FACT SHEET

United States Environmental Protection Agency (EPA)
Region 10
Park Place Building, 13th Floor
1200 Sixth Avenue, WD-134
Seattle, Washington 98101
(206) 553-1214

Date:

Permit No : WA-002612-3

PROPOSED ISSUANCE OF A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE POLLUTANTS AND TO DISPOSE OF SEWAGE SLUDGE PURSUANT TO THE PROVISIONS OF THE CLEAN WATER ACT (CWA)

City of Toppenish

has applied for issuance of a NPDES permit to discharge pollutants and dispose of sewage sludge pursuant to the provisions of the CWA. This Fact Sheet includes (a) the tentative determination of the EPA to reissue the permit, (b) information on public comment, public hearing and appeal procedures, (c) the description of the current discharge, (d) a listing of tentative effluent limitations, schedules of compliance and other conditions, (e) a sketch or detailed description of the discharge location, and (f) a description of the proposed sludge disposal practices. We call your special attention to the technical material presented in the latter part of this document.

Persons wishing to comment on the tentative determinations contained in the proposed permit issuance may do so by the expiration date of the Public Notice. All written comments should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the expiration date of the Public Notice, the Director, Water Division, will make final determinations with respect to the permit issuance. The tentative determinations contained in the draft permit will become final conditions if no substantive comments are received during the public notice period.

If no substantive comments are received, the permit will be effective immediately upon issuance. If comments are received, the permit will become effective 30 days after the final determinations are made, unless a request for an evidentiary hearing is submitted within 30 days after receipt of the final determinations.

The proposed NPDES permit and other related documents are on file and may be inspected at the above address any time between 8:30 a.m. and 4:00 p.m., Monday through Friday. Copies and other information may be requested by writing to EPA at the above address to the attention of the Water Permits Section, or by calling (206) 553-1214. The draft permit and fact sheet are also available from

the EPA Washington Operations Office, c/o State of Washington, Department of Ecology, P.O. Box 47600, Olympia, Washington 98504-7600.

TECHNICAL INFORMATION

I. Applicant:

City of Toppenish
21 West First Avenue
Toppenish, WA 98948

NPDES Permit No. WA-002612-3

Contact:

Ed Martindale
City of Toppenish Public Works Assistant Director

II. Activity:

The City of Toppenish owns and operates a municipal sewage treatment facility that provides secondary treatment and disinfection of wastewater. After treatment, the facility discharges the effluent to the Toppenish Drain. The Toppenish Drain is within the Wapato Irrigation Project and eventually empties into the Yakima River. The facility design flow is 1.35 million gallons per day (mgd) and the volume of wastewater discharged from the facility varies from 0.7 to 1.4 mgd, dependant on the season. The plant is currently being upgraded and will have a new plant design flow of 1.90 mgd. The plant receives domestic wastewater from residential and commercial sources. There is no industrial input to the plant.

The following is a summary of the treatment processes at the Toppenish facility:

> Wastewater flows through a flowmeter and into a gravity grit chamber. From the grit chamber the wastewater passes through a comminutor and into a wet well. The wastewater is pumped from the wet well into the primary clarifier, where it flows by gravity through the rest of the treatment plant. Sewage flows from the primary clarifier into three mechanically driven rotating biological contactor (RBC) trains of two shafts each of which provides secondary treatment. The first shaft in each RBC train receives supplemental aeration. The wastewater is chlorinated in the RBC effluent trough and then flows through the secondary clarifier, the chlorine mixing basins, and the chlorine contact tanks. The wastewater is then discharged into the Toppenish Drain. Sludge is stabilized in the primary and secondary anaerobic digesters and then dewatered on the sludge drying beds before final disposal at the Cheyne municipal solid waste landfill.

The discharge from the Toppenish facility is currently regulated by a NPDES permit issued by the State of Washington, Permit No. WA-002068-1. The facility has generally been in compliance with the limits established in the NPDES permit.

The City of Toppenish has completed final plans and awarded a contract for a treatment plant improvement project. Construction began in the spring of 1996 and is scheduled to end in the spring of 1997. Operational level of the improvements is expected to be reached by March 25, 1997.

The following improvements are part of the plan:

> New headworks consisting of two aerated grit basins and a self-cleaning rotating screen; a new primary clarifier which will enable the existing primary clarifier to be used as a standby primary or secondary clarifier; new submerged biological contactors (SBCs); a new blower building to house blowers for the SBCs and RBCs; new secondary sludge pumps and magnetic flowmeters; new baffles will be installed in the chlorine mixer basins to improve mixing of the chlorine with the treated wastewater. The new plant design flow will be 1.90 mgd.

III. Receiving Water:

The Toppenish plant discharges to the Toppenish Drain of the Wapato Irrigation Project, which flows into the Yakima River. In the State of Washington, waterbodies are classified into one of five different classes. Each classification protects the water for specific uses and for specific water quality criteria. Classifications are found in the Water Quality Standards for Surface Waters of the State of Washington, WAC 173-201A-130 Specific Classifications - Freshwater. The Toppenish Drain is not directly classified in the standards, however, the regulations specify that all unclassified surface waters within the state shall be classified as Class A (WAC 173-201A-120 (6)). Conversations with representatives from the State of Washington Department of Ecology and the Yakama Nation Environmental Protection Program confirmed that the Toppenish Drain is classified as Class A (see also, Ecology Report October 1991, "Toppenish Sewage Treatment Plant Class II Inspection"). Class A designation under the State of Washington Water Quality Standards protects this waterbody for the following uses: water supply (domestic, industrial, agricultural), stock watering, fish and shellfish, wildlife habitat, recreation, and commerce and navigation.

The most extensive and recent monitoring of water quality in the drain has been conducted by the Yakama Nation Environmental Protection Program and is presented in Appendix 1. Monthly data was collected in 1994 within 20 to 50 feet, both above and below the facility. Data was also collected on roughly a bi-weekly basis for one year starting in March 1990 at Wilson Road, approximately 1.5 miles below the facility's outfall. Both of these data bases clearly show the seasonal

nature of flow in the drain, with low flow during the winter and high flow for irrigation purposes during the summer. Flow is from 3-15 cubic feet per second (cfs) in the winter months and flow up to a high of 80 cfs was measured during the summer months. The Department of Ecology also sampled drain flow and water quality during the last facility inspection in 1990 (Ecology Report October 1991). Drain flow measured during the Ecology inspection was 33 mgd. Effluent flow was 1.4 mgd for an effluent dilution of 24:1 at the time of the inspection.

EPA's national data base of sampling sites and associated water quality data, STORET, was searched for data from the Toppenish Drain. Limited data was found from the Wilson Road site. Most of the stream flow data was from 1975-1976. The most recent data from the STORET database was from 1989.

IV. Basis of Limitations, Monitoring and Other Requirements:

A. Effluent limitations

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

In general, EPA first determines which technology-based limits are required, as well as best management practices or other requirements. Secondly, the CWA requires NPDES permitted discharges to demonstrate compliance with state water quality standards. EPA evaluates the effluent quality expected to result after technology-based controls are applied to determine if exceedances of the water quality standards in the receiving water could be expected to occur. If exceedances could occur, EPA must include water quality-based limits in the permit. The permit may thus include technology-based and/or water quality-based limits.

1. Technology-Based Requirements:

a. BOD_5 and TSS Limitations: Biological oxygen demand (BOD_5) and total suspended solids (TSS) concentration limitations and percent removal requirements are based on the federal secondary treatment, technology-based regulation found in 40 CFR 133.102. These limits are consistent with the previous permit. See Table 1 for a summary.

b. BOD_5 and TSS Loading Limitations: The BOD_5 and TSS loading limitations are derived by multiplying the secondary treatment concentration limitations above by the future plant design flow of 1.90 mgd and the unit conversion factor of 8.34.

The BOD_5 and TSS limits in the proposed permit are as follows:

Table 1. BOD and TSS Limitations

Effluent Parameter	Average Monthly Limit	Average Weekly Limit	Percent Removal
BOD_5, concentration	30 mg/l	45 mg/l	85
BOD_5, loading limit	475 lb/day	713 lb/day	NA
TSS, concentration	30 mg/l	45 mg/l	85
TSS, loading limit	475 lb/day	713 lb/day	NA

2. Water Quality-Based Requirements:

a. Background: The CWA requires that all NPDES permitted discharges achieve technology-based effluent limitations established under Section 301, 306, or 402(a)(1), and comply with the State water quality standards established under 303 of the CWA. The NPDES regulations, 40 CFR 122.44(d) specifically require an NPDES permit to include effluent limitations for those pollutants that have a reasonable potential to cause or contribute to an in-stream excursion above the allowable ambient concentration of a State water quality standard.

To support the implementation on EPA's national policy for controlling the discharge of toxicants, EPA developed the "Technical Support Document for Water Quality-Based Toxics Control" (TSD). The procedures of the TSD translate water quality criteria or standards to "end of the pipe" effluent limits.

In order to determine effluent limits, the following information is needed: characterization of the receiving water flow, facility flow, availability of a mixing zone, receiving water background concentrations, and water quality criteria. The following assumptions were made in calculating water-quality based effluent limits for this facility.

Receiving water flow. In calculating effluent limits, conservative assumptions regarding receiving water flow are made so that the resultant effluent limits are protective of water quality criteria. A low receiving water flow and a peak future facility discharge will be representative of the situation where dilution capability of the stream is restricted. The EPA TSD recommends the use of the low flow 7Q10 (seven-day average low flow over a statistical ten-year period) for effluent calculations. The State of Washington standards state that "mixing zone determinations shall consider critical discharge conditions" (WAC 173-201A-100 (3)). The standards specify under the definition section that critical conditions may be assumed to be equal to the 7Q10 flow event unless determined otherwise by the Department. The data base available for the Toppenish Drain flow near the facility is not large enough to calculate a statistically significant 7Q10 flow. The best available data base is the monitoring done in recent years by the Yakama Nation Environmental Protection Program presented in Appendix 1. Instead of the 7Q10 value, a statistical 10th sample percentile of the flow values from the Wilson road data base

was used to represent a conservative low-flow condition: 5.43 mgd.

Facility Flow. The future facility design flow of 1.9 mgd was used in calculating effluent limits. This is a conservative value representing what would be anticipated as a peak future flow and again, worst case dilution potential. Data from the facility shows that discharge volume over the past five years ranges from 0.7 to 1.4 mgd. The discharge rate has been increasing and moderate growth in population is forecasted for the area.

Mixing Zone. A mixing zone is a transition region where effluent discharge blends into the receiving stream. WAC 173-201A-100 authorizes mixing zones and mixing zone requirements in the State of Washington. By regulation, water quality criteria shall not be violated outside of the boundary of a mixing zone. A number of other conditions are outlined in the regulation including the requirement that the discharger must be implementing all known, available, and reasonable methods of prevention, control, and treatment (AKART) before being authorized a mixing zone and that critical discharge conditions (ie, conservative assumptions discussed above) be considered in determining the mixing zone.

Among other criteria, the regulation states that the mixing zone shall not utilize greater than 25% of the stream flow. For acute criteria, the mixing zone shall not utilize greater than 2.5% of the stream flow. 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. To simplify the calculations for this particular permit, 25% of stream flow for chronic criteria, and 2.5% of stream flow for acute criteria, were used in a mass-balance equation in order to determine facility effluent limits. The lack of specific data on the Toppenish Drain near the outfall prevented a more detailed analysis of the resulting mixing zone dimensions.

Upstream Background Concentrations. The best source of background or upstream data was again from the Yakama Nation data listed in Appendix 1.

b. Total Residual Chlorine

i) Limits. To protect aquatic life, the Washington State Water Quality Standards have established acute and chronic criteria for total residual chlorine. The acute criterion is 19 ug/L; the chronic criterion is 11 ug/L (WAC 173-201A-040). There is no monitoring of upstream chlorine concentrations and since there are no known upstream sources of chlorine, upstream chlorine was assumed to be zero. Appendix 2 shows the application of the methods of the TSD along with the assumptions listed above in deriving water quality-based effluent limitations for total residual chlorine for the Toppenish facility (Table 2).

Table 2. Total Residual Chlorine Effluent Limitations	
Maximum Daily Limit (mg/L)	0.020
Average Monthly Limit (mg/L)	0.008

The Toppenