kennewick plant to be used in inorganic fertilizer production. The Hedges facility also received solid urea by rail car and stored it in the warehouse, which had a capacity of 10,000 tons.

The plant manufactured aqua ammonia by mixing anhydrous ammonia with water. The Hedges facility treated water with a softener prior to blending and shipped the final product offsite via tank trucks.

The Hedges facility also produced N-pHURIC® fertilizer by blending solid urea prills (spherical particles), water, and sulfuric acid. They also added a dye and copper sulfate to inhibit corrosion. The blending process took place in a contact tower and did not generate waste.

In 1999, Unocal reorganized the Hedges facility along with the Kennewick fertilizer plant and Finley facility into a limited liability corporation called Pro dica. The formation of Pro dica was part of the business sale. In 2000, Unocal sold Pro dica to Agrium U.S., Inc. which changed the name to Agrium Kennewick Fertilizer Operations.

By January 2005, Agrium shut down all manufacturing and distribution activities at the Hedges facility. The company permanently removed the N-pHURIC processing unit and inventory from the warehouse and tanks. The company currently operates the water system to provide potential fire protection for buildings and basic sanitary needs for a neighboring facility not owned by Agrium.

Industrial Processes

The Hedges facility, approximately 40 acres, currently has no active manufacturing or distribution activities. The facility does not store any materials or products. There are no employees permanently stationed at the facility.

The only activity at the Hedges facility is groundwater pumping from two wells to supply basic sanitary needs for the neighboring Simplot property. The groundwater pumping system has a pressure relief valve that if groundwater is pumped continuously for long enough the system will discharge groundwater to Outfall 001. Simplot stopped using the wells continuously and only uses them as needed to pressurize their distribution system. Ecology expects there to be no significant amounts of pollutants in the groundwater wells that couldn't be attributed to pollutants in the Columbia River because there is likely a direct link between groundwater and the river at the location of the wells. Agrium does not plan to discharge wastewater or stormwater from the Hedges facility to the Columbia River during the next permit cycle.

Although not in operation currently, Agrium has two atmospheric pressure tanks, heat exchangers, pumps, and pipelines at the Hedges facility that could be used if Agrium decides to restart the ammonia storage operations at the Hedges facility.

Wastewater Treatment Processes

Agrium does not currently treat any groundwater discharged at the Hedges facility. If Agrium restarts ammonia storage operations at the site, Agrium does not plan to treat any non-contact cooling water or stormwater runoff discharged at the site.

Solid Wastes

The facility does not generate solid wastes because it is not currently operating industrial activities at the site. Agrium may restart the ammonia storage operations at the Hedges facility which might then generate solid waste. The proposed permit requires Agrium to update the solid waste control plan to represent any industrial activities at the Hedges facility before any ammonia storage operations resume.

Discharge Outfall

The effluent flows through an underground pipe. The pipe extends under the dock and discharges to Outfall 001 into the Columbia River at river mile 323.3. Outfall 001 is a single port out of the water oriented to discharge downward into the river usually above the river surface but at times submerged.

B. Description of the Receiving Water

When the Hedges facility is operating, effluent is discharged to the Columbia River. Other nearby point source outfalls include the cities of Kennewick, Pasco, and Richland's stormwater and wastewater discharges, Agrium's Kennewick and Finley facilities, U.S. Army Corps of Engineers ground water pumping station, and Columbia Irrigation District return flows. There are no significant nearby non-point sources of pollutants. Section III.E describes any receiving waterbody impairments.

The ambient background data used for this permit is in the following table.

Table 2 Ambient Background Data

| Parameter | Value Used |
|---|---|
| Temperature (highest annual 1-DADMax) ^a | 21.12 degrees Centigrade (°C) |
| pH (minimum / maximum) ^a | 7.78 / 8.61 standard units (SU) |
| Total Ammonia as N (90 th percentile) ^a | 0.010 milligrams/liter (mg/L) |
| Alkalinity ^b | 60.1 mg/L as CaCO ₃ |
| a | Calculated at river mile 405 at WRIA 36 Esquatzel Coulee station 36A070, 2006 to 2013. This is from Ecology's most recent available data upstream and closest to the discharge at river mile 323.3 (available at http://www.ecy.wa.gov/programs/eap/fw_riv/rv_main.html#4). |
| b | Calculated at river mile 405 at WRIA 36 Esquatzel Coulee station 36A070, October 2007 to September 2008. This is the geometric mean of Ecology's most recent available data upstream and closest to the discharge at river mile 323.3. |

C. Wastewater Characterization

Agrium reported concentrations of pollutants in the groundwater only discharge at Outfall 001 in the permit renewal application and in discharge monitoring reports. The following tabulated data also includes Ecology inspection monitoring results. The data in Table 3 represents the quality of the groundwater discharge from no ammonia storage activities discharged from September 2006 to June 2012. Since July 2012, Agrium has not discharged any groundwater or stormwater from the Hedges facility. The groundwater is characterized as follows:

Table 3 Groundwater Characterization

| Parameter | Units | # of Samples | Average Value | Minimum Value | Maximum Value | Previous Permit Limit |
|------------------|--|--------------|---------------|---------------|---------------------|-----------------------|
| Flow | gpd ^a | 70 | 28,759 | 25,920 | 28,800 ^b | 70,000 |
| Ammonia (as N) | mg/L | 74 | 0.053 | < 0.01 | 0.3 ^c | - |
| BOD ₅ | mg/L | 1 | < 4 | < 4 | < 4 | - |
| Temperature | °C | 70 | 13.2 | 10.6 | 16.7 | 18.3 |
| pH | SU | 73 | - | 6.8 | 7.6 | 6.0 to 9.0 |
| a | gpd = gallons per day | | | | | |
| b | This is based on 20 gallons per minute for 1,440 minutes (24 hours). | | | | | |
| c | The 95 th percentile of effluent ammonia (as N) samples is also 0.3 mg/L. | | | | | |

Agrium reported concentrations of pollutants in the non-contact cooling water discharge at Outfall 001 in discharge monitoring reports. The data in Table 4 represents the quality of the

non-contact cooling water discharge from ammonia storage activities discharged from August 1998 to December 2004. By January 2005, Agrium shut down all manufacturing and distribution activities at the Hedges facility. Since January 2005, Agrium has not discharged any non-contact cooling water or stormwater from the Hedges facility. The non-contact cooling water is characterized as follows:

Table 4 Non-Contact Cooling Water Characterization

| Parameter | Units | # of Samples | Average Value | Minimum Value | Maximum Value | Previous Permit Limit ^a |
|----------------|---|--------------|---------------|---------------|-------------------|------------------------------------|
| Flow | gpd | 77 | 18,352 | 0.019 | 32,695 | 35,000 |
| Ammonia (as N) | mg/L | 76 | 1.0 | 0 | 9.98 ^b | - |
| Temperature | °C | 77 | 13.9 | 10.0 | 17.22 | 18.3 |
| pH | SU | 77 | - | 6.5 | 8.1 | 6.0 to 9.0 |
| a | These permit limits are from the permit effective August 1, 1998 when the Hedges facility had ammonia storage operations. | | | | | |
| b | The 95 th percentile of effluent ammonia (as N) samples is 5.65 mg/L. | | | | | |

D. Summary of Compliance with Previous Permit Issued

The previous permit placed effluent limits on flow, pH, and temperature.

