



FACT SHEET

The U.S. Environmental Protection Agency (EPA) Proposes to Issue a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA) to:

**Yakama Nation Legends Casino
Wastewater Treatment Plant**

Mailing/Facility Address: 580 Fort Road
Toppenish, Washington 98948
NPDES Permit Number: WA0026743
Public Comment Start Date: August 21, 2013
Public Comment Expiration Date: September 20, 2013
EPA Contact: Kai Shum
(206) 553-0060

EPA Proposes NPDES Permit Issuance.

EPA proposes to issue an NPDES permit for the Yakama Nation Legends Casino Wastewater Treatment Plant. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This fact sheet includes:

- Information on public comment, public hearing and appeal procedures;
- A description of the discharge(s);
- A listing of proposed effluent limitations and other conditions;
- A listing of proposed receiving water monitoring requirements;
- Technical material supporting the conditions in the permit.

Public Comment

Persons wishing to comment on or request a public hearing concerning the draft NPDES permit may do so in writing by the expiration date of the Public Notice. A request for a public hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described in the Public Comments section of the attached Public Notice.

After the Public Notice expires and all comments have been considered, EPA's regional Director for the Office of Water and Watersheds will make a final determination regarding permit issuance.

If no substantive comments are received, the tentative conditions in the draft permit will become final and the permit will become effective upon issuance. If comments are received, EPA will address the comments and issue the final permit along with a response to comments document. The permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days of the issuance date of the permit.

Documents are Available for Review

The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's regional office in Seattle, Washington between 8:30 a.m. and 4:00 p.m., Monday through Friday.

United States Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900, OWW-130
Seattle, Washington 98101-3140
(206) 553-0060 or 1-800-424-4372 ext 0060 (within Alaska, Idaho, Oregon and Washington).

Draft permits, fact sheets and other information can also be found by visiting EPA Region 10's website at: <http://yosemite.epa.gov/r10/WATER.NSF/NPDES+Permits/Draft+NP787>

The fact sheet and draft permit are also available at the following locations:

United States Environmental Protection Agency
Washington Operations Office
300 Desmond Dr. SE, Suite 102
Lacey, WA 98503
(360) 753-9457

Water Code Administration
Yakama Nation
P.O. Box 151
Toppenish, Washington 98948
Wayne Wiltse, (509) 865-5121, ext. 6123

I. APPLICANT 5

II. FACILITY INFORMATION 5

 A. Facility Description..... 5

 B. Permit History 6

 C. Treatment 6

III. RECEIVING WATER 6

 A. Receiving Water and Low Flow Conditions..... 6

 B. Water Quality Standards 7

 C. Water Quality Limited Streams 12

IV. PROPOSED EFFLUENT LIMITATIONS 13

 A. Basis for Effluent Limitations..... 13

 B. Proposed Effluent Limitations 13

V. MONITORING REQUIREMENTS..... 14

 A. Basis for Effluent and Receiving Water Monitoring Requirements 14

 B. Proposed Effluent Monitoring Requirements 14

 C. Proposed Receiving Water Monitoring 15

VI. SPECIAL CONDITIONS..... 16

 A. Quality Assurance Plan (QAP)..... 16

 B. Sewage Sludge (Biosolids) 16

 C. Sanitary Sewer Overflows and Proper Operation and Maintenance of the Collection System 16

VII. OTHER LEGAL REQUIREMENTS 17

 A. Endangered Species Act of 1973 17

 B. Essential Fish Habitat (EFH) 18

 C. Water Quality Standards Certification..... 18

 D. Interstate Waters 18

 E. Standard Permit Provisions..... 18

 F. Permit Expiration..... 18

 G. Facility Changes or Alterations 18

VIII. REFERENCES 19

IX. ACRONYMS..... 20

APPENDIX A: FACILITY LOCATION 21

APPENDIX B: CALCULATION OF FRESHWATER AMMONIA CRITERIA 24

APPENDIX C: BASIS FOR EFFLUENT LIMITATIONS 26

 A. Statutory and Regulatory Basis for Effluent Limits 26

 B. Technology-Based Effluent Limits 26

 C. Water Quality-Based Effluent Evaluation 27

 D. Antidegradation 32

 E. Pollutant-specific Analysis 37

APPENDIX D: REASONABLE POTENTIAL ANALYSIS & DERIVATION OF WATER QUALITY-BASED EFFLUENT LIMITS 42

 A. Calculate the Wasteload Allocations (WLAs) 46

 B. Derive the maximum daily and average monthly effluent limits 47

APPENDIX E: ENDANGERED SPECIES ACT 50

APPENDIX F: ESSENTIAL FISH HABITAT 51

LIST OF TABLES

TABLE 1: Effluent Discharge Locations

TABLE 2: Yakama Nation Water Quality Criteria (Class III Waters)

TABLE 3: Proposed Effluent Limitations for Outfall 003

TABLE 4: Proposed Monitoring Frequency of Effluent

TABLE 5: Proposed Receiving Water Monitoring

TABLE B1: Ammonia Criteria Summary

TABLE C1: Technology-Based Effluent Guidelines

TABLE D1: Ammonia Reasonable Potential Analysis (concentrations are in mg/L)

TABLE D2: Ammonia Permit Limits

TABLE D3: Comparison of Technology-based Effluent Limits to Water Quality-Based Effluent Limits

LIST OF FIGURES

FIGURE A1: Legends Casino Wastewater Treatment Plant Location

FIGURE A2: Discharge Locations (Option 1: Outfall No. 003; Option 2: Outfall No. 002)

FIGURE A3: Process Flow Diagram of Legends Casino WWTP

I. APPLICANT

This fact sheet provides information on the draft NPDES permit for the following entity:

Yakama Nation Legends Casino
Wastewater Treatment Plant
NPDES Permit Number: WA0026743

Facility Contact:
Frank Whitefoot , Interim Director of Facilities at Yakama Legends Casino
(509) 865-8800, extension 5090

Facility Location and Mailing Address:
580 Fort Road
Toppenish, WA 98948

II. FACILITY INFORMATION

A. Facility Description

The Yakama Nation owns and operates the Yakama Nation Legends Casino Wastewater Treatment Plant (WWTP) located at 580 Fort Road, Toppenish, Yakima County, Washington. The WWTP is within the boundaries of the Yakama Nation tribal land. The WWTP has a design flow of 0.18 million gallons per day (mgd) and currently has an average daily flow rate of approximately 0.051 mgd.

The WWTP consists of a membrane bioreactor (MBR) sewage treatment plant that provides secondary treatment and ultraviolet (UV) disinfection of wastewater. The WWTP receives domestic wastewater from commercial and residential sources. The WWTP serves the Legends Casino (est. 2,200 system users) and Yakama Nation Tribal Complex (est. 1,200 system users) with a total population of approximately 3,400 system users.

The WWTP temporarily discharged treated wastewater effluent through Outfall 001 into a Wapato Irrigation Project (WIP) lateral that eventually connects to WIP Drain No. 4. WIP Drain No. 4 in turn empties into Wanity Slough, which eventually flows into the Yakima River. Operating at the temporary discharge location requires additional maintenance cost; therefore, the Yakama Nation requested two separate, potential outfall locations in the permit application. The two proposed discharge locations are a direct discharge to WIP Drain No. 4 (Option 1); or, direct discharge to Wanity Slough (Option 2). These locations are depicted in Appendix A, Figure A1. The WWTP also intermittently land-applies treated wastewater on the casino lawns (approximately 6.8 acres).

On February 20, 2013, Ray Spencer, then Facilities Director at the Legends Casino indicated in an email that the WWTP decided to discharge to WIP Drain No. 4 (Option 1). On February 22, 2013, Wayne Wiltse from the Yakama Nation Water Code Administration indicated in an email that the WWTP plans to install underground piping for completion by

the end of May, 2013. The installation of new piping would enable the permittee to discharge directly into WIP Drain No. 4.

Currently the WWTP discharges treated wastewater effluent through Outfall 003 into to WIP Drain No. 4 via the completed underground piping.

TABLE 1: Effluent Discharge Locations

<i>Outfall</i>	<i>Latitude, Longitude</i>	<i>Discharge Location</i>	<i>Average Daily Flow</i>
Temporary discharge location:			
Outfall No. 001	46.371466, -120.341052	Irrigation lateral SW of Facility	0.051 mgd
Proposed discharge location:			
Outfall No. 003 (Option 1)	46.367789, -120.335881	WIP Drain No. 4	NA

B. Permit History

On October 13, 2011, EPA received an NPDES permit application for the Legends Casino WWTP. On February 1, 2012, EPA entered into a Compliance Order by Consent between EPA and the Yakama Nation Tribal Gaming Corporation, dba the Yakama Nation Legends Casino, pursuant to Sections 308 and 309 of the Clean Water Act, 33 U.S.C. §§ 1318 and 1319, respectively. The Order requires the WWTP to monitor and report flow, biochemical oxygen demand (BOD5), total suspended solids (TSS), pH, fecal coliform, and temperature until an NPDES permit is issued to the WWTP.

C. Treatment

Influent wastewater flows through a fine screen and into an anoxic basin. After the anoxic basin, wastewater is routed through a pre-aeration basin and into two parallel MBR basins. The MBR systems remove soluble organic material and provide secondary treatment for the wastewater. Effluent from the MBR units flows into a channel for UV disinfection prior to the point of discharge into the irrigation lateral. Settleable and floating solids removed during the course of treatment are thickened and then pumped into the primary and then secondary digester for stabilization. Digester sludge is then dewatered in a belt filter press, and finally dried prior to land application or disposal on Yakama Nation lands.

III. RECEIVING WATER

A. Receiving Water and Low Flow Conditions

Originally in the permit application, the permittee considered two potential discharge locations: one to WIP Drain No. 4 (Outfall No. 003), and the other to Vanity Slough (Outfall No. 002). As stated above, the permittee has decided to discharge to WIP Drain No. 4

through Outfall No. 003. WIP Drain No. 4 discharges into Wanity Slough which eventually flows into the Yakima River. The option to discharge into Wanity Slough through Outfall No. 002 is no longer considered by the WWTP.

WIP Drain No. 4

The proposed discharge location for Outfall No.003 is into WIP Drain No. 4, which runs in the east-west direction south of the WWTP and primarily carries irrigation return flows during the irrigation season (April 1 through October 31), and serves to lower the high water table. EPA believes that WIP Drain No. 4 is an intermittent stream, and does not have information on low flow volumes. Consequently, EPA will assume a worst-case critical low flow of zero for the receiving water, representing occasions when the drainage is dry and effluent makes up the full volume of water in the canal.

B. Water Quality Standards

General Information

Section 301(b)(1)(C) of the Clean Water Act (CWA) requires that NPDES permits contain limitations, including those necessary to meet water quality standards, treatment standards, or schedules of compliance, established pursuant to State law or regulations, or any Federal law or regulation, or required to implement any applicable water quality standard pursuant to the CWA.

Under the CWA implementing regulations, water quality standards consist of designated uses for waterbodies (e.g., aquatic life, contact recreation, etc), numeric or narrative criteria to protect those uses, and an antidegradation policy to maintain water quality (40 Code of Federal Regulations (CFR) Part 131). Such standards serve both as a description of the desired water quality for particular waterbodies and as a means of ensuring that such quality is attained and maintained.

Washington State Water Quality Standards

The discharge to WIP Drain No. 4 occurs in waters of the Yakama Nation. The State of Washington is downstream from the discharge. The State of Washington has EPA-approved water quality standards; however, Washington does not have the authority to issue NPDES permits on tribal lands. Moreover, since Washington does not have Clean Water Act authority on tribal lands or in tribal waters, the Washington water quality standards are not directly applicable within the tribal reservation. EPA regulation at 40 CFR 122.4(d) does, however, prohibit EPA from issuing a permit when the “imposition of conditions cannot ensure compliance with the applicable water quality requirement of all affected states,” including downstream states. Since Washington State waters are approximately 10 miles downstream of the effluent discharge from the Facility, the effluent limitations in this permit are not likely to affect Washington water quality standards provided there is adequate assimilative capacity in the receiving waters on tribal land. However, if the receiving waters already exceed the water quality standard then the effluent limitations in the permit must ensure that Washington water quality standards will be achieved when the discharge reaches

waters under Washington's jurisdiction. This can be achieved by ensuring that the effluent discharge meets the water quality criteria prior to being discharged to the receiving water.

Yakama Nation Tribal Water Quality Standards

In 1987, Congress amended the CWA to add Section 518 which allows the Administrator of EPA to treat a Tribe in the same manner as a State (i.e., commonly referred to as "treatment as a State" (TAS)) for purposes of various Clean Water Act provisions (e.g., implementing the water quality standards program, and developing water quality standards for CWA purposes) provided that the Tribe meets certain eligibility criteria. EPA's implementing regulations at 40 CFR 131.8 contain the criteria in Section 518 of the CWA that Tribes must meet in order to be eligible to administer a water quality standards program. The regulation at 40 CFR 131.8 also establishes procedures for the EPA Regional Administrator to receive and make determinations on Tribal applications.

The Yakama Nation submitted an application for TAS in 1994. However, EPA is awaiting additional information from the Yakama Nation before it can approve the TAS application. In November 2005, the Yakama Nation adopted the *Yakama Nation Water Quality Standards*. However, because the Yakama Nation does not have TAS status, there are no EPA-approved water quality standards for Clean Water Act permitting purposes on the Yakama Nation reservation.

In 1993, EPA issued the *Guidance on EPA's NPDES and Sludge Management Permit Procedures on Federal Indian Reservations* (from Cynthia Dougherty to Water Management Division Directors Regions I – X, November 16, 1993) which set forth EPA's position on NPDES permitting on tribal lands. This memo states that EPA Regions should work with Tribes who have adopted water quality standards not yet approved by EPA to ensure that, to the extent practicable, NPDES permits issued on the reservation achieve compliance with those water quality standards. In addition, the memo states that "[u]ntil a Tribe is authorized under Section 303 [i.e., has TAS], EPA is the certification authority." 40 CFR § 121.21(b) requires that EPA issue 401 certifications where water quality standards have been established but there is no state/agency who has the authority to issue the certification. This regulatory section implements Section 401(d) of the Clean Water Act which requires that a certification set forth the effluent limitations and other limitations and monitoring requirements necessary to assure that the permittee complies with the appropriate sections of the CWA, and with any appropriate requirements of State law.

Given the EPA guidance memo as well as the regulatory/statutory provisions, EPA believes it is appropriate to consider the Yakama Nation water quality standards when determining the applicable designated uses and criteria for WIP Drain No. 4 and the Wanity Slough as long as the water quality standards are consistent with Section 303 of the CWA, as well as EPA's implementing regulations at 40 CFR 131, and they are protective of downstream waters (i.e., Washington State waters).

Moreover, it should be noted that EPA has reviewed the State of Washington WQS and the Yakama Nation WQS and found that they are very similar. As such, EPA has determined

that using the Yakama Nation WQS will be protective of the downstream waters in Washington State.

Designated Uses for Wanity Slough

The Yakama Nation water quality standards consider Wanity Slough to be Class III waters and include a special temperature condition (Yakama Nation WQS 20.1.5.3.1.7). The Yakama Nation's water quality standards apply the following uses to Wanity Slough (Yakama Nation WQS 21.2.3.36):

- Cultural and religious uses
- Anadromous spawning, rearing and migration
- Aquatic life
- Wildlife habitat
- Recreation
- Ground water recharge
- Agricultural water supply and/or drainage
- Livestock watering

Designated Uses for WIP Drain No. 4

WIP Drain No. 4 is part of the Wapato Irrigation Project. The Yakama Nation water quality standards generally classify the Wapato Irrigation Project as Class IV waters (Yakama Nation WQS 21.2.3.37). Class IV waters are protected for: agricultural water supply and/or drainage, livestock watering, and domestic water, but only at the discretion of the Officer-in-Charge. However, the Yakama Nation WQS for Class IV waters (see section 20.1.6.1) state:

“...Note that since their construction, incidental to their designated uses, these waters have been subject to other beneficial uses and sustained or enhanced other resources, notably cultural uses, wildlife... and fisheries. Because the stock water and domestic water designated uses are sensitive uses requiring stringent standards, it is assumed that these standards for Class IV waters shall be of sufficient quality to sustain these additional uses...”

Additionally, the Yakama water quality criteria for Class IV waters, at Section 20.1.6.2, state:

“...waters discharged from Class IV waters into ground waters or a different class of waters shall be of such quality as to ensure that the receiving water is in compliance with the standards assigned to the receiving water...”

WIP Drain No. 4 is a tributary to the Yakima River via Wanity Slough, which are both designated as Class III waters. Therefore, WIP Drain No. 4 will also be considered a Class III waters for the purposes of permit development. The beneficial uses for Class III waters are cultural and religious uses, anadromous spawning, rearing and migration, aquatic life, wildlife habitat, recreation, ground water recharge, agricultural water supply and/or drainage, and livestock watering.

Applicable Water Quality Criteria

The designated uses with the most protective water quality criteria in the Yakama Nation WQS are anadromous spawning, rearing and migration, and cultural and religious uses. The water quality criteria associated with these designated uses will also be protective of the other applicable designated uses (e.g., aquatic life, wildlife habitat, etc).

Water quality criteria for pollutants that are expected to be present at the Legends Casino WWTP are presented in Table 2 below.

TABLE 2: Yakama Nation Water Quality Criteria (Class III Waters)

Parameter	Yakama Nation Water Quality Criteria
pH	pH must be within the range of 6.5 to 8.5 standard units with a human-caused variation within the above range of less than 0.2 standard units (see Yakama Nation WQS 20.1.5.2.4)
Bacteria	E.coli bacteria levels shall 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 10 sample points exist) greater than 200 colonies/100 mL (see Yakama Nation WQS 20.1.5.2.1)
Ammonia	<p><u>WIP Drain No. 4</u> Acute aquatic life criterion = 19.73 mg/L (see Yakama Nation WQS 13.3.3.3) Chronic aquatic life criterion = 5.39 mg/l (see Yakama Nation WQS 13.3.3.3)</p> <p>Total ammonia criteria per the standards applicable to waters on Yakama Nation lands are a function of the 95th percentile receiving water temperature and pH data. Yakama Nation did not provide receiving water information for WIP Drain No. 4 with the permit application for the Legends Casino. In the absence of this information, the conservative WIP Drain No. 4 assumption is that of no flow in WIP Drain No. 4, such that the effluent becomes the receiving water. Effluent temperature and pH results submitted for the period from 1/1/12 through 3/31/12 yielded the following percentiles: the 95th percentile effluent temperature was 20.3°C, and the 95th percentile effluent pH was 7.2 s.u.</p>
Dissolved Oxygen	August 15 – May 31: exceed 10 mg/L to protect salmon spawning June 1 – August 14: exceed 8.5 mg/L (see Yakama Nation WQS 20.1.5.2 and discussion below)
Temperature	During non-irrigation season: temperature shall not exceed a 7-day average daily max of 16°C (60.8°F), with no single daily maximum over 18°C. Although mixing zones are allowed under certain conditions to accommodate discharge, incremental

	<p>increases above background temperature from any single discharge shall not exceed 0.25°C at the downstream end of a mixing zone (see Yakama Nation WQS 20.1.5.2). During irrigation season: 18°C as a 7-day daily average for Wapato Irrigation Project and Wanity Slough with no single daily maximum temperature exceeding 20°C (see Yakama Nation WQS 20.1.5.3.1.7).</p>
<p>Aesthetic Values</p>	<p>All waters, including any established mixing zones, shall be free from substances, materials, floating debris, oil, grease, or scum attributable to any point source discharge or nonpoint source activity that are in amounts sufficient to be visually displeasing, deleterious, a nuisance, or which interfere directly or indirectly with any beneficial use; will settle to form bottom or shoreline deposits which are putrescent, visually displeasing, or otherwise objectionable or will significantly alter the physical, chemical or biological properties of the bottom or shoreline; are in amounts that cause a visible sheen, film, iridescent appearance, or any discoloration of the surface of the water, on any objects in the water, on the adjoining shoreline, or on nearby sediments; produce color, odor taste or other conditions in such a degree as to create a nuisance, impart a detectable “off” flavor in fish or other foods of aquatic origin, or adversely affect the ecosystem; are in concentrations or combinations that will cause or contribute to the growth of aquatic plants or algae to such a degree as to create a nuisance; be visually displeasing; be harmful to human, animal, plant aquatic life or the ecosystem; or otherwise impair the beneficial uses; or will interfere with the propagation of desirable aquatic life species or which undesirably alter the qualitative and quantitative character of the aquatic biota (see Yakama Nation WQS 13.3.2).</p>
<p>Nutrients</p>	<p>To the extent feasible, waters shall be free from excess nutrients that cause or contribute to undesirable or nuisance aquatic life or produce adverse physiological response in humans, animals, or plants as defined below, unless it is determined by the Department that a persistent exceedence of the criteria listed in the following sections is attributable to natural conditions, or conditions unrelated to management actions. Occasional short duration non-compliant nutrient conditions resulting from natural causes, or intermittent high densities of periphyton, macrophytes, or plankton blooms related to fish carcass nutrients, beaver droppings, leaf fall, naturally high concentrations resulting from native soils, or other natural sources typical to the ecoregion, or periodic events, such as floods, shall not be considered as a noncompliant condition for purposes of this title. Nutrient loadings in excess of these criteria resulting from anthropogenic actions, which are addressable by changes in management, (e.g. improved stormwater management practices), shall be considered as non-compliant conditions and</p>

	<p>dealt with accordingly (Yakama Nation 20.1.5.4). Total Phosphorus shall not exceed a median of 30 ug/L as sampled throughout a year (Yakama Nation 20.1.5.4.1). Total Nitrogen shall not exceed a median value of 0.36 mg/L as sampled throughout the year (Yakama Nation 20.1.5.4.2). Periphyton chlorophyll a shall not exceed a yearly median value of 150 mg/m² more than once in ten years to account for natural variations in flow (e.g. 7Q10), solar exposure or other dynamic natural causes, as determined by sampling of representative stream reaches selected by the Department and regularly sampled (Yakama Nation 20.1.5.4.3).</p>
--	--

Other Applicable Water Quality Standards – Mixing Zones

It is not always necessary to meet all water quality criteria within the discharge pipe to protect the integrity of the water body as a whole. Sometimes it is appropriate to allow for ambient concentrations above the criteria in a small area near the outfall. These areas are called mixing zones. Whether to allow mixing zones is a matter of State or Tribal discretion. Mixing zone characteristics should be established to ensure that:

- (1) Mixing zones do not impair the integrity of the water body as a whole;
- (2) There is no lethality to organisms passing through the mixing zone; and
- (3) There are no significant health risks, considering likely pathways of exposure
(*Water Quality Standards Handbook: Second Edition*, Chapter 5, EPA-8238B-94-005a).

Additionally, it is EPA's position that mixing zones should not be authorized for bacteria in rivers and streams (see November 12, 2008 memo from Ephraim King on *Initial Zones of Dilution for Bacteria in Rivers and Streams Designated for Primary Contact Recreation*).

The Yakama Nation Water Quality standards do not allow mixing zones for acute aquatic life criteria (Yakama Nation WQS, 16.3), wetlands, intermittent or ephemeral streams, lakes or ponds. However, the standards do allow a maximum of 20% of the 7Q10 flow for chronic aquatic life criteria (Yakama Nation WQS, Section 16.11.4).

Both the Washington Water Quality Standards and the Yakama Nation Water Quality Standards confer authority to allow a mixing zone to the State and the Tribe, respectively. However, in this case, Washington State does not have jurisdiction over these waters and the Yakama Nation has not received TAS status. For the proposed permit, EPA believes it is not reasonable to allow a mixing zone for the discharge to WIP Drain No. 4 since the 7Q10 low flow is estimated to be zero.

C. Water Quality Limited Streams

A water quality limited segment is any waterbody, or definable portion of a water body, where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards. Data collected in Wanity Slough indicates that the waterbody is not meeting tribal water quality standards for the Yakama Nation for dissolved oxygen.

Section 303(d) of the Clean Water Act requires States to develop a plan, known as a Total Maximum Daily Load management plan (TMDL), for water bodies listed as water quality limited. The TMDL documents the amount of a pollutant a waterbody can assimilate without violating a state's water quality standards and allocates that load to known point sources and nonpoint sources.

In 1997, the State of Washington Department of Ecology issued a Total Maximum Daily Load (TMDL) for sediment and DDT in the Lower Yakima River, waters downstream of Yakama Nation. The State of Washington is in the process of developing an updated TMDL for toxics and published a report on toxics in the Lower Yakima River in 2009. Wanity Slough is not part of the TMDL because it is a tribal waterbody, and the State has no jurisdiction on tribal lands. WIP Drain No. 4 is similarly not included in the Yakima River TMDL. Therefore, the WWTP has no wasteload allocation (WLA).

IV. PROPOSED EFFLUENT LIMITATIONS

A. Basis for Effluent Limitations

In general, the Clean Water Act requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits (see CWA 301(b), 33 USC § 1311(b)). A technology-based effluent limit requires a minimum level of treatment for a point source based on currently available treatment technologies. A water quality-based effluent limit is designed to ensure that the water quality standards of a water body are being met. The bases for the proposed effluent limits and pollutant-specific analyses are provided in Appendices B and C.

B. Proposed Effluent Limitations

The following summarizes the proposed effluent limitations in the draft permit:

1. The effluent pH range must be between 6.5 and 8.5 standard units.
2. For BOD5 and TSS, the monthly average effluent percent removal must not be less than 85 percent.
3. There must be no discharge of floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses.
4. Tables 3 below summarize the remaining proposed effluent limitations (for BOD5, TSS, bacteria, and ammonia).

TABLE 3. Proposed Effluent Limitations for Outfall 003 (WIP Drain No. 4)

Parameters	Average Monthly	Average Weekly	Maximum Daily
BOD5 (mg/L)	30	45	NA
BOD5 (lbs/day)	45	68	NA
TSS (mg/L)	30	45	NA
TSS (lbs/day)	45	68	NA
E. Coli bacteria	100/100mL	NA	200/100mL

(#/100mL ¹)			
Total Ammonia as N (mg/L)	5.0	---	13.1
Total Ammonia as N (lbs/day)	7.5	---	19.7
Note: 1. E.coli bacteria levels shall 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 10 sample points exist) greater than 200 colonies/100 mL (see Yakama Nation WQS 20.1.5.2).			

V. MONITORING REQUIREMENTS

A. Basis for Effluent and Receiving Water Monitoring Requirements

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required in the future, and/or to monitor effluent impacts on the receiving water. Therefore, receiving water and effluent monitoring have been incorporated into the draft permit. The permittee is responsible for conducting the monitoring and for reporting results with Discharge Monitoring Reports (DMRs) to EPA.

B. Proposed Effluent Monitoring Requirements

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the Facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA approved test methods (40 CFR Part 136), and if the Method Detection Limits for the test methods are less than the effluent limits. Table 4 presents the proposed effluent monitoring requirements for the draft permit.

TABLE 4: Proposed Monitoring Frequency of Effluent

Parameter	Sample Location	Sample Frequency	Sample Type
Flow (mgd)	Effluent	Daily	Measure
BOD₅ (mg/L)¹	Influent and effluent	1/week	24-hour composite
TSS (mg/L)¹	Influent and effluent	1/week	24-hour composite
Percent Removal¹ for BOD₅ and TSS	Influent and effluent	1/month	Calculation
Loading for BOD₅ and TSS	Effluent	1/week	Calculation
pH (s.u.)	Effluent	5/week	Grab
E. Coli bacteria (#/100mL)	Effluent	1/week	Grab

Temperature (°C)	Effluent	1/month	Grab
Total Ammonia as N (mg/L)	Effluent	1/ week	24-hour composite
Total Nitrogen (mg/l)	Effluent	1/month	24-hour composite
Total Phosphorus (mg/l)	Effluent	1/month	24-hour composite
NPDES Application Form 2A Section A.12	Effluent	3x/5 years	---
NPDES Application Form 2A Section B.6²	Effluent	3x/5 years	---
<p>Notes:</p> <ol style="list-style-type: none"> 1. The monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month. Effluent and influent sampling must be completed within the same 24-hour period. 2. Per NPDES Application Form 2A Section B.6 (Effluent Testing Data for Facilities Greater Than 0.1 MGD), the facility must monitor the effluent for dissolved oxygen (minimum and monthly average effluent DO); Total Kjeldahl Nitrogen (TKN); Nitrate + Nitrite Nitrogen; Oil and Grease; phosphorus (Total) and Total Dissolved Solids (TDS). 			

C. Proposed Receiving Water Monitoring

The purpose of requiring receiving water monitoring in WIP Drain No. 4 is to determine receiving water quality conditions as part of the effort to evaluate the reasonable potential for the discharge to cause an instream excursion above water quality criteria (40 CFR 122.44). The permittee will select the sampling locations and submit them to the Yakama Nation Environmental Protection Program for approval. The upstream station should be located upstream of the influence of the proposed discharge location into WIP Drain No. 4. The draft permit requires the permittee to conduct surface water monitoring within 180 days of the effective date of the permit, for the entire duration of the permit. Table 5 presents the proposed receiving water monitoring requirements for the draft permit.

TABLE 5: Proposed Receiving Water Monitoring (WIP Drain No. 4)

Parameter	Units	Sampling Frequency	Location
Flow	cfs	1/quarter	Upstream
BOD5	mg/L	1/quarter	Upstream
DO	mg/L	1/quarter	Upstream
pH	s.u.	1/quarter	Upstream
Temperature	°C	1/month	Upstream
Total Ammonia as N	mg/L	1/quarter	Upstream
Tot. Phosphorus as P	ug/L	1/quarter	Upstream
Tot. Nitrogen as N	mg/L	1/quarter	Upstream

VI. SPECIAL CONDITIONS

A. Quality Assurance Plan (QAP)

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop procedures to ensure that the monitoring data submitted is complete, accurate and representative of the environmental or effluent condition. The Facility is required to update and implement a QAP within 60 days of the effective date of the final permit. The QAP must be prepared in accordance with EPA guidance documents (*EPA Requirements for Quality Assurance Project Plans*, EPA/QA/R-5, and (*Guidance for Quality Assurance Project Plans*, EPA/QA/G-5), and consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The QAP must be retained on site and made available to EPA upon request.

B. Sewage Sludge (Biosolids)

Under Section 405 of the Clean Water Act, EPA has the authority to issue biosolids-only permits for the purpose of regulating biosolids. EPA may issue a biosolids-only permit for this Facility at a later date, if appropriate. In the absence of a biosolids-only permit, biosolids management and disposal activities at the Facility are subject to the national standards at 40 CFR 503. The regulations are self- implementing, therefore the permittee must comply with them.

C. Sanitary Sewer Overflows and Proper Operation and Maintenance of the Collection System

Untreated or partially treated discharges from separate sanitary sewer systems are referred to as sanitary sewer overflows (SSOs). SSOs may present serious risks of human exposure when released to certain areas, such as streets, private property, basements, and receiving waters used for drinking water, fishing and shellfishing, or contact recreation. Untreated sewage contains pathogens and other pollutants, which are toxic. SSOs are not authorized under this permit. Pursuant to the NPDES regulations, discharges from separate sanitary sewer systems authorized by NPDES permits must meet effluent limitations that are based upon secondary treatment. Further, discharges must meet any more stringent effluent limitations that are established to meet EPA-approved state water quality standards.

The permit contains language to address SSO reporting and public notice and operation and maintenance of the collection system. The permit requires that the Permittee identify SSO occurrences and their causes. In addition, the permit establishes reporting, record keeping and third party notification of SSOs. Finally, the permit requires proper operation and maintenance of the collection system. The following specific permit conditions apply:

Immediate Reporting - The Permittee is required to notify the EPA of an SSO within 24 hours of the time the Permittee becomes aware of the overflow (See 40 CFR 122.41(l)(6)).

Written Reports - The Permittee is required to provide the EPA a written report within five days of the time it became aware of any overflow that is subject to the immediate reporting provision. (See 40 CFR 122.41(l)(6)(i)).

Third Party Notice – The permit requires that the Permittee establish a process to notify specified third parties of SSOs that may endanger health due to likelihood of human exposure, or of unanticipated bypass and upsets that exceed any effluent limitation in the permit or that may endanger health due to a likelihood of human exposure. The Permittee is required to develop, in consultation with appropriate authorities at the local, county, and/or state level (as applicable), a plan that describes how, under various overflow (and unanticipated bypass and upset) scenarios, the public, as well as other entities, would be notified of overflows that may endanger health. The plan should identify all overflows that would be reported and to whom, and the specific information that would be reported. The plan should include a description of lines of communication and the identities of responsible officials. (See 40 CFR 122.41(i)(6)).

Record Keeping -The Permittee is required to keep records of SSOs. The Permittee must retain the reports submitted to the EPA and other appropriate reports that could include work orders associated with investigation of system problems related to a SSO, and that describe the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the SSO. (See 40 CFR 122.41(j)).

Proper Operation and Maintenance -The permit requires proper operation and maintenance of the collection system. (See 40 CFR 122.41(d) and (e)). SSOs may be indicative of improper operation and maintenance of the collection system. The Permittee may consider the development and implementation of a capacity, management, operation and maintenance (CMOM) program.

The Permittee may refer to *Guide for Evaluating Capacity, Management, Operation, and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems* (EPA 305-B-05-002). This guide identifies some of the criteria used by EPA inspectors to evaluate the management of the collection system, and operation and maintenance program activities. Owners/operators can review their own systems against the checklist (Chapter 3) to reduce the occurrence of sewer overflows and improve or maintain compliance. The CMOM Guide is currently available on the EPA website at: http://www.epa.gov/npdes/pubs/cmom_guide_for_collection_systems.pdf

VII. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act of 1973

Section 7 of the Endangered Species Act requires Federal agencies to consult with the National Oceanic and Atmospheric Administration-Fisheries (NOAA-Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species.

There are three species listed as threatened near the Legends Casino facility: the Middle Columbia River steelhead (*O.mykiss*), Bull trout (*Salvelinus confluentus*), and Ute Ladies'-tresses (*spiranthes diluvialis*).

EPA has determined that the issuance of this permit will have no effect on Bull trout, Mid-Columbia steelhead, or Ute Ladies'-tresses. EPA made the determination that Bull trout are not in the area of the discharge, and Ute Ladies'-tresses are not found within streams and

therefore will not be impacted. Steelhead are within the area of the discharge and EPA made the determination that there will be no effect on steelhead because the draft permit contains effluent limitations based on criteria that are designed to be protective of aquatic life. Further, no mixing zone is being allowed for the discharge.

B. Essential Fish Habitat (EFH)

EFH is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act requires EPA to consult with the NOAA-Fisheries when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. EPA has tentatively determined that the issuance of this permit will not adversely affect any EFH species in the vicinity of the discharge, therefore consultation is not required for this action. See Appendix F for further details.

C. Water Quality Standards Certification

Since the discharge is from a facility located within the boundaries of the Yakama Reservation, and the Tribe is not authorized under Section 303 of the CWA, EPA is the certification authority (see 40 CFR 121.1(e), and 40 CFR 121.21(b)).

D. Interstate Waters

Under Section 401(a)(2) of the CWA, EPA must give notice of this permit action to any affected State. Notice has been given to Washington Department of Ecology. A copy of the proposed permit action has also been provided to the Yakama Nation.

E. Standard Permit Provisions

Sections III, IV, and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements. The regulations cannot be challenged in the context of an NPDES permit action.

F. Permit Expiration

Section 402(1)(B) of the Clean Water Act requires that NPDES permits are issued for a period not to exceed five years. Therefore, this permit will expire five years from the effective date of the permit.

G. Facility Changes or Alterations

In accordance with 40 CFR §122.41(l), the Facility is required to notify EPA and the Yakama Nation Environmental Management Program of any planned physical alteration or operational changes to the Facility. This requirement has been incorporated into the proposed permit to ensure that EPA and the Yakama Nation are notified of any potential increases or changes in the amount of pollutants being discharged and evaluate the impact of the pollutant loading on the receiving water.

VIII. REFERENCES

EPA, 1991. *Technical Support Document for Water Quality-based Toxics Control*. (TSD) U.S. Environmental Protection Agency, Office of Water, EPA/505/2-90-001, March 1991.

EPA, 1993. *Guidance Manual for Developing Best Management Practices (BMP)*. U.S. Environmental Protection Agency, Office of Water, EPA/833/B-93-004.

EPA, 1996. *U.S. EPA NPDES Permit Writer's Manual*. U.S. Environmental Protection Agency, Office of Water, EPA/833/B-96-003.

EPA. 2013. Biological Assessment for the Issuance of the NPDES Discharge Permit for Legends Casino. USEPA Region 10. February 21, 2013.

Tchobanoglous, G and Stensel, D., Metcalf and Eddy, *Wastewater Treatment and Reuse*, 4th Edition, McGraw-Hill, 2003

Water Environment Federation, *Membrane Systems for Wastewater Treatment*, WEF Press, McGraw-Hill, New York, 2006.

WDOE. 2006. *Water Quality Standards for Surface Water of the State of Washington, Chapter 173201A WAC*. Washington State Department of Ecology, November 20, 2006.

Wise, D.R., 2009, Assessment of Eutrophication in the Lower Yakima River Basin, Washington, 2004–07, U.S. Geological Survey Scientific Investigations Report 2009–5078.

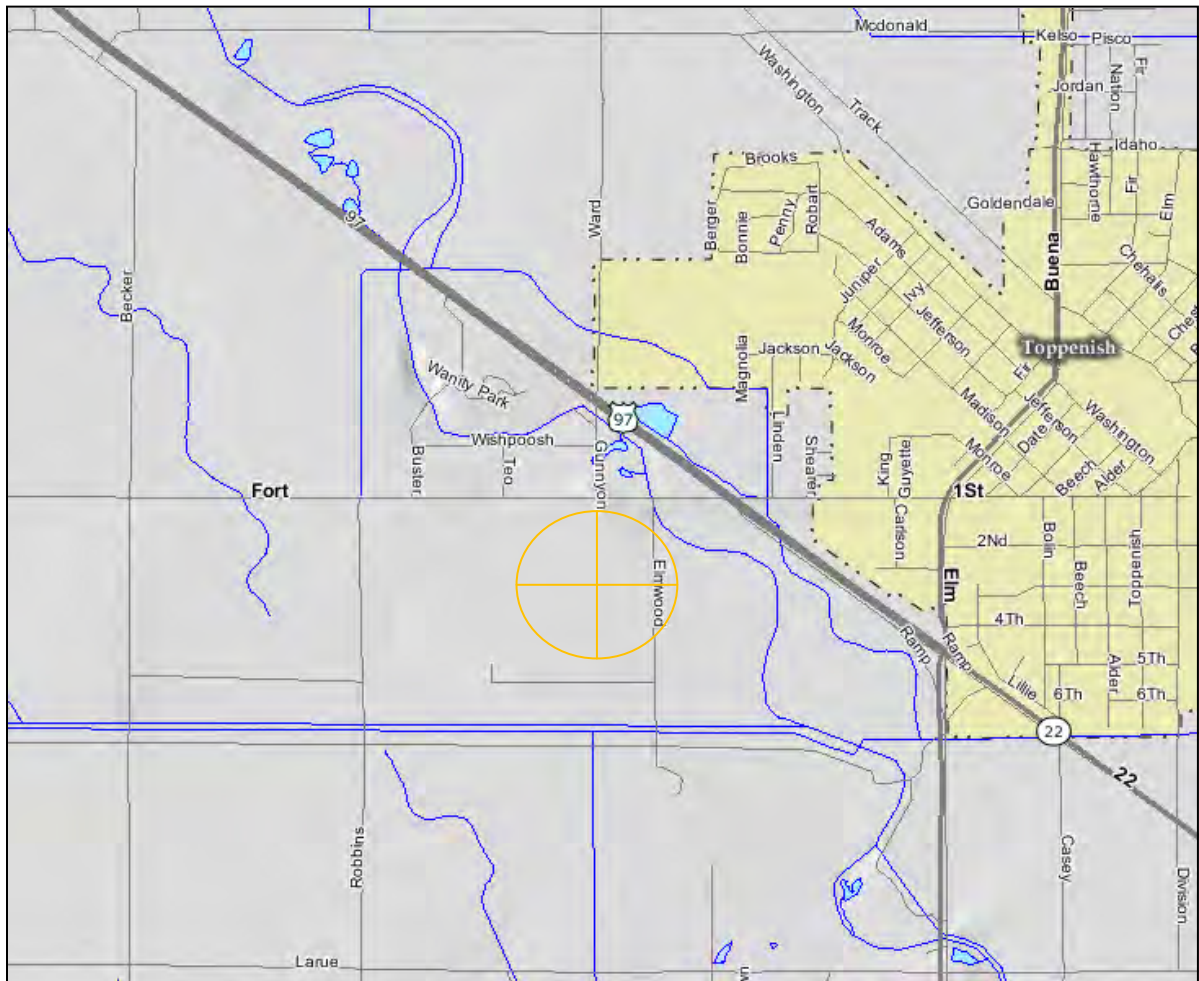
Yakama Nation, 2005. *The Yakama Nation Water Quality Standards, Final Draft*. Yakama Nation Environmental Management Program, November 2005.

IX. ACRONYMS

BMPs	Best management practices
BOD	Biochemical oxygen demand
BOD5	Biochemical oxygen demand, five-day
°C	Degrees Celsius
CFR	Code of Federal Regulations
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
LA	load allocation
lb	pounds
mg/L	milligrams per liter
µg/L	micrograms per liter
mgd	million gallons per day
mL	milliliter
N	Nitrogen
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric turbidity units
OWW	Office of Water and Watersheds
QAP	Quality assurance plan
s.u.	Standard units
sp.	Species
TMDL	Total Maximum Daily Load
TSD	Technical Support Document (EPA, 1991)
TSS	Total Suspended Solids
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WQBEL	Water quality-based effluent limit

APPENDIX A: FACILITY LOCATION

FIGURE A1: Legends Casino Wastewater Treatment Plant Location



(Note: Location of the WWTP is at the crosshair of the map)

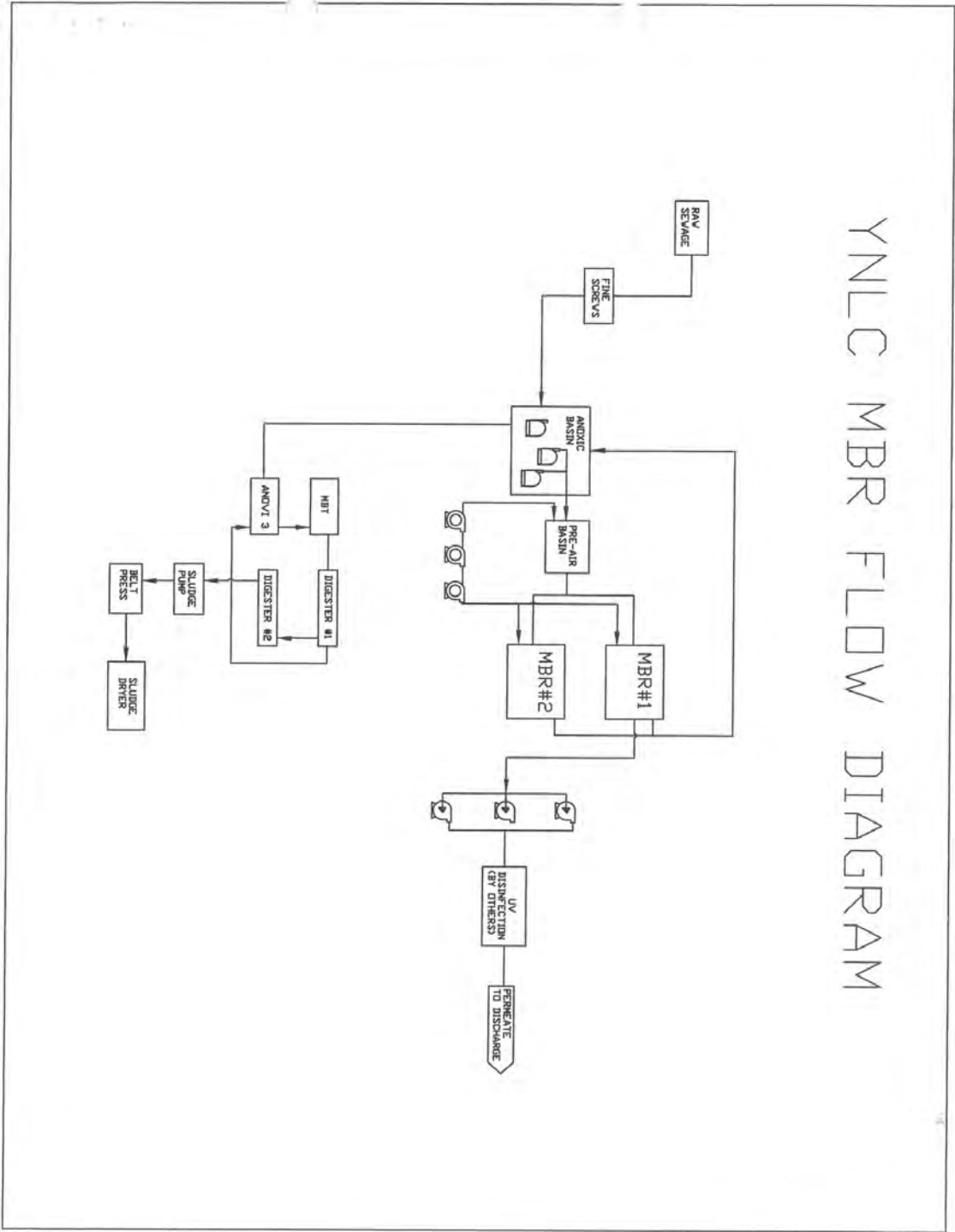
FIGURE A2: Discharge Locations (Option 1: Outfall No. 003; Option 2: Outfall No. 002)



Figure provided by Cory Bradley/Yakama Nation.

Note: The Facility originally proposed to discharge at either Option 1 or Option 2, and has subsequently decided to discharge at Option 1, which discharges via a buried pipeline into WIP Drain No. 4.

Figure A3: Process Flow Diagram of Legends Casino WWTP



APPENDIX B: CALCULATION OF FRESHWATER AMMONIA CRITERIA

FOR OUTFALL No. 003 (WIP Drain No. 4, no dilution, effluent is the receiving water, percentiles are from effluent data for 1/1/12 through 3/31/12):

95th percentile effluent temperature: **20.3°C**

95th percentile effluent pH: **7.2 s.u.**

ACUTE CRITERION

1. The one-hour average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CMC (acute criterion) calculated using the following equation where salmonid fish are present:

$$CMC = \frac{0.275}{1 + 10^{7.204-pH}} + \frac{39.0}{1 + 10^{pH-7.204}}$$

CHRONIC CRITERION

2A. The thirty-day average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CCC (chronic criterion) calculated using the following equation when fish early life stages are present:

$$CCC = \left(\frac{0.0577}{1 + 10^{7.688-pH}} + \frac{2.487}{1 + 10^{pH-7.688}} \right) * MIN(2.85, 1.45 \times 10^{0.028 * (52-T)})$$

2B. In addition, the highest four-day average within the 30-day period should not exceed 2.5 times the CCC.

TABLE B1: Ammonia Criteria Summary

OUTFALL No. 003 – WIP Drain No. 4	
<u>ACUTE CRITERION</u>	
<u>(mg/L):</u>	
<i>1-hr ave tot ammonia must not > CMC > 1X/3yrs on ave:</i>	
Where salmonid fish are present:	19.73
<u>CHRONIC CRITERION</u>	
<u>(mg/L):</u>	
<i>30-day ave tot ammonia must not > CCC > 1X/3yrs on ave:</i>	
When fish early life stages are present:	5.39
<i>max 4-day ave within 30-days shouldn't > (2.5*CCC):</i>	
2.5*CCC present:	13.47

Note: Steelhead (*O. mykiss*) is listed as "threatened" for the Middle Columbia River. Wanity Slough is accessible to Steelhead from this area. Also, the October 15, 2008 federal register lists EFH habitat for Chinook and Coho salmon in the Lower Yakima River, and all streams, estuaries, marine waters, and other waterbodies historically accessible to Chinook and Coho in the Lower Yakima (see 73 FR 60991). Consequently the ammonia criteria selected above are for use when young salmonids may be present.

APPENDIX C: BASIS FOR EFFLUENT LIMITATIONS

A. Statutory and Regulatory Basis for Effluent Limits

Sections 101, 301(b), 304, 308, 401, 402 and 405 of the Clean Water Act provide the statutory basis for establishing the effluent limitations and other conditions in the draft permit. EPA evaluates discharges with respect to these sections of the Clean Water Act as well as the relevant NPDES regulations in determining which conditions to include in the permit.

In general, the EPA first determines which technology-based limits must be incorporated into the permit. EPA then evaluates the effluent quality expected to result from these controls, to see if it could result in any exceedances of the water quality standards in the receiving water. If exceedances could occur, EPA must include water quality-based limits in the permit. The draft permit limits reflect whichever requirements (technology-based or water quality-based) are more stringent. This Appendix describes the technology-based and water quality-based evaluation for the Legends Casino WWTP.

B. Technology-Based Effluent Limits

The 1972 Clean Water Act required publicly owned treatment works (POTWs) to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the Act established a required performance level, referred to as “secondary treatment,” that all POTWs were required to meet by July 1, 1977.

More specifically, Section 301(b)(1)(B) of the Clean Water Act requires that EPA develop secondary treatment standards for POTWs as defined in Section 304(d)(1) of the CWA. Based on this statutory requirement, EPA developed secondary treatment regulations which are specified in 40 CFR Part 133.102. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of five-day biochemical oxygen demand (BOD5), total suspended solids (TSS), and pH and have been included in Table C1.

TABLE C1: Technology-Based Effluent Guidelines

Parameter	Average Monthly	Average Weekly	Percent Removal
BOD5	30 mg/L	45 mg/L	85%
TSS	30 mg/L	45 mg/L	85%
pH	Between 6.0 and 9.0 standard units		

BOD5 and TSS, mass based limits: Federal regulations at (40 CFR § 122.45 (f)) require BOD and TSS limitations to be expressed as mass based limits using the design flow of the Facility. The loading is calculated as follows: concentration x design flow x conversion factor of 8.34.

BOD5 and TSS loading, monthly average = 30 mg/L x 0.18 mgd x 8.34 = 45 lbs/day

BOD5 and TSS loading, weekly average = 45 mg/ L x 0.18 mgd x 8.34 = 68 lbs/day

C. Water Quality-Based Effluent Evaluation

In addition to the technology-based limits discussed above, EPA evaluated the discharge to determine compliance with Section 301(b)(1)(C) of the Clean Water Act. This section requires the establishment of limitations in permits necessary to meet water quality standards by July 1, 1977.

The regulations at 40 CFR 122.44(d)(1) implement Section 301(b)(1)(C) of the Clean Water Act. These regulations require that NPDES permits include limits for all pollutants or parameters which “are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including narrative criteria for water quality”. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation (WLA).

In determining whether water quality-based limits are needed and developing those limits when necessary, EPA uses the approach outlined below:

1. Determine the appropriate water quality criteria;
2. Determine whether there is “reasonable potential” to cause or contribute to an exceedance of water quality criteria;
3. If there is “reasonable potential”, develop a WLA; and
4. Develop effluent limitation based on WLA.

The following sections provide a detailed discussion of each step. Appendix D provides the reasonable potential analysis.

1. Determine Water Quality Criteria

The first step in developing water quality-based limits is to determine the applicable water quality criteria. The applicable criteria for this waterbody are presented in Table 2 of *Section III.B. Water Quality Standards* of this fact sheet.

2. Reasonable Potential Evaluation

To determine if there is “reasonable potential” to cause or contribute to an exceedance of the water quality criteria for a given pollutant, the EPA compares applicable water quality criteria to the maximum expected receiving water concentrations for a particular pollutant. If the expected receiving water concentration exceeds the criteria, there is “reasonable potential” and a water quality-based effluent limit must be included in the permit.

EPA used the recommendations in Chapter 3 of the Technical Support Document for Water Quality-based Toxics Control (TSD, EPA 1991) to conduct this “reasonable potential” analysis for the Legends Casino WWTP. The Reasonable Potential Analysis for ammonia is found in Appendix D.

The maximum expected receiving water concentration C_d is determined using the following mass balance equation.

$$C_d \times Q_d = (C_e \times Q_e) + (C_u \times MZ \times Q_u) \quad (\text{Equation 1})$$

$$C_d = \frac{(C_e \times Q_e) + (C_u \times MZ \times Q_u)}{Q_d} \quad (\text{Equation 2})$$

where,

C_d = receiving water concentration downstream of the effluent discharge

C_e = maximum projected effluent concentration = maximum reported effluent value x reasonable potential multiplier

Q_e = maximum effluent flow

C_u = upstream concentration of pollutant

Q_d = flow downstream of the effluent discharge = $Q_e + (MZ \times Q_u)$

Q_u = upstream flow

MZ = Mixing zone fraction

When no mixing zone is allowed Equation 2 becomes:

$$C_d = C_e \quad (\text{Equation 3})$$

Letters A through D below discuss each of the factors used in the mass balance equation to calculate C_d . Letter E discusses the actual “reasonable potential” calculation.

A. Effluent Concentration (C_e):

The maximum projected effluent concentration (C_e) in the mass balance equation is calculated using the statistical approach recommended in the TSD. The maximum projected effluent concentration is calculated by multiplying the maximum reported effluent concentration by a reasonable potential multiplier (RPM). The reasonable potential multiplier accounts for uncertainty in the data due to a limited data set and effluent variability. The multiplier decreases as the number of data points increases and variability of the data decreases. Variability is measured by the coefficient of variation (CV) of the data. When there are not enough data to reliably determine a CV, the TSD recommends using 0.6 as a default value. A partial listing of reasonable potential multipliers can be found in Table 3-1 of the TSD.

EPA evaluated preliminary discharge monitoring reports (DMRs) from January 2012 through March 2012 submitted under the February 1, 2012 Compliance Order by Consent (Docket Number: CWA-10-2012-0030), as well as data submitted as part of the permit application. See Tables C2 and C3 below for a summary of maximum reported effluent concentrations, reasonable potential multipliers, and maximum projected effluent concentrations.

B. Effluent Flow (Qe):

The effluent flow used in the equation is the Facility's design flow of 0.18 mgd.

C. Upstream Concentration (Cu):

The upstream concentration in the mass balance equation is based on a reasonable worst-case estimate of the pollutant concentration upstream of the Legends Casino WWTP discharge. The 95th percentile of the ambient data is generally used as an estimate of worst-case. These percentiles were calculated for the available data. Where there was no data to determine the ambient concentration, zero was used in the mass balance equation.

D. Upstream Flow (Qu)/Mixing Zone (MZ):

The upstream flow for WIP Drain No. 4 during the non-irrigation period is assumed to be 0 MGD. For purposes of calculating the ammonia criteria, EPA estimated the 30B3 biological criteria by multiplying 1.1 to the 7Q10 value which is 0 MGD, since there is no dilution.

Dischargers are generally not authorized to use the entire upstream flow for dilution of their effluent. The Mixing Zone (MZ) is the fraction of the receiving water available for dilution. The Yakama Nation water quality standards authorize mixing zones and provide mixing zone requirements (Yakama Nation WQS, Section 16).

The Yakama Nation regulation states that the mixing zone must not use more than twenty percent (20%) of the stream flow and, for acute criteria, there must be no mixing zone (Yakama Nation WQS, Section 16.3). The regulation also limits mixing zone dimensions upstream and downstream from the discharge point as well as limiting the percent of the width of the receiving water that is available for mixing. These dimensions of a mixing zone are determined from modeling the receiving water and the effluent. Because the upstream flow is zero, no mixing zone is allocated for the WIP Drain No. 4 discharge.

E. "Reasonable Potential" Calculation:

The calculations at Table D-1, show that there is reasonable potential for the facility to exceed the Water Quality Standards for the ammonia criteria at WIP Drain No. 4.

3. Wasteload Allocation Development

Once EPA has determined that a water quality-based limit is required for a pollutant, the first step in determining a permit limit is development of a wasteload allocation (WLA) for the pollutant. A WLA is the concentration (or loading) of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. Waste Load Allocations can be calculated in different ways such as: based on a mixing zone; based on a WLA established as part of a TMDL; or based on meeting water

quality criteria at “end-of-pipe.” WLAs for this permit were calculated for each proposed discharge location.

The following paragraphs describe the basis for two methods used to develop WLAs for this permit.

i. TMDL-Based Wasteload Allocation

Where the receiving water quality does not meet water quality standards, the wasteload allocation is generally based on a TMDL developed by the State. A TMDL is a determination of the amount of a pollutant from point, non-point, and natural background sources that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risks violating water quality standards.

To ensure that these waters will come into compliance with water quality standards Section 303(d) of the CWA requires States to develop TMDLs for those water bodies that will not meet water quality standards even after the imposition of technology-based effluent limitations. The first step in establishing a TMDL is to determine the assimilative capacity (the loading of pollutant that a water body can assimilate without exceeding water quality standards). The next step is to divide the assimilative capacity into allocations for non-point sources (load allocations), point sources (wasteload allocations), natural background loadings, and a margin of safety to account for any uncertainties. Permit limitations are then developed for point sources that are consistent with the wasteload allocation for the point source.

In this case there are no TMDLs for the receiving water.

ii. Mixing zone-based WLA.

A mixing zone is an area where an effluent discharge undergoes initial dilution. It is an allocated impact zone where water quality criteria can be exceeded as long as acutely toxic conditions are prevented. The Yakama Nation water quality standards authorize mixing zones and provide mixing zone requirements (Yakama Nation WQS, Section 16). The Yakama Nation regulation states that the mixing zone must not use more than twenty percent (20%) of the stream flow for chronic criteria and, for acute criteria, there must be no mixing zone (Yakama Nation WQS, Section 16.3).

In the case where a mixing zone is allowed, the wasteload allocation (WLA) is calculated using a mass balance equation which accounts for effluent flow, available dilution, background concentrations and flow (when known), and the applicable water quality criteria.

Ammonia

In the case where no dilution is available, either because the receiving water exceeds the criteria or because a mixing zone for a particular pollutant has otherwise not been allowed, the criterion becomes the WLA. Establishing the criterion as the WLA ensures

that the permittee does not contribute to any exceedances of the criterion. WLAs were developed based on no mixing zone.

The WLAs corresponding to the ammonia acute criteria were developed based on no mixing zone allowed per Section 16 of the Yakama Nation WQS. The WIP Drain No. 4 discharge has the additional standing of having a 30B3 flow of zero, consequently there is no receiving water available for mixing and the WLA corresponding to the ammonia chronic criteria was based on meeting criteria at the end-of-pipe.

Bacteria

It is EPA's position that mixing zones should not be authorized for bacteria in rivers and streams (see November 12, 2008 memo from Ephraim King on Initial Zones of Dilution for Bacteria in Rivers and Streams Designated for Primary Contact Recreation). For the purposes of this section, the Yakama Nation "religious uses" designation for Class III waters can be equated to a primary contact recreation use. Therefore, even if there was assimilative capacity in the receiving water a mixing zone would not be authorized for bacteria.

pH

A mixing zone has not been allowed for pH, as the Facility is capable of meeting the criteria at the end-of-pipe.

4. Permit Limit Derivation

Once the WLA has been developed, EPA applies the statistical permit limit derivation approach described in Chapter 5 of the TSD to obtain daily maximum and monthly average permit limits. This approach takes into account effluent variability (through the CV), sampling frequency, and the difference in timeframes between the monthly average and daily maximum limits.

The daily maximum limit is based on the CV of the data and the probability basis, while the monthly average limit is dependent on these two variables and the monitoring frequency. As recommended in the TSD, EPA used a probability basis of 95 percent for monthly average limit calculation and 99 percent for the daily maximum limit calculation. As with the reasonable potential calculation, when there were not enough data to calculate a CV, EPA assumed a CV of 0.6 for both monthly average and daily maximum calculations. See Appendix D for development of water quality based effluent limits. The NPDES regulations at 40 CFR 122.45(d) require that permit limits for publicly owned treatment works (POTW) be expressed as average monthly limits (AMLs) and average weekly limits (AWLs) unless impracticable. Additionally, federal regulations do not prohibit a Permittee from increasing their sampling events above what is required in an NPDES permit. The final permit contains an average monthly limit and a maximum daily limit for ammonia.

D. ANTIDegradation

Overview

EPA is required under Section 301(b)(1)(C) of the Clean Water Act (CWA) and implementing regulations (40 CFR 122.4(d) and 122.44(d)) to establish conditions in NPDES permits that ensure compliance with State and tribal water quality standards, including antidegradation requirements. In the Yakama Nation water quality standards, the applicable antidegradation standard is as follows: “Existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected. Where designated uses of the waterbody are impaired, there shall be no further lowering of the water quality with respect to the pollutant or pollutants which cause the impairment (Yakama Nation Water Quality Standards, 14.1.2).”

The antidegradation policy of the Yakama Nation is divided into three tiers of protection:

- Tier 1 - maintain and protect existing in-stream water uses and the water quality necessary to protect such existing uses whether or not such uses are included in the water quality standards as was explained in Section 2.0.3. This applies a minimum level of protection to all waters addressed in these standards.
- Tier 2 - maintain and protect those waters where the existing water quality is better for any parameter of the water quality criteria as set forth in the standards. Such water quality must be maintained and protected unless the Yakama Nation finds that allowing lower water quality for any parameter to what is established in the standards is necessary for important economic or social development in the area in which the waters are located.
- Tier 3 - maintain and protect high quality waters that constitute an outstanding national resource such as waters of exceptional cultural, recreational or ecological significance, such as springs used as drinking water, other cultural or religious uses or exceptionally high quality waters vital to a proper functioning ecosystem.

Existing in-stream uses

WIP Drain No. 4 is an irrigation ditch that feeds into the Wanity Slough (and eventually the Yakima River beyond). The Yakama Nation water quality standards designate irrigation ditches and canals as Class IV waters (Yakama Nation WQS 20.1.6.). However, the Yakama Nation water quality standards have a site-specific temperature and water use condition for Wanity Slough that provides Class III protections because of the presence of salmonids in the irrigation system. The standards state that, “...Wanity Slough, although a natural waterway, is interconnected with the irrigation system, and is populated by salmonids, hence the same temperature variance applied to Marion and Harrah Drains shall apply as an interim temperature standard until such time as the Yakima River basin Water Enhancement Project actions eliminate the need for interconnection with the WIP irrigation system; at that time the interim temperature standard shall no longer apply and Wanity Slough shall be considered as a regular Class III water for purposes on this Title (20.1.5.3.1.7).” Therefore, Class III

beneficial uses apply in WIP Drain No. 4 and in Wanity Slough. This includes the following beneficial uses: cultural and religious uses, salmonid rearing and spawning, wildlife habitat, and agricultural and industrial water supply (20.1.5.1).

EPA Antidegradation Determination

At the time of the writing of this permit, there were no TMDL's directly applicable to the Legends Casino WWTP. The effluent limits in the draft permit are considered adequately stringent to ensure that existing uses are maintained and protected consistent with the requirements of 40 CFR 131.12(a)(1) and Yakama Nation WQS 14.1.2 (Tier 1). The draft permit does not allow lower water quality for those parameters where the receiving water quality "exceeds levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water" (Tier 2). The antidegradation policy for outstanding resource waters (Tier 3) is not applicable in this permit because Yakama Nation did not designate WIP Drain No. 4 or the Wanity Slough as an "outstanding resource water" (Yakama Nation WQS 14.1.4).

As explained in detail below, the permit ensures that "the existing in stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected" consistent with the requirements of 40 CFR 131.12(a)(1) and WQS section 14.1.2. In addition, the permit does not allow lower water quality for those parameters where the receiving water quality "exceeds levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water," consistent with the requirements of 40 CFR 131.12(a)(2) and WQS section 14.1.3.

The draft permit ensures compliance with the Yakama Nation's antidegradation policy and CWA regulations because the permit conditions ensure protection of existing uses and do not allow lower water quality. Under the circumstances of this draft permit, EPA may issue an NPDES permit even though the Yakama Nation has not yet identified methods for implementing its antidegradation policy. In its antidegradation analysis below, EPA is applying a parameter-by-parameter approach in determining compliance with Yakama Nation's antidegradation requirements.

EPA Antidegradation Analysis

Protection of Existing Uses or Tier I (WQS Section 14.1.2 and 40 CFR 131.12(a)(1))

The WQS indicate Wanity Slough and WIP Drain No. 4 as Class III waterbodies, with a site-specific temperature criterion (WQS section 20.1.5.3.1.7). Class III waters are protected for the following designated uses: cultural and religious uses, anadromous and resident fish migration, spawning and rearing for those species historically found in these waters, support of aquatic life dependent upon the water quality criteria, wildlife habitat, recreation, ground water recharge, agricultural water supply, livestock watering, and industrial water supply (WQS Section 20.1.5.1).

The effluent limits in the draft permit ensure compliance with numeric and narrative water quality criteria. The numeric and narrative water quality criteria are set at levels that ensure protection of the designated uses. As there is no information indicating the presence of existing beneficial uses in either Wanity Slough or WIP Drain No. 4, other than those that are designated, the draft permit ensures a level of water quality necessary to protect the

designated uses and, in compliance with section 14.1.2 of the WQS and 40 CFR 131.12(a)(1), also ensures that the level of water quality necessary to protect existing uses is maintained and protected.

If EPA receives information during the public comment period demonstrating that there are existing uses in the Wanity Slough or WIP Drain No. 4 other than those that are designated, EPA will consider this information before issuing a final permit and will establish additional or more stringent permit conditions if necessary to ensure protection of existing uses.

High Quality Waters or Tier II (WQS Section 14.1.3 and 40 CFR 131.12(a)(2))

For any parameter for which the water quality exceeds that level necessary to support the designated uses, the propagation of fish and wildlife, recreation in and on the waters, and cultural uses, that water shall be considered of high quality for that parameter and that quality shall be maintained and protected unless the Yakama Nation finds that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located (WQS section 14.1.3, 40 CFR 131.12(a)(2)).

Unlike the State of Washington, the Yakama Nation has not identified implementation methods for its antidegradation policy that define how an antidegradation evaluation should be performed. To ensure consistency with other permits issued in the State of Washington, EPA has used the State of Washington's implementation methods as guidance when interpreting the Yakama Nation's Tier II antidegradation policy. The State of Washington requires an analysis to determine if allowing lower water quality is necessary for important economic and social development in the area in which the waters are located when an action has the potential to cause a measurable change in the physical, chemical, or biological quality of a waterbody (WAC 173-201A-320(3)). The Yakama Nation may also make a finding that allowing lower water quality is necessary for important economic and social development (WAC 173-201A-320(4)).

A facility must prepare a Tier II analysis when the facility is planning a new or expanded action that has the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone. A Tier II analysis consists of an evaluation of whether or not the proposed action is both necessary and in the overriding public interest. A Tier II analysis focuses on evaluating feasible alternatives that would eliminate or significantly reduce the level of degradation. The analysis also includes a review of the benefits and costs associated with the lowering of water quality. New discharges and facility expansions are prohibited from lowering water quality without providing overriding public benefits.

The effluent from the facility is a new discharge to WIP Drain No. 4, and therefore is considered a new or expanded source of pollution. WIP Drain No. 4 discharges to Wanity Slough, and is believed to be representative of an intermittent effluent dominated stream. Accordingly, EPA evaluated whether a Tier II analysis would be necessary only for Wanity Slough. If a discharge has the potential to cause measurable change degradation to existing water quality at the edge of the chronic mixing zone, the facility would then need to conduct a full Tier II analysis. EPA estimated the ammonia chronic dilution factor in Wanity Slough to be 8.92 (based on a 30Q3 of 8.03mgd, 20% stream flow, and the facility's design flow of 0.18 mgd).

Ecology water quality standards define a measurable change to include:

- (a) *Temperature increase of 0.3°C or greater;*
- (b) *Dissolved oxygen decrease of 0.2 mg/L or greater;*
- (c) *Bacteria level increase of 2 cfu/100 mL or greater;*
- (d) *pH change of 0.1 units or greater;*
- (e) *Turbidity increase of 0.5 NTU or greater; or*
- (f) *Any detectable increase in the concentration of a toxic or radioactive substance.*

To determine what is measurable, EPA evaluated the expected change for each parameter at the edge of the chronic mixing zone. EPA determined that a Tier II analysis was **not** required because this facility will not cause measurable change to existing water quality at the edge of the chronic mixing zone. An explanation of EPA's Tier II eligibility analysis is below.

(a) Temperature

According to the facility's permit application, during the summer season, the maximum temperature of the effluent was 26.8 °C at the facility. However, the outfall pipe extending from the WWTP to the receiving water is considerable, possibly greater than 1000 feet which could impact the temperature of the effluent before it is discharged to the receiving water. The EPA has no receiving temperature data for WIP Drain No. 4; therefore, EPA is requiring the facility to monitor effluent and receiving water temperatures at the point of discharge to access compliance with WQS during the next permit cycle. Until more definitive site specific temperature data becomes available, EPA currently estimates that the effluent would not cause a temperature increase of 0.3°C or greater in Wanity Slough and therefore this parameter does not trigger the Tier II antidegradation analysis.

(b) Dissolved oxygen (DO)

MBR systems produce high quality effluent that is low in biochemical oxygen demand (BOD). In fact, the facility produced an average BOD of 10 mg/l according to its application. The facility is a minor discharger, with a design flow of 0.18 mgd. Its effluent is relatively low in BOD. Therefore, the facility's discharge is not expected to have the potential to cause a measurable depression of dissolved oxygen (0.2 mg/L or greater) at the edge of the chronic mixing area.

For dissolved oxygen, the point of compliance for determining if a measurable change would occur is at the point of maximum oxygen depletion (caused by an increase in BOD and nutrients)- this often occurs many miles down gradient. Since the point of maximum oxygen depletion occurs miles down gradient, the dilution factor will be even greater. Therefore, the facility's discharge will not cause any measurable change of dissolved oxygen in the near or far field and therefore this parameter does not trigger the Tier II antidegradation analysis.

(c) Bacteria

The facility utilizes UV disinfection, which is a method of disinfection where bacteria counts can be greatly reduced. According to the permit application, the average effluent has fecal coliform of less than 1 colony/100 ml. Given the receiving water's dilution factor and the fact that this facility treats wastewater with MBRs and UV disinfection, the WWTP does not have potential to cause a bacteria level increase of 2 cfu/100 mL or greater. Therefore, it will not cause measurable change to existing water quality at the edge of the chronic mixing zone and therefore this parameter does not trigger the Tier II antidegradation analysis.

(d) pH

The permit requires the facility to discharge effluent in the range from 6.5 to 8.5 standard units. Using the nearby Harrah Drain for comparison, the 5th percentile pH in the Harrah Drain is 7.5 standard units and the 95th percentile pH is 8.08 standard units. Thus, the pH of the permit limit range is similar to the expected pH range of the receiving water. Given a dilution factor is applicable, EPA therefore does not expect the effluent to change the pH of the receiving water by more than 0.1 standard units. Therefore, this parameter does not trigger the Tier II antidegradation analysis.

(e) Turbidity

Per Ecology's guidance, EPA assumed turbidity to have a linear relationship to dilution. For example, if there were a dilution factor of 100, effluent turbidity would need to exceed 50 NTU to indicate potential to cause a measurable lowering of water quality. In this case, the dilution factor is 9, accordingly, effluent turbidity would need to exceed 4.5 NTU to indicate potential to cause a measurable lowering of water quality. Even though turbidity data at the point of discharge is not known since the outfall is not yet constructed, any turbidity caused by the effluent is not expected to be measurable. The parameter associated with turbidity is TSS, and it is known that this plant produces very low TSS in its effluent, as would be expected of a WWTP that utilizes MBR technology. According to the permit application, the plant produces effluent with a maximum TSS of 2 mg/l, and the average TSS discharged is <1 mg/l. Therefore, with a low TSS discharge, this facility does not have the expected potential to cause a turbidity increase of 0.5 NTU or greater; and, therefore this parameter does not trigger the Tier II antidegradation analysis.

(f) Toxic or radioactive substances

Ecology provides guidance for estimating whether a new discharge would have the potential to cause a measurable degradation of water quality due to toxic substances. The first step is to estimate the concentrations of toxic pollutants at the edge of a chronic mixing zone. This procedure is based on the premise that the quantification level associated with the analytical method yielding the lowest detection level represents measurable degradation under Tier II for toxics. If the estimated concentration is below the method with the lowest detection level, then no Tier II analysis is required. In the case of this permit, ammonia is the only toxic substance of concern.

The analytical method yielding the lowest detection limit that is approved for use in surface water analysis by the EPA is Method 350.1, —Determination of Ammonia Nitrogen by Semi-automated Colorimetry. The applicable range is 0.01-2.0 mg/L NH₃ as N. In accordance with Ecology's guidance, the average monthly limit was divided by the ammonia dilution factor at Wanity Slough (i.e., 8.92).

$$5.0 \text{ mg/L} / 8.92 = 0.56 \text{ mg/L}$$

Because the resulting value is less than the upper end of the method detection limit as provided by the most sensitive analytical method, therefore, Tier II antidegradation analysis is not needed.

Antidegradation Summary

Effluent limitations in the permit ensure that those parameters meet WQS. In addition, all the other pollutants present in the discharge that are not limited in the permit, and where there is no factual basis to expect that those pollutants will be discharged in greater amounts under the permit than were authorized by WQS.

As explained above, the effluent limits in the draft permit are adequately stringent to ensure that existing uses are maintained and protected, in compliance with Yakama Nation water quality standards and 40 CFR 131.12(a)(1). In addition, the effluent limits in the permit are as stringent as or more stringent as applicable WQS, that do not allow lower water quality, therefore, is in compliance with Yakama Nation Section 14 and 40 CFR 131.12(a)(2). The Yakama Nation may also make a finding that allowing lower water quality is necessary for important economic and social development.

E. Pollutant-specific Analysis

The following parameters have been evaluated for compliance with technology and water quality-based criteria. The more stringent criteria has been included in the draft permit when applicable.

1. Biochemical Oxygen Demand and Total Suspended Solids

BOD₅ and TSS are typically limited by standard technology-based criteria for secondary treatment. These criteria include a weekly average limit of 45 mg/L and a monthly average limit of 30 mg/L. The technology-based limits also include a requirement for 85% removal of BOD₅ and TSS. Compliance with the removal requirement is determined using 30-day average concentrations.

Monthly effluent samples for BOD₅ and TSS at the time of permit development showed very high % removals (in excess of the required 85% removals) and compliance with the 30 mg/L monthly average and 45 mg/L weekly average effluent limits.

Federal regulations (40 CFR § 122.45 (b) and 122.45 (f)) require BOD₅ and TSS limitations to be expressed as mass-based limits using the design flow (0.18 mgd) of the Facility. The mass loading is calculated as follows:

[concentration-based limit] x [design flow] x [conversion factor (8.34)] = mass-based limit

Consequently, the Facility's BOD5 and TSS mass-based limits are as follows:

BOD5 and TSS loading, monthly average = 30 mg/L x 0.18 mgd x 8.34 = 45 lbs/day

BOD5 and TSS loading, weekly average = 45 mg/L x 0.18 mgd x 8.34 = 68 lbs/day

2. Dissolved Oxygen (DO)

For Class III waters, the Yakama Nation requires a DO concentration of 10 mg/L from August 15 through May 31st to protect salmonid spawning, and a DO concentration of 8.5 mg/L from June 1 through August 14th.

Effluent dissolved oxygen data provided with the permit application indicates that the Legends Casino WWTP has discharged DO at a max daily concentration of 5.86 mg/L, with an average daily effluent concentration of 2.12 mg/L dissolved oxygen. The effluent does not meet DO criteria the point of discharge, and only has dilution available in the case of the chronic mixing zone for Outfall No. 002 (the discharge to Wanity Slough).

The Washington Beef permit (NPDES Permit No. WA0050203) covers a discharge to Wanity Slough approximately half mile downstream of the proposed Legends Casino WWTP discharge. The Washington Beef Fact Sheet states that on July 23, 1993 a stream survey of Wanity Slough was conducted to determine receiving water characteristics. In-stream vertically-averaged concentrations of dissolved oxygen were between 9.09 mg/L and 11.2 mg/L throughout the stream study area. These values are between 102.2% saturation and 119.1% saturation. It was postulated that the supersaturated DO values were due to large populations of rooted aquatic plants, which were observed throughout the stream. While supersaturation (i.e., greater than 100% saturation) sounds good it can indicate problems such as excessive plant growth. Aquatic plants produce oxygen by photosynthesis during daylight hours but they also use oxygen for respiration. During the night or on heavily overcast days, respiration removes oxygen from the water while photosynthesis stops or drastically slows down. Oxygen depletion in the water can occur, during the night or heavily overcast days, because of heavy plant growth. These wide daily fluctuations of DO can be stressful to aquatic organisms.

Dissolved oxygen data was collected by the Yakama Nation Water Resources Planning Program from March 1990 through April 1991. This data was collected upstream of Lateral 4, and just downstream of the Washington Beef facility. Dissolved oxygen levels varied from 6.2 mg/L to 11.4 mg/L but did not exhibit an explicit flow period or seasonal relationship. Based on this data, it can be concluded that Wanity Slough does not always meet Yakama Nation water quality standards.

Dissolved oxygen is a characteristic of a water body that can be affected by several different parameters such as temperature, physical characteristics (e.g. stream velocities, sediments), nutrients, sunlight, ammonia, etc. Because any oxygen demanding material or

nutrients can negatively affect dissolved oxygen, meeting the criterion without allowing some insignificant decrease in dissolved oxygen would require disallowing any discharge of any pollutant that would affect dissolved oxygen. Therefore, EPA will require the Facility to control BOD5 and DO concentrations such that the discharge has a non-measurable effect on dissolved oxygen levels in the water. Washington State describes a measurable change in DO as a decrease in DO of 0.2 mg/L (see WAC 173-201A-320). EPA considers this to be a reasonable measure of DO impact for application in this case. When evaluating the impact on DO of a discharge at Outfall No. 003 (where WIP Drain No. 4 constitutes the receiving water) recall that, in the absence of background flow data, WIP Drain No. 4 was assumed to have a critical low flow of 0 mgd. In this most conservative case, effluent constitutes 100% of flow in the drain. This removes the basis for directly monitoring upstream and downstream DO to check for a 0.2 mg/L decline (as the assumption is no upstream flow). No minimum limit has been proposed for Outfall No. 003. The effluent DO concentration reported in the application was 5.86 mg/L (max daily) and 2.12 mg/L (ave daily).

3. Temperature

The Yakama Nation water quality standards for temperature are as follows:

During non-irrigation season: 16°C as a 7-day daily average with no single daily maximum temperature exceeding 18°C. (see Yakama Nation WQS 20.1.5.2)

During irrigation season: 18°C as a 7-day daily average for Wapato Irrigation Project and Wanity Slough with no single daily maximum temperature exceeding 20°C. (see Yakama Nation WQS 20.1.5.3.1.7).

The Facility proposes to discharge at WIP Drain No. 4, which is approximately a quarter mile from the Facility (through underground piping). Due to heat dissipation, temperature of the discharge would likely change from the last treatment unit prior to discharge at the waterbody. The temperature standard is intended to protect uses in the waterbody, therefore, to determine if the effluent would cause a violation of the temperature standard, effluent monitoring for temperature is proposed to be located at the end of pipe, immediately prior to discharge to the waterbody. The effluent temperature data and the ambient temperature data collected would be used to determine if effluent limitations for temperature is necessary for the next permit cycle.

Insufficient ambient temperature monitoring data exists to conclude reasonable potential to exceed criteria in WIP Drain No. 4. The proposed permit includes effluent temperature monitoring requirement at the point of discharge. Ambient temperature monitoring has been incorporated into the draft permit to help determine if effluent limits for temperature may be necessary in the next permit cycle.

4. Bacteria

The Yakama Nation's Water Quality Criteria for bacteria: E.coli bacteria levels shall 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 10 sample points exist) greater than 200 colonies/100 mL (see Yakama Nation WQS 20.1.5.2.1)

Mixing zones for bacteria were not considered appropriate for WIP Drain No. 4. It is EPA's position that mixing zones should not be authorized for bacteria in rivers and streams. Further, there is no assimilative capacity in the potential receiving waters. At WIP Drain No. 4, the low flow is assumed to be zero so therefore there is no dilution.

The February 2012 Compliance Order required fecal coliform monitoring of effluent from the Legends Casino WWTP. EPA evaluated 13 bacterial sample results from discharge monitoring reports (DMRs) from January 2012 through March 2012. All fecal coliform measurements from this period indicated bacteria counts of no more than 1 cfu/100mL in the effluent. Therefore, the facility should be able to meet the end of pipe E. coli limits.

5. Total Ammonia (as N)

In order to ensure that ammonia limits are protective of all life stages of fish, EPA applied ammonia criteria which are protective of salmonids, including early life stages, at both discharge locations. The ammonia criteria are pH and temperature dependent, as is the toxicity of ammonia. Appendix B contains the ammonia criteria calculations; Appendix D contains the reasonable potential analysis and water quality-based effluent limits. The maximum effluent ammonia concentration reported with the permit application was 4.8 mg/L, which was sufficiently high to result in a finding of reasonable potential to exceed applicable water quality standards for ammonia in the receiving waters of both proposed discharge locations. The draft permit proposes water quality-based effluent ammonia limits for Outfall No. 003.

Outfall No. 003 (WIP Drain No. 4)

The calculated ammonia criteria for Outfall No. 003 are as follows: 19.73 mg/L (acute zone) and 5.39 mg/L (chronic zone). The average monthly ammonia effluent limit assigned to Outfall No. 003 is 5.0 mg/l (based on 5.0037 mg/L), accordingly, with mass loading limit of 7.5 lbs/day ($5.0 \text{ mg/l} \times 0.18 \text{ mgd} \times 8.34 = 7.5 \text{ lbs/day}$). The maximum daily ammonia effluent limit is 13.1 mg/l (based on 13.099 mg/L), accordingly, with mass loading limit of 19.7 lbs/day ($13.1 \text{ mg/l} \times 0.18 \text{ mgd} \times 8.34 = 19.7 \text{ lbs/day}$).

6. pH

In addition to limits on BOD5 and TSS, 40 CFR 133.102 requires that effluent pH be within the range of 6.0 to 9.0 s.u. for POTWs. Furthermore, the Yakama Nation water quality standards for protection of Class III waters requires pH to be between 6.5 to 8.5

standard units with a human-caused variation within the above range of less than 0.2 standard units (see Yakama Nation WQS 20.1.5.2). The draft permit introduces pH effluent limits of 6.5 to 8.5 standard units. EPA evaluated 66 pH sample results from discharge monitoring reports (DMRs) from January 2012 through March 2012. All results reported were within the necessary range for Class III waters.

7. Aesthetic Values

The Yakama Nation water quality standards (Yakama Nation WQS 13.3.2) require that surface waters remain free from substances, materials, floating debris, oil, grease, or scum attributable to any point source discharge or nonpoint source activity that are in objectionable amounts. The draft permit includes requirements that restrict the impairment of aesthetic values. There must be no discharge of floating, suspended, or submerged matter of any kind in concentrations that will cause nuisances or objectionable conditions or that may impair designated beneficial uses.

8. Nutrients

The Yakama Nation water quality standards require that surface waters be free from excess nutrients that cause or contribute to undesirable or nuisance aquatic life or produce adverse physiological responses in humans, animals, and plants. Eutrophication from excess nutrients in the Lower Yakima River has been noted since 2001. The Marion Drain downstream of Wanity Slough and Yakima River have shown increasing signs of nutrient enrichment showing signs of algal blooms and increased turbidity (USGS, 2009). It is believed that excess nutrients, such as phosphorus and nitrogen could be the cause of this problem.

Yakama Nation water quality standards for nutrients include a total phosphorus level not to exceed a median of 30 ug/L as sampled throughout a year (Yakama Nation 20.1.5.4.1), and a total Nitrogen level not to exceed a median value of 0.36 mg/L as sampled throughout the year (Yakama Nation 20.1.5.4.2). Phosphorus and nitrogen monitoring have been included in the permit to evaluate the need for nutrient limits in the next permit.

APPENDIX D: REASONABLE POTENTIAL ANALYSIS & DERIVATION OF WATER QUALITY-BASED EFFLUENT LIMITS

A. Reasonable Potential Analysis (Ammonia)

Step 1: Determine the appropriate criteria

1A. Determine the uses

Wanity Slough and WIP Drain No. 4 are Class III waters under the Yakama Nation water quality standards and are protected for the following uses: cultural and religious uses, anadromous and resident fish migration, spawning and rearing for those species historically found in these waters, aquatic life support, wildlife habitat, recreation, groundwater recharge, agricultural water supply, livestock watering, and industrial water supply (Yakama Nation WQS, 20.1.5.1). Site-specific temperature and water use conditions also apply during irrigation as laid out in Section 20.1.5.3.

1B. Determine the most stringent criteria to protect the uses

The most stringent criterion associated with these uses is for the protection of fish. The acute and chronic criteria for ammonia are dependent on pH and temperature. The chronic and acute criteria calculations for ammonia toxicity in freshwater are from the Yakama Nation WQS (Appendix C) and are listed in Appendix B of this fact sheet.

Step 2: Determine whether there is “reasonable potential” to exceed the criteria

2A. Determine the “reasonable potential” multiplier

The “reasonable potential” multiplier is based on the coefficient of variation (CV) of the data and the number of data points. Where there are fewer than 10 data points to calculate a CV, the TSD recommends using 0.6 as a default CV value. In this case, 10 data points were submitted for ammonia, and the CV of the data set is 0.60. Using the equations in Section 3.3.2. of the TSD, the “reasonable potential” multiplier (RPM) is calculated as follows:

$$p_n = (1 - \text{confidence level})^{1/n}$$

where,

p_n = the percentile represented by the highest concentration

n = the number of samples

$$p_n = (1 - 0.99)^{1/10}$$

$$p_n = 0.63$$

This means that the largest value in the data set of 10 data points is greater than the 63rd percentile.

The reasonable potential multiplier (RPM) is the ratio of the 99th percentile concentration (at the 99th percentile confidence level) to the maximum reported effluent concentration. This is calculated as follows:

$$\text{RPM} = C_{99}/C_p$$

where,

$$C_p = \exp(z\sigma - 0.5\sigma^2)$$

$$\sigma^2 = \ln(\text{CV}^2 + 1)$$

$$\text{CV} = \text{coefficient of variation} = 0.60$$

$$\sigma = \text{square root} [\ln(0.60^2 + 1)] = 0.554$$

$$\sigma^2 = 0.307$$

$$z = \text{normal distribution value}$$

$$= 2.33 \text{ for the } 99^{\text{th}} \text{ percentile}$$

$$= 0.33 \text{ for the } 63^{\text{rd}} \text{ percentile}$$

$$C_{99} = \exp(2.326 \times 0.554 - 0.5 \times 0.307) = 3.11$$

$$C_{63} = \exp(0.33 \times 0.554 - 0.5 \times 0.307) = 1.03$$

$$\text{RPM} = C_{99}/C_{63} = 3.11/1.03 = 3.02$$

The maximum projected effluent concentration is the product of the maximum reported effluent concentration and the RPM.

$$4.8 \times \text{RPM} = 14.5 \text{ mg/L}$$

2C. Calculate the concentration of the pollutant at the edge of the mixing zone

There is reasonable potential to exceed criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the criterion. The maximum projected concentration is calculated from the following equation:

$$C_d = \frac{(C_e \times Q_e) + (C_u \times Q_u \times \%MZ)}{Q_e + (Q_u \times \%MZ)}$$

where,

C_d = receiving water concentration at the edge of the mixing zone

C_e = maximum projected effluent concentration = maximum reported effluent concentration x reasonable potential multiplier

Q_e = maximum effluent flow (max flow is from March 2012 DMR: 0.14 mgd)

C_u = upstream concentration of pollutant. For ammonia, WIP Drain No. 4 ambient information was not available.

Q_u = upstream flow (0 mgd critical flow in WIP Drain No. 4)

%MZ = % of upstream flow allowed for mixing zone (0% for acute; 20% for chronic)

For the acute zone concentration, there is no available dilution in the mixing zone.

$$C_d = C_e$$

$$C_d = 14.49 \text{ mg/L}$$

For the chronic zone concentration, there is no available dilution given the absence of streamflow.

$$C_d = 14.49 \text{ mg/L}$$

The projected concentrations are compared with the criterion to determine if there is reasonable potential for the water quality criteria to be exceeded. The reasonable potential analysis in Table D1 shows that the projected maximum concentrations for acute and chronic criteria in the discharge scenarios considered by this permit exceed the criteria. Consequently, limits must be included in the permit.

TABLE D-1: Ammonia Reasonable Potential Analysis

Parameter	Tribal Water Quality Standard		Max concentration at edge of...		LIMIT REQ'D?	Effluent percentile value	Pn	Max effluent conc. measured	Coeff Variation	S	# of samples	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor
	Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone										
	ug/L	ug/L	ug/L	ug/L										
Ammonia at Outfall No. 3 – WIP Drain No. 4	19730	5390	14486	14486	YES	0.99	0.631	4800	0.60	0.55	10	3.02	1	1

B. CALCULATE WATER QUALITY BASED EFFLUENT LIMITS

EPA used the Yakama Water Quality Standards to calculate the ammonia effluent limits. These effluent limits were calculated using a spreadsheet as shown below. Described below is a summary of the ammonia criteria:

WIP Drain No. 4:

Acute Criterion: CMC = 19.7 mg/l

Chronic Criterion: CCC = 5.39 mg/l

Below are generalized descriptions of the methodology for calculating effluent limitations:

A. Calculate the Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated using the same mass balance equations used to calculate the concentration of the pollutant at the edge of the mixing zone in the reasonable potential analysis. To calculate the wasteload allocations, C_d is set equal to the acute or chronic criterion and the equation is solved for C_e . The calculated C_e is the acute or chronic WLA:

$$C_e = \text{WLA} = \frac{C_d(Q_u \times \text{MZ}) + (C_d + Q_e)}{Q_e} - \frac{(C_u \times (Q_u \times \text{MZ}))}{Q_e} \quad (\text{Equation D-1})$$

If there is no flow in the receiving water, or if no mixing zone is allowed, the dilution factor is equal to 1, and this equation simplifies to:

$$C_e = \text{WLA} = C_d \quad (\text{Equation D-2})$$

The next step is to compute the “long term average” concentrations which will be protective of the WLAs. This is done using the following equations from EPA’s *Technical Support Document for Water Quality-based Toxics Control* (TSD):

$$\text{LTA}_a = \text{WLA}_a \times \exp(0.5\sigma^2 - z\sigma) \quad (\text{Equation D-3})$$

$$\text{LTA}_c = \text{WLA}_c \times \exp(0.5\sigma_{30}^2 - z\sigma_{30}) \quad (\text{Equation D-4})$$

Where,

$$\sigma^2 = \ln(\text{CV}^2 + 1)$$

$$\sigma = \sqrt{\sigma^2}$$

$$\sigma_{30}^2 = \ln(\text{CV}^2/30 + 1)$$

$$\sigma = \sqrt{\sigma_{30}^2}$$

$$z = 2.326 \text{ for } 99^{\text{th}} \text{ percentile probability basis}$$

In the case of ammonia,

$$\sigma^2 = \ln(0.978^2 + 1) = 0.6712$$

$$\sigma = \sqrt{\sigma^2} = 0.8193$$

$$\sigma_{30}^2 = \ln(0.978^2/30 + 1) = 0.0314$$

$$\sigma_{30} = \sqrt{\sigma_{30}^2} = 0.1772$$

$z = 2.326$ for 99th percentile probability basis

B. Derive the maximum daily and average monthly effluent limits

Using the TSD equations, the MDL and AML effluent limits are calculated as follows:

$$\text{MDL} = \text{LTA} \times \exp(z_m \sigma - 0.5 \sigma^2) \quad (\text{Equation D-5})$$

$$\text{AML} = \text{LTA} \times \exp(z_a \sigma_n - 0.5 \sigma_n^2) \quad (\text{Equation D-6})$$

where σ , and σ^2 are defined as they are for the LTA equations (D-2 and D-3) and,

$$\sigma_n^2 = \ln(\text{CV}^2/n + 1)$$

$$\sigma = \sqrt{\sigma_n^2}$$

$z_a = 1.645$ for 95th percentile probability basis

$z_m = 2.326$ for 99th percentile probability basis

n = number of sampling events required per month (minimum of 4; if the limiting LTA is the chronic LTA, then $n = 30$)

EPA used a spreadsheet to calculate the effluent limits for Outfall 003.

Table D3: Summary of Effluent Limits for Ammonia	
WIP Drain No. 4 (Outfall No. 003)	
MDL (max daily)	13.1 mg/L
AML (ave monthly)	5.0 mg/L

The ammonia mass loads are calculated as follows:

Outfall No. 003 AML, monthly average = 5.0 mg/L x 0.18 mgd x 8.34 = 7.5 lbs/day

Outfall No. 003 MDL, maximum daily = 13.1 mg/ L x 0.18 mgd x 8.34 = 19.7 lbs/day

TABLE D3: Comparison of Technology-based Effluent Limits to Water Quality-Based Effluent Limits

Parameter	Technology-based Effluent Limits			Water quality-based Effluent Limits		
	AML	AWL	MDL	AML	AWL	MDL
BOD5	30 mg/L	45 mg/L	--	--	--	--
	45 lbs/day	68 lbs/day	--	--	--	--
BOD5 % Removal	85%+	--	--	--	--	--
TSS	30 mg/L	45 mg/L	--	--	--	--
	45 lbs/day	68 lbs/day	--	--	--	--
TSS % Removal	85%+	--	--	--	--	--
pH	6.0 – 9.0 standard units		--	6.5 - 8.5 standard units		--
E. Coli	--	--	--	100/100 mL	--	200/100 mL
Ammonia (Outfall No. 003)	--	--	--	5.0 mg/L	--	13.1 mg/L
	--	--	--	7.5 lbs/day	--	19.7 lbs/day

APPENDIX E: ENDANGERED SPECIES ACT

I. Threatened and Endangered Species

Section 7 of the Endangered Species Act (ESA) requires federal agencies to request a consultation with the National Oceanic and Atmospheric Administration-Fisheries (NOAA-Fisheries) and the U.S. Fish and Wildlife Service (USFWS) regarding potential effects an action may have on listed endangered species.

The following federally-listed endangered and threatened species may be located in the vicinity of the discharges. This list was developed from the *Species List* found on the U.S. Fish and Wildlife Services – Species Report at: http://ecos.fws.gov/tess_public/pub/stateListingIndividual.jsp?state=WA&status=listed. This *Species List* identifies those species under the jurisdiction of USFWS and NOAA-Fisheries.

Endangered Species:

None

Threatened Species:

Middle Columbia River steelhead (*O. mykiss*)

Bull Trout (*Salvelinus confluentus*)

Ute Ladies'-tresses (*Spiranthes diluvialis*)

II. Potential Effects for Species

EPA has prepared a Biological Assessment for the issuance of the Legends Casino permit and determined that the permitted discharges will have **No Effect** on the Bull trout, and Utes' Ladies Tresses, and the Mid Columbia steelhead.

APPENDIX F: ESSENTIAL FISH HABITAT

An analysis of EFH, in consultation with NOAA Fisheries, is required for any federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities. The objectives of this EFH analysis are to determine whether the EPA action described in Sections I and II of the Biological Assessment would adversely affect designated EFH. For the purpose of this EFH analysis, EPA defines the Action Area as Wanity Slough.

According to the Magnuson-Stevens Fishery Conservation and Management Act, EFH refers to those waters and that substrate necessary to fish for spawning, breeding, feeding, or growth and maturity. For the purpose of interpreting this definition of EFH: “waters” include aquatic areas and their associated physical, chemical, and biological properties that are used by fish; “substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities; “necessary” means the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem; and “spawning, breeding, feeding, and growth to maturity” covers a species’ full life cycle (50 CFR 600.01). “Adverse effect” means any impact which reduces quality and/or quantity of EFH, and may include direct (e.g. physical disruption), indirect (e.g. loss of prey), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

EFH assessments must address the following:

1. **Species in the Facility Area.** The October 15, 2008 federal register lists EFH habitat for Chinook and Coho salmon in the Lower Yakima River, and all streams, estuaries, marine waters, and other waterbodies historically accessible to Chinook and Coho in the Lower Yakima (73 FR 60991).
2. **Facility Description and Discharge Location.** Facility activities and wastewater sources are described in *Section II. Facility Information* of this fact sheet. The discharge location is described in *Section III. Receiving Water* of this fact sheet.
3. **EFH Evaluation.** The EPA has tentatively determined that the issuance of this permit will have no effect on any EFH species in the vicinity of the discharge for the following reasons:
 - a. The proposed permit has been developed to protect aquatic life species in Wanity Slough. NPDES permits are established to protect water quality in accordance with water quality standards. The standards are developed to protect the designated uses of the waterbody, including growth and propagation of aquatic life and wildlife.
 - b. The derivation of permit limits and monitoring requirements for an NPDES discharge include the basic elements of ecological risk analysis as specified in the Technical Support Document (TSD) (EPA, 1991). This analysis includes, but is not limited to, consideration of the following: effluent characterization, threshold concentration determination, exposure considerations, dilution modeling and analysis, multiple sources and natural background consideration, fate and transport variability, and monitoring duration and frequency.