Agrium complied with the effluent limits at the Hedges facility throughout the duration of the permit issued on August 24, 2006. Agrium had three violations of permit conditions for submitting late discharge monitoring reports (DMRs) for December 2011, June 2013, and January 2014. Ecology does not typically issue enforcement actions for facilities that submit DMRs up to 5 days late. Ecology may consider taking action when facilities repeatedly submit their DMRs late. Ecology did not take enforcement action because these were isolated incidents and the DMRs were submitted within 5 days of being late. Ecology assessed compliance based on its review of the facility's information in Ecology's Permitting and Reporting Information System (PARIS), DMRs, and on inspections.

PARIS shows that Agrium's Application for Permit Renewal for the Hedges facility was due on March 1, 2011 and received on February 28, 2011.

E. State Environmental Policy Act (SEPA) Compliance

State law exempts the issuance, reissuance or modification of any wastewater discharge permit from the SEPA process as long as the permit contains conditions that are no less stringent than federal and state rules and regulations (RCW 43.21C.0383). The exemption applies only to existing discharges, not to new discharges.

III. Proposed Permit Limits

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

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and chapter 173-220 WAC).
- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC), or the National Toxics Rule (40 CFR 131.36).
- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

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

Ecology does not usually develop limits for pollutants not reported in the permit application but may be present in the discharge. The permit does not authorize discharge of the non-reported pollutants. During the five-year permit term, the facility's effluent discharge conditions may change from those conditions reported in the permit application. The facility must notify Ecology if significant changes occur for any constituent [40 CFR 122.42(a)]. Until Ecology modifies the permit to reflect additional discharge of pollutants, a permitted facility could be violating its permit.

A. Design Criteria

According to WAC 173-220-150(1)(g), neither flows nor waste loadings may exceed approved design criteria. Agrium is not currently treating any wastewater at the Hedges facility, therefore the design criteria and treatment plant engineering report do not apply. The flow from potential ammonia storage operations would be untreated, non-contact cooling water.

Table 4 summarizes the average flows reported in the permit renewal application if Agrium resumes the ammonia storage operations at the Hedges facility. The discharge from ammonia storage operations would be non-contact cooling. The only possible source of contact wastewater would be if product comes in contact with stormwater or if product leaks or spills into the non-contact cooling water system. If Agrium restarts operations, they need to develop best management practices for stormwater to meet all known, available, and reasonable methods of prevention, control, and treatment (AKART).

Table 5 Potential Discharge Flow Rates

| Operation | Status | Average Flow at Full Operation |
|--------------------------------------|---|---------------------------------------|
| Pressure control blowdown | Active ^a | 28,800 gpd |
| Ammonia cooler/condenser | Idle | 12,000 gpd |
| Water softener | Idle | 7,000 gpd |
| Aqua condenser | Idle | 1,440 gpd |
| Ammonia heater condensate | Idle | 120 gpd |
| Total average flow at full operation | | 49,360 gpd |
| a | Unit currently used as needed by adjacent Simplot company for basic sanitary needs. | |

B. Technology-Based Effluent Limits

Ecology must ensure that facilities provide AKART when it issues a permit. Ecology has determined that:

- The pollutant concentrations previously reported or detected in the effluent during the suspension of transfer and storage activities at the Hedges facility do not have reasonable potential to violate surface water or sediment standards.
- Due to the suspension of transfer and storage activities at the Hedges facility, there is no potential for release of pollutants into the surface water.
- 40 CFR Part 418 (Fertilizer Manufacturing Point Source Category) does not apply to the Agrium Hedges facility.

During ammonia storage operations, the Hedges facility's discharge is non-contact cooling water used for ammonia refrigeration. The system is designed to maintain segregation of cooling water and ammonia. Ammonia has the potential to enter the non-contact cooling water discharge through corrosion, leakage, cooling system failures, or spills. To achieve AKART, Agrium must take all reasonable measures to prevent, reduce, and eliminate ammonia contamination to the maximum extent feasible. If Agrium restarts ammonia storage operations at the Hedges facility, Ecology determined that Agrium must prepare and submit an AKART study to demonstrate that the cooling system operation meets AKART.

Based on the evaluation above, the proposed permit only contains technology-based limits for the discharge resulting from ammonia storage operations for pH.

C. Surface Water Quality-Based Effluent Limits

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

Numerical Criteria for the Protection of Aquatic Life and Recreation

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

Numerical Criteria for the Protection of Human Health

The U.S. EPA has published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State (EPA, 1992). These criteria are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The water quality standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

Narrative Criteria

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

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

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

Antidegradation

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

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

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

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

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

Facility Specific Requirements -- This facility must meet Tier I requirements.

- Dischargers must maintain and protect existing and designated uses. Ecology must not allow any degradation that will interfere with, or become injurious to, existing or designated uses, except as provided for in chapter 173-201A WAC.
- For waters that do not meet assigned criteria, or protect existing or designated uses, Ecology will take appropriate and definitive steps to bring the water quality back into compliance with the water quality standards.
- Whenever the natural conditions of a water body are of a lower quality than the assigned criteria, the natural conditions constitute the water quality criteria. Where water quality criteria are not met because of natural conditions, human actions are not allowed to further lower the water quality, except where explicitly allowed in chapter 173-201A WAC.

Ecology's analysis described in this section of the fact sheet demonstrates that the proposed permit conditions will protect existing and designated uses of the receiving water.

Mixing Zones

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

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

The state's water quality standards allow Ecology to authorize mixing zones for the facility's permitted wastewater discharges only if those discharges already receive AKART. Mixing

zones typically require compliance with water quality criteria within a specified distance from the point of discharge and must not use more than 25% of the available width of the water body for dilution [WAC 173-201A-400 (7)(a)(ii-iii)].

Ecology uses modeling to estimate the amount of mixing within the mixing zone. Through modeling Ecology determines the potential for violating the water quality standards at the edge of the mixing zone and derives any necessary effluent limits. Steady-state models are the most frequently used tools for conducting mixing zone analyses. Ecology chooses values for each effluent and for receiving water variables that correspond to the time period when the most critical condition is likely to occur (see *Permit Writer's Manual - Ecology* Publication No. 92-109). Each critical condition parameter, by itself, has a low probability of occurrence and the resulting dilution factor is conservative. The term “reasonable worst-case” applies to these values.

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

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

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

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

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

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

The proposed permit specifies the size and location of the allowed mixing zone (see Section III.G, “Evaluation of Surface Water Quality-Based Effluent Limits for Numeric Criteria”).

2. The facility must fully apply “all known, available, and reasonable methods of prevention, control and treatment” to its discharge.

Ecology determined that Agrium must demonstrate that best management practices (BMPs) implemented at the Hedges facility meet the requirements of AKART (see Section III.B, “Technology-Based Effluent Limits”) before discharges are allowed.

3. Ecology must consider critical discharge conditions.

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

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

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

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

Ecology established Washington State water quality criteria for toxic chemicals using EPA criteria. EPA developed the criteria using toxicity tests with numerous organisms and set the criteria to generally protect the species tested and to fully protect all commercially and recreationally important species.

EPA sets acute criteria for toxic chemicals assuming organisms are exposed to the pollutant at the criteria concentration for one hour. They set chronic standards assuming organisms are exposed to the pollutant at the criteria concentration for four days. Dilution modeling under

critical conditions generally shows that both acute and chronic criteria concentrations are reached within minutes of discharge.

The discharge plume does not impact drifting and non-strong swimming organisms because they cannot stay in the plume close to the outfall long enough to be affected. Strong swimming fish could maintain a position within the plume, but they can also avoid the discharge by swimming away. Mixing zones generally do not affect benthic organisms (bottom dwellers) because the buoyant plume rises in the water column. Ecology has additionally determined that the effluent will not exceed 33 degrees C for more than two seconds after discharge; and that the temperature of the water will not create lethal conditions or blockages to fish migration.

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

Ecology reviewed the above information, the specific information on the characteristics of the discharge, the receiving water characteristics, and the discharge location. Based on this review, Ecology concluded that the non-contact cooling water discharge does not have a reasonable potential to cause the loss of sensitive or important habitat, substantially interfere with existing or characteristics uses, result in damage to the ecosystem, or adversely affect public health if the permit limits are met.

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

Ecology conducted a reasonable potential analysis, using procedures established by the EPA and by Ecology, for each pollutant and concluded the discharge/receiving water mixture will not violate water quality criteria outside the boundary of the mixing zone if permit limits are met.

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

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

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

concentration, the centerline dilution factor, and the lowest flow occurring once in every ten years to perform the reasonable potential analysis.

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

7. Maximum size of mixing zone.

The authorized mixing zone does not exceed the maximum size restriction.

8. Acute mixing zone.

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

Ecology determined the acute criteria will be met at 10% of the distance of the chronic mixing zone at the ten year low flow.

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

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

- **Comply with size restrictions.**

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

9. Overlap of Mixing Zones.

This mixing zone does not overlap another mixing zone.

D. Designated Uses and Surface Water Quality Criteria

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. In addition, the U.S. EPA set human health criteria for toxic pollutants (EPA 1992). The table included below summarizes the criteria applicable to this facility's discharge. The discharge outfall at the Hedges facility is located at river mile 323.3 on the Columbia River.

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

Table 6 Freshwater Aquatic Life Uses and Associated Criteria

| Salmonid Spawning, Rearing, and Migration | |
|--|---|
| Description | The key identifying characteristic of this use is salmon or trout spawning and emergence that only occurs outside of the summer season (September 16 - June 14). Other common characteristic aquatic life uses for waters in this category include rearing and migration by salmonids. |
| Temperature Criteria – 1-DMax ^a | Temperature shall not exceed a 1-DMax of 20.0°C (68.0°F) due to human activities. When natural conditions exceed a 1-DMax of 20.0°C (68.0°F), no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3°C; nor shall such temperature increases, t, at any time, exceed $t = 34/(T + 9)$, where T is the ambient temperature. |
| Dissolved Oxygen Criteria – Lowest 1-Day Minimum | 8.0 mg/L |
| Turbidity Criteria | <ul style="list-style-type: none"> • 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU. |
| Total Dissolved Gas Criteria | Total dissolved gas must not exceed 110 percent of saturation at any point of sample collection. |
| pH Criteria | The pH must measure within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units. |
| a | Footnote 2 of Table 602 in WAC 173-201A-602(1). |

- The recreational uses for this receiving water are identified below.

Table 7 Recreational Uses and Associated Criteria

| Recreational Use | Criteria |
|----------------------------|---|
| Primary Contact Recreation | Fecal coliform organism levels must not exceed a geometric mean value of 100 colonies /100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies /100 mL. |

- The water supply uses are domestic, agricultural, industrial, and stock watering.
- The miscellaneous freshwater uses are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

E. Water Quality Impairments

The Columbia River is listed on the current 303(d) list and is impaired for temperature, dioxins, and total dissolved gas near the Hedges facility discharge, although the outfall does not discharge directly to the river specifically where the parameters are listed or impaired.

Ambient water monitoring by Ecology showed temperatures higher than the surface quality criteria of 20.0°C. The EPA is the lead agency in developing a total maximum daily load (TMDL) analysis for temperature. It has not completed the TMDL as of the issuance of this permit. However, EPA published a report in 2003 which identified the major sources of temperature as the dams along the Columbia and Snake Rivers. The report demonstrated that other point source discharges on the Columbia River have a negligible impact on its temperature. A copy of the report is available at:

[http://yosemite.epa.gov/r10/OMP.NSF/webpage/Developing+a+Temperature+Total+Maximum+Daily+Load+for+the+Columbia+and+Snake+Rivers:+Simulation+Methods/\\$FILE/910_R_03_003.pdf](http://yosemite.epa.gov/r10/OMP.NSF/webpage/Developing+a+Temperature+Total+Maximum+Daily+Load+for+the+Columbia+and+Snake+Rivers:+Simulation+Methods/$FILE/910_R_03_003.pdf).

EPA completed a TMDL for 2,3,7,8-TCDD dioxin in 1991. A copy of the TMDL is available at: <http://www.ecy.wa.gov/biblio/0910058.html>. Major sources of dioxin are the chlorine-bleach pulp mills. The TMDL contained waste load allocations (WLA) for dioxins discharged by mills. Minor sources do not have significant impacts on the surface water and do not have WLAs. The Hedges facility was not identified as a source of dioxins.

In 2002, the states of Washington and Oregon issued a joint TMDL for total dissolved gas (TDG). The states identified four dams as sources of TDG. The TMDL report containing WLAs is available at <http://www.ecy.wa.gov/biblio/0203004.html>. EPA approved the TMDL in 2004. The Hedges facility was not identified as a source of TDG.

Based on the information available, Ecology determined that the Hedges facility is not a contributing source of heat, dioxins, or TDG.

F. Evaluation of Surface Water Quality-Based Effluent Limits for Narrative Criteria

Ecology must consider the narrative criteria described in WAC 173-201A-160 when it determines permit limits and conditions. Narrative water quality criteria limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge which

have the potential to adversely affect designated uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health.

Ecology considers narrative criteria when it evaluates the characteristics of the wastewater and when it implements AKART as described above in the technology-based limits section. When Ecology determines if a facility is meeting AKART it considers the pollutants in the wastewater and the adequacy of the treatment to prevent the violation of narrative criteria.

In addition, Ecology considers the toxicity of the wastewater discharge by requiring WET testing when there is a reasonable potential for the discharge to contain toxics. Ecology's analysis of the need for WET testing for this discharge is described later in the fact sheet.

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

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

With technology-based controls (AKART), predicted pollutant concentrations in the non-contact cooling water discharge exceed water quality criteria. Ecology therefore authorizes a mixing zone in accordance with the geometric configuration, flow restriction, and other restrictions imposed on mixing zones by chapter 173-201A WAC.

The outfall pipe at Outfall 001 extends under the dock and discharges to Outfall 001 into the Columbia River at river mile 323.3. Outfall 001 is a single port out of the water oriented to discharge downward into the river usually above the river surface but at times submerged.

Chronic Mixing Zone -- WAC 173-201A-400(7)(a) specifies that mixing zones must not extend in a downstream direction from the discharge ports for a distance greater than 300 feet plus the depth of water over the discharge ports or extend upstream for a distance of over 100 feet, not utilize greater than 25% of the flow, and not occupy greater than 25% of the width of the water body.

The horizontal distance of the chronic mixing zone is 300 feet downstream and 100 feet upstream. The mixing zone extends from the bottom to the top of the water column. The chronic dilution factor is based on these dimensions.

Acute Mixing Zone -- WAC 173-201A-400(8)(a) specifies that in rivers and streams a zone where acute toxics criteria may be exceeded must not extend beyond 10% of the distance towards the upstream and downstream boundaries of the chronic zone, not use greater than 2.5% of the flow and not occupy greater than 25% of the width of the water body.

The horizontal distance of the acute mixing zone is 30 feet downstream and 10 feet upstream. The mixing zone extends from the bottom to the top of the water column. The acute dilution factor is based on these dimensions.

Agrium has not performed a mixing zone study that estimates the dilution factors available for the non-contact cooling water discharge at the Hedges facility. Ecology conservatively estimated the aquatic life acute and chronic dilution factors using modeling software. The model considered the outfall configuration, effluent flow, and ambient conditions. The estimated aquatic life acute and chronic dilution factors are 55 and 166, respectively. To confirm the mixing zone dilution factors, the proposed permit requires Agrium to perform a mixing zone study only if Agrium restarts ammonia storage operations (see Section V.I, “Effluent Mixing Study”).

Dissolved Oxygen -- BOD₅ and Ammonia Effects -- Natural decomposition of organic material in wastewater effluent impacts dissolved oxygen in the receiving water at distances far outside of the regulated mixing zone. The 5-day Biochemical Oxygen Demand (BOD₅) of an effluent sample indicates the amount of biodegradable material in the wastewater and estimates the magnitude of oxygen consumption the wastewater will generate in the receiving water. The amount of ammonia-based nitrogen in the wastewater also provides an indication of oxygen demand in the receiving water.

pH -- Monitoring data showed the facility discharge pH ranges between 6.5 and 8.1 standard units. Ecology predicts no water quality-based effluent limit violation of the pH criteria under critical conditions. The proposed permit includes technology-based effluent limits for pH of 6.0 to 9.0 only if Agrium restarts ammonia storage operations.

Turbidity -- Ecology evaluated the impact of turbidity based on the expected range of turbidity in the effluent and turbidity of the receiving water. Based on visual observation of the facility’s effluent, Ecology expects no violations of the turbidity criteria outside the designated mixing zone.

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

Based on a review of historical data when the Hedges facility was operating as an ammonia storage facility, the following toxic pollutant is present in the non-contact cooling water discharge: ammonia. Ammonia can enter the non-contact cooling water discharge if a leak in the non-contact cooling water system is present. Ecology conducted a reasonable potential analysis (see **Appendices D** and **E**) for ammonia to determine whether it would require effluent limits in the permit.

Ammonia's toxicity depends on the portion that is available in the unionized form. The amount of unionized ammonia depends on the temperature and pH in the receiving freshwater. To evaluate ammonia toxicity, Ecology used the available receiving water information from ambient station 36A070 (Columbia River – WRIA 36 Esquatzel Coulee) and Ecology spreadsheet tools.

Valid ambient background data were available for ammonia (see Table 2). Ecology used all applicable data to evaluate reasonable potential for this discharge to cause a violation of water quality standards.

Ecology determined that ammonia does not pose a reasonable potential to exceed the water quality criteria during the current shutdown of the Hedges facility.

Based on the estimated conservative dilution factors, Ecology determined that ammonia poses no reasonable potential to exceed the water quality criteria at the critical condition using procedures given in EPA, 1991 (see **Appendices D and E**) and as described above. Ecology's determination assumes that this facility meets the other effluent limits of this permit.

Flow -- The previous permits included limits for effluent flow. Although previous fact sheets do not specifically explain why effluent flow limits were included in previous permits, Ecology assumes that the effluent limits were based on the capacity of the water supply pumps to the facility for non-contact cooling water use. An effluent flow limit is not included in the proposed permit and is no longer necessary because the previous effluent flow limit was based on design conditions rather than water quality-based or technology-based limits.

Temperature -- The state temperature standards (WAC 173-201A-200-210 and 600-612) include multiple elements:

- Annual summer maximum threshold criteria (June 15 to September 15)
- Supplemental spawning and rearing season criteria (September 16 to June 14)
- Incremental warming restrictions
- Protections against acute effects

Ecology evaluates each criterion independently to determine reasonable potential and derive permit limits.

- Annual summer maximum and supplementary spawning/rearing criteria

Each water body has an annual maximum temperature criterion (WAC 173-201A-200(1)(c), 210(1)(c), and Table 602). These threshold criteria (e.g., 12, 16, 17.5, 20°C) protect specific categories of aquatic life by controlling the effect of human actions on summer temperatures.

Some waters have an additional threshold criterion to protect the spawning and incubation of salmonids (9°C for char and 13°C for salmon and trout) (WAC 173-201A-602, Table 602). These criteria apply during specific date-windows.

The threshold criteria apply at the edge of the chronic mixing zone. Criteria for most fresh waters are expressed as the highest 7-Day average of daily maximum temperature (7-DADMax). The 7-DADMax temperature is the arithmetic average of seven consecutive measures of daily maximum temperatures. Criteria for marine waters and some fresh waters are expressed as the highest 1-Day annual maximum temperature (1-DMax).

- Incremental warming criteria

The water quality standards limit the amount of warming human sources can cause under specific situations [WAC 173-201A-200(1)(c)(i)-(ii), 210(1)(c)(i)-(ii)]. The incremental warming criteria apply at the edge of the chronic mixing zone.

At locations and times when background temperatures are cooler than the assigned threshold criterion, point sources are permitted to warm the water by only a defined increment. These increments are permitted only to the extent doing so does not cause temperatures to exceed either the annual maximum or supplemental spawning criteria.

At locations and times when a threshold criterion is being exceeded due to natural conditions, all human sources, considered cumulatively, must not warm the water more than 0.3°C above the naturally warm condition.

When Ecology has not yet completed a TMDL, our policy allows each point source to warm water at the edge of the chronic mixing zone by 0.3°C. This is true regardless of the background temperature and even if doing so would cause the temperature at the edge of a standard mixing zone to exceed the numeric threshold criteria. Allowing a 0.3°C warming for each point source is reasonable and protective where the dilution factor is based on 25% or less of the critical flow. This is because the fully mixed effect on temperature will only be a fraction of the 0.3°C cumulative allowance (0.075°C or less) for all human sources combined.

- Protections for temperature acute effects

Instantaneous lethality to passing fish: The upper 99th percentile daily maximum effluent temperature must not exceed 33°C, unless a dilution analysis indicates ambient temperatures will not exceed 33°C two seconds after discharge.

General lethality and migration blockage: Measurable (0.3°C) increases in temperature at the edge of a chronic mixing zone are not allowed when the receiving water temperature exceeds either a 1DMax of 23°C or a 7DADMax of 22°C.

Lethality to incubating fish: Human actions must not cause a measurable (0.3°C) warming above 17.5°C at locations where eggs are incubating.

Ecology calculated the reasonable potential for the discharge to exceed the annual summer maximum, the supplementary spawning criterion, the incremental warming criteria, and the protection of acute effects at the effluent outfall during critical conditions.

No reasonable potential exists to exceed the temperature criterion during current operating conditions (no ammonia storage) because the maximum effluent temperature reported by Agrium at the Hedges facility was less than the ambient and criterion temperatures.

The facility potentially could restart ammonia storage operations. The restart may result in a thermal load to the effluent. A previous permit writer determined that a discharge of 35,000 gpd of non-contact cooling water at or below 18.3°C to the Columbia River would have no reasonable potential to violate the temperature surface water quality criteria. Ecology could not re-create this analysis, therefore, performed a new reasonable potential analysis on

temperature based on when the Hedges facility was operating as an ammonia storage facility. Ecology used the temperature data submitted on DMRs by Agrium and previous owners of the Hedges facility between August 1998 and December 2004 to represent the temperature of the non-contact cooling water during ammonia storage operations. The maximum non-contact cooling water during ammonia storage operations was 17.22°C which is below the temperature surface water quality criteria and the current ambient river temperature. Therefore, no reasonable potential exists to exceed the temperature criterion during ammonia storage operations.

If Agrium resumes ammonia storage operations at the Hedges facility during the next five-year permit cycle, Ecology will re-evaluate whether or not a reasonable potential to exceed the temperature criterion using updated data from the non-contact cooling water discharge.

H. Human Health

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

Ecology determined that the applicant's discharge: (1) is unlikely to contain chemicals regulated to protect human health, and (2) does not contain chemicals of concern based on existing effluent data or knowledge of discharges to their non-contact cooling water collection system. Ecology will re-evaluate this discharge for impacts to human health at the next permit reissuance.

I. Sediment Quality

The aquatic sediment standards (chapter 173-204 WAC) protect aquatic biota and human health. Under these standards Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400). You can obtain additional information about sediments at the Aquatic Lands Cleanup Unit website: <http://www.ecy.wa.gov/programs/tcp/smu/sediment.html>.

Following a review of the facility characteristics and effluent characteristics, Ecology determined that the groundwater discharge under the current operating scenario and the discharge from restarting ammonia storage activities have no reasonable potential to violate the sediment management standards.

J. Groundwater Quality Limits

The groundwater quality standards (chapter 173-200 WAC) protect beneficial uses of groundwater. Permits issued by Ecology must not allow violations of those standards (WAC 173-200-100). Agrium does not discharge wastewater at the Hedges facility to the ground. No permit limits are required to protect groundwater.

K. Whole Effluent Toxicity

The water quality standards for surface waters forbid discharge of effluent that has the potential to cause toxic effects in the receiving waters. Many toxic pollutants cannot be measured by commonly available detection methods. However, laboratory tests can measure toxicity directly by exposing living organisms to the wastewater and measuring their responses. These tests measure the aggregate toxicity of the whole effluent, so this approach is called WET testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Using the screening criteria in chapter 173-205-040 WAC, Ecology determined that toxic effects caused by unidentified pollutants in the effluent are unlikely. According to chapter 173-205-040(1)(a), effluent characterization is required for facilities that use, store, or produce substances listed in 40 CFR 302.4 with a code of 1 or 2 (ammonia meets this criteria), unless the facility can demonstrate that these substances are kept separate from the wastewater collection, treatment, and discharge at all times. If Agrium restarts ammonia operations at the Hedges facility, the proposed permit requires Agrium to perform an AKART study to demonstrate that the cooling water system is designed and managed so that the ammonia does not come in contact with the effluent. According to chapter 173-205-040(2)(a), once-through non-contact cooling water without biocides is excluded from WET testing unless chapter 173-205-040(1) applies. Therefore, this permit does not require WET testing. Ecology may require WET testing in the future if it receives information indicating that toxicity may be present in this effluent.

L. Comparison of Effluent Limits with the Previous Permit Issued on August 24, 2006

A comparison of the effluent limits from the previous permit and the proposed effluent limits is shown in the table below. The proposed permit is structured to cover two scenarios: 1) the current situation with no ammonia storage activities and 2) the potential situation with ammonia storage operations. In the current situation, there is minimal discharge of groundwater with no significant levels of ammonia, temperature, or other pollutants. There are no effluent limits proposed for this scenario. Effluent limits for pH are included in the proposed permit for the second scenario in which Agrium restarts ammonia storage operations at the Hedges facility.

Table 8 Comparison of Previous and Proposed Effluent Limits

| Parameter | Basis of Limit | Previous Effluent Limits: Outfall 001 | Proposed Effluent Limits: Outfall 001 <u>Scenario 1</u> groundwater discharge only | Proposed Effluent Limits: Outfall 001 <u>Scenario 2</u> discharge from ammonia operations |
|-------------|----------------|---------------------------------------|--|---|
| | | Maximum Daily | | |
| Flow | Operating data | 70,000 gpd | - | - |
| Temperature | Water quality | 65°F (18.3°C) | - | - |
| pH | Technology | 9.0 | - | 9.0 |
| Parameter | Basis of Limit | Minimum Daily | | |
| pH | Technology | 6.0 | - | 6.0 |

IV. Monitoring Requirements

Ecology requires monitoring, recording, and reporting (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and that the discharge complies with the permit's effluent limits. For the groundwater discharge only, Ecology is requiring monitoring for flow only to check that the current condition remains the same. The proposed permit includes monitoring for flow, pH, temperature, and ammonia if Agrium restarts ammonia storage operations at the Hedges facility.

If a facility uses a contract laboratory to monitor wastewater, it must ensure that the laboratory uses the methods and meets or exceeds the method detection levels required by the permit. The permit describes when facilities may use alternative methods. It also describes what to do in certain situations when the laboratory encounters matrix effects. When a facility uses an alternative method as allowed by the permit, it must report the test method, DL, and QL on the discharge monitoring report or in the required report.

A. Wastewater Monitoring

The facility does not have a wastewater treatment system and all manufacturing and storage operations were shut down prior to Ecology's re-authorization of the permit on September 1, 2006. The 2006 permit reissuance retained all limits that were in effect prior to the shut down and did not re-evaluate the permit limits as a result of the shutdown. Since 2006 the facility has demonstrated that it meets all permit limits at the "end of pipe." Ecology re-evaluated the permit limits and monitoring requirements and determined that the discharge

during the current shut down has no reasonable potential to exceed water quality standards. The proposed permit requires monitoring for flow during the shutdown status of the facility. With the current management of the facility, it is unlikely there will be any wastewater or stormwater discharges from the Hedges facility during the next five-year permit cycle.

If Agrium resumes ammonia storage operations at the Hedges facility, Agrium must notify Ecology (see Special Condition S3.I in the proposed permit) 60 days prior to beginning such activities. The proposed permit requires monitoring for flow, temperature, pH, and ammonia for discharges from ammonia storage operations.

The monitoring schedule is detailed in the proposed permit under Special Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. Agrium may petition to reduce the monitoring frequency of any pollutant as specified by Special Condition S2.F in the new permit.

B. Lab Accreditation

Ecology requires that facilities must 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). Agrium uses Mukang Labs, Inc., in Pasco, WA, to analyze wastewater samples from the Hedges facility. Mukang Labs is an off-site accredited laboratory with accreditation number C914-15. This accreditation was last revised on July 3, 2015, expires on July 2, 2015, and is required to be updated every year.

V. Other Permit Conditions

A. Reporting and Record Keeping

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

B. Operation and Maintenance Manual

Ecology requires industries to take all reasonable steps to properly operate and maintain their wastewater treatment system in accordance with state and federal regulations [40 CFR 122.41(e) and WAC 173-220-150 (1)(g)]. Since Agrium does not currently operate a wastewater treatment system at the Hedges facility, implementation of the operation and maintenance manual will ensure systems that discharge to the river will be properly maintained to reduce the potential of exceeding any limits or conditions of the proposed permit. The proposed permit includes requirements related to the operation and maintenance of industrial wastewater facilities including all structures, equipment, or processes required to collect, carry away, treat, reclaim or dispose of industrial wastewater. Although the system is designed to keep non-contact cooling water separate from products, there is potential for product (fertilizer) to enter the non-contact cooling water through spills or leaks. The intent of the operation and maintenance manual is to document how the facility operates and

maintains all systems related to industrial wastewater so pollutants aren't discharged to the receiving waterbody above which is allowed in a waste discharge permit.

The Hedges facility does not have a treatment system and is not designed to have industrial wastewater (only non-contact cooling water). The Hedges facility does have a collection system for the non-contact cooling water. Ecology acknowledges that the standard language in the proposed permit mainly applies to facilities with industrial wastewater and treatment. Ecology determined that Agrium can tailor the operation and maintenance manual to address the requirements that apply to the collection system for the non-contact cooling water. Agrium should document in the operation and maintenance manual which operation and maintenance manual requirements in the proposed permit do not apply to the Hedges facility.

The proposed permit requires Agrium to update the operation and maintenance manual if Agrium resumes storage operations at the Hedges facility.

C. Solid Waste Control Plan

Agrium could cause pollution of the waters of the state at the Hedges facility through inappropriate disposal of solid waste or through the release of leachate from solid waste if Agrium resumes ammonia storage operations at the Hedges facility during the next permit cycle.

Before resuming ammonia storage operations, the proposed permit requires Agrium to update the current KFO solid waste control plan to include the Hedges facility. Agrium must submit the updated plan to Ecology for approval (RCW 90.48.080). You can obtain an Ecology guidance document, which describes how to update a solid waste control plan, at: <http://www.ecy.wa.gov/pubs/0710024.pdf>.

D. Non Routine and Unanticipated Discharges

Occasionally, this facility may generate wastewater which was not characterized in the permit application because it is not a routine discharge and was not anticipated at the time of application. These wastes typically consist of waters used to pressure test storage tanks or fire water systems or leaks from drinking water systems.

The proposed permit authorizes non-routine and unanticipated discharges under certain conditions. Agrium must characterize these wastewaters and examine the opportunities for reuse. Depending on the nature and extent of pollutants in the wastewater and any opportunities for reuse, Ecology may:

- Authorize the facility to discharge the wastewater.
- Require the facility to treat the wastewater.
- Require the facility to reuse the wastewater.

E. Spill Plan

If Agrium resumes ammonia storage operations at the Hedges facility, Agrium could store chemicals on-site that have the potential to cause water pollution if accidentally released. Ecology can require a facility to develop best management plans to prevent this accidental

release [Section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080].

The proposed permit requires Agrium to update the spill plan and submit it to Ecology if Agrium resumes ammonia storage operations at the Hedges facility.

F. Stormwater Pollution Prevention Plan

The proposed permit requires Agrium to update the current KFO stormwater pollution prevention plan (SWPPP) to include the Hedges facility and submit it to Ecology if Agrium resumes ammonia storage operations at the facility.

In accordance with 40 CFR 122.44(k) and 40 CFR 122.44 (s), the proposed permit includes requirements for the development and implementation of a SWPPP along with BMPs to minimize or prevent the discharge of pollutants to waters of the state. BMPs constitute Best Conventional Pollutant Control Technology (BCT) and Best Available Technology Economically Achievable (BAT) for stormwater discharges. Ecology has determined that Agrium must update the SWPPP if Agrium resumes ammonia storage operations at the Hedges facility and implement adequate BMPs at the site in order to meet the requirements of AKART. A SWPPP requires a facility to implement actions necessary to manage stormwater to comply with the state's requirement under chapter 90.48 RCW to protect the beneficial uses of waters of the state.

The SWPPP must identify potential sources of stormwater contamination from industrial activities and identify how it plans to manage those sources of contamination to prevent or minimize contamination of stormwater. Agrium must continuously review and revise the SWPPP as necessary to assure that stormwater discharges do not degrade water quality. It must retain the SWPPP on-site or within reasonable access to the site and available for review by Ecology.

You can obtain a template and guidance to help you update a SWPPP at:
<http://www.ecy.wa.gov/programs/wq/stormwater/industrial/guidance.html> and
<http://fortress.wa.gov/ecy/publications/publications/0410030.pdf>.

Best Management Practices

BMPs are the actions identified in the SWPPP to manage, prevent contamination of, and treat stormwater. 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. BMPs also include treatment systems, operating procedures, and practices used to control plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage. Agrium must ensure that its SWPPP includes the operational and structural source control BMPs listed as “applicable” in Ecology’s stormwater management manuals. Many of these “applicable” BMPs are sector-specific or activity-specific, and are not required at facilities engaged in other industrial sectors or activities.

Ecology-Approved Stormwater Management Manuals

Consistent with RCW 90.48.555 (5) and (6), the proposed permit requires the facility to implement BMPs contained in the *Stormwater Management Manual for Eastern Washington* (2004 edition), or any revisions thereof, or practices that are demonstrably equivalent to practices contained in stormwater technical manuals approved by Ecology. This should ensure that BMPs will prevent violations of state water quality standards, and satisfy the state AKART requirements and the federal technology-based treatment requirements under 40 CFR part 125.3. The SWPPP must document that the BMPs selected provide an equivalent level of pollution prevention, compared to the applicable stormwater management manuals, including the technical basis for the selection for all stormwater BMPs (scientific, technical studies, and/or modeling) which support the performance claims for the BMPs selected.

G. Outfall Evaluation

If Agrium resumes ammonia storage operations, the proposed permit requires Agrium to conduct an outfall inspection at the Hedges facility and submit a report detailing the findings of that inspection. The inspection must evaluate the physical condition of the discharge pipe and the extent of sediment accumulation in the vicinity of the outfall.

H. AKART Study

If Agrium resumes ammonia storage operations, the proposed permit requires Agrium to prepare and submit an AKART study to demonstrate that the non-contact cooling water discharges meet AKART. The most likely sources of pollutants potentially entering in the non-contact cooling water are from leaks and spills. The study will include an evaluation of the current BMPs to determine if those BMPs are adequate to keep pollutants separate from the non-contact cooling water. The study will recommend any changes or new BMPs necessary to achieve AKART. Ecology must make a determination whether a discharge meets AKART. Currently, Ecology does not have enough information to make a determination whether non-contact cooling water discharges at the Hedges facility will meet AKART. The AKART study in the proposed permit will allow Ecology to determine if AKART is met.

I. Effluent Mixing Study

Ecology estimated the amount of mixing of the discharge with receiving water and the potential for the mixture to violate the water quality standards for surface waters at the edges of the mixing zone (chapter 173-201A WAC; see Section III.G, “Evaluation of Surface Water Quality-Based Effluent Limits for Numeric Criteria”). If Agrium resumes ammonia storage operations, the proposed permit requires Agrium to determine the mixing characteristics of the discharge. The effluent mixing study must measure or model the characteristics of the discharge under conditions specified in the permit to assess whether the receiving water quality is protected outside the mixing zone boundary.

J. General Conditions

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

VI. Permit Issuance Procedures

A. Permit Modifications

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

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

B. Proposed Permit Issuance

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

VII. References for Text and Appendices

Environmental Protection Agency (EPA)

2003. *Developing a Temperature Total Maximum Daily Load for the Columbia and Snake Rivers: Simulation Methods*. EPA 910-R-03-003.

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. *Technical Support Document for Water Quality-based Toxics Control*. EPA/505/2-90-001.

1988. *Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling*. USEPA Office of Water, Washington, D.C.

1985. *Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water*. EPA/600/6-85/002a.

1983. *Water Quality Standards Handbook*. USEPA Office of Water, Washington, D.C.

Tsivoglou, E.C., and J.R. Wallace.

1972. *Characterization of Stream Reaeration Capacity*. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

January 2015. *Permit Writer's Manual*. Publication Number 92-109.
<https://fortress.wa.gov/ecy/publications/SummaryPages/92109.html>.

2014. River and Stream Water Quality Monitoring data available on the World Wide Web. Accessed March 2014. www.ecy.wa.gov/programs/eap/fw_riv/rv_main.html.

Fact Sheet for NPDES Permit WA0003699

9/18/2015

Agrium Kennewick Fertilizer Operation – Hedges Facility

Page 35 of 49

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<http://www.ecy.wa.gov/pubs/0710024.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/permits/guidance.html>.

Wright, R.M., and A.J. McDonnell.

1979. *In-stream Deoxygenation Rate Prediction*. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

Appendix A -- Public Involvement Information

Ecology proposes to reissue a permit to Agrium Kennewick Fertilizer Operations – Hedges Facility. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology will place a Public Notice of Draft on September 25, 2015 in The Tri-City Herald and Tú Decides to inform the public and invite comment on the proposed draft National Pollutant Discharge Elimination System 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 request a public hearing of comments about the proposed NPDES permit.
- Explains the next step(s) in the permitting process.

Ecology has published a document entitled *Frequently Asked Questions about Effective Public Commenting* which is available on our website at <https://fortress.wa.gov/ecy/publications/SummaryPages/0307023.html>.

You may obtain further information from Ecology by telephone, (360) 407-6934, or by writing to the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Industrial Section
PO Box 47600
Olympia, WA 98504-7600

The primary author of this permit and fact sheet is Greg Gould.

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 Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 | Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 |
| Pollution Control Hearings Board 1111 Israel RD SW STE 301 Tumwater, WA 98501 | Pollution Control Hearings Board PO Box 40903 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 groundwater from the point of compliance where compliance with the groundwater standards is measured. It may be established in the groundwater 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 (Intermittent) Discharge Limit -- The average of the measured values obtained over a calendar months time taking into account zero discharge days.

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 groundwater 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 BOD₅ 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 -- 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.

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, groundwater, 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 groundwater at the point of compliance for the purpose of regulation, [WAC 173-200-020(11)]. This limit assures that a groundwater 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.

Groundwater -- 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) -- See Method Detection Level.

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.

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.

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.

Point of Compliance -- The location in the groundwater 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 groundwater 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 $(1,2,\text{or } 5) \times 10^n$, 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, non-contact 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 BOD₅ -- 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 BOD₅ 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 BOD₅ 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 Maximum Daily Load (TMDL) -- A determination of the amount of pollutant that a water body can receive and still meet water quality standards.

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 -- Ammonia Criteria Calculations

Based on Chapter 173-201A WAC, amended
 November 20, 2006

| INPUT | |
|---|--------------|
| 1. Receiving Water Temperature (deg C): | 21.12 |
| 2. Receiving Water pH: | 8.61 |
| 3. Is salmonid habitat an existing or designated use? | Yes |
| 4. Are non-salmonid early life stages present or absent? | Present |
| OUTPUT | |
| Using mixed temp and pH at mixing zone boundaries? | no |
| Ratio | 13.500 |
| FT | 1.400 |
| FPH | 1.000 |
| pKa | 9.367 |
| Unionized Fraction | 0.149 |
| Unionized ammonia NH3 criteria (mg/L as NH ₃) | |
| Acute: | 0.315 |
| Chronic: | 0.042 |
| RESULTS | |
| Total ammonia nitrogen criteria (mg/L as N): | |
| Acute: | 1.738 |
| Chronic: | 0.234 |

Appendix E -- Reasonable Potential Calculations

| | |
|----------------------------|------------------------------|
| Facility | Agrium KFO – Hedges Facility |
| Water Body Type | Freshwater |
| Rec. Water Hardness | 68 mg/L |

Dilution Factors:

Acute Chronic

| | | |
|-------------------------------|----|-----|
| Aquatic Life | 55 | 166 |
| Human Health Carcinogenic | | 1 |
| Human Health Non-Carcinogenic | | 1 |

| Pollutant, CAS No. & NPDES Application Ref. No. | | AMMONIA, Criteria as Total NH3 |
|--|---|---|
| <u>Effluent Data</u> | # of Samples (n) | 76 |
| | Coeff of Variation (Cv) | 1.82 |
| | Effluent Concentration, ug/L (95th percentile) | 5,650.0 |
| | Calculated 50th percentile Effluent Conc. (when n>10) | - |
| <u>Receiving Water Data</u> | 90th Percentile Conc., ug/L | 10.0 |
| | Geo Mean, ug/L | - |
| <u>Water Quality Criteria</u> | Aquatic Life <u>Acute</u> Criteria, ug/L | 1,738 |
| | <u>Chronic</u> | 234 |
| | WQ Criteria for Protection of Human Health, ug/L | - |
| | Metal Criteria <u>Acute</u> Translator, decimal | - |
| | <u>Chronic</u> Carcinogen? | - |
| | | N |

Aquatic Life Reasonable Potential

| | | |
|--|--|-----------|
| Effluent percentile value | | 0.950 |
| s | $s^2 = \ln(CV^2 + 1)$ | 1.207 |
| Pn | $Pn = (1 - \text{confidence level})^{1/n}$ | 0.961 |
| Multiplier | | 1.00 |
| Max concentration (ug/L) at edge of... | Acute | 113 |
| | Chronic | 44 |
| Reasonable Potential? Limit Required? | | NO |

Comments/Notes:

References: WAC 173-201A,

Technical Support Document for Water Quality-based Toxics

Control, US EPA, March 1991, EPA/505/2-90-001, pages 56/99

Appendix F -- Response to Comments

Entity Review

Entity review ran from May 12, 2015 to July 13, 2015. The following are significant changes made in this fact sheet and the proposed permit as a result of entity review:

- Section V.B, “Operations and Maintenance Manual” in this fact sheet was updated to address Agrium’s concerns that most of the proposed permit requirements for the operations and maintenance manual do not apply to the Hedges facility. Ecology added language describing why some of the operations and maintenance manual requirements in the proposed permit do not apply. Ecology also added language describing what is expected in Agrium’s operations and maintenance manual.
- Ecology updated the language in V.H, “AKART Study” in this fact sheet to more accurately describe the purpose and requirements of the AKART study in the proposed permit.
- Special Condition S11, “AKART Study” in the proposed permit was updated to more accurately describe the requirements of the AKART study.
- The minimum sampling frequencies for flow, temperature, and pH for the non-contact cooling water discharge during ammonia storage operations was changed from twice a month to monthly. Also, the frequency for ammonia was reduced from weekly to monthly. The initial frequencies were selected before Ecology determined mixing zone dilution factors for the discharge at the Hedges facility. After applying the conservative dilution factors, Ecology determined that the reduced frequencies are sufficient to capture the variability of the discharge and meet water quality and human health standards.

Public Review

Ecology made the draft permit and fact sheet available for public review and comment before issuing the final permit. Copies of the fact sheet and draft permit were available for public review and comment from September 25, 2015 until October 27, 2015. Ecology placed a Public Notice of Draft on September 25, 2015 in The Tri-City Herald and Tú Decides to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System permit and fact sheet. Ecology received no external comments during the public review period.

Based on internal comments, the following change was made to the permit:

- To more align with federal requirements and be consistent with updated boilerplate language, the entire Special Condition S4.B, “Bypass Procedures”, was updated to provide clarification on bypass procedures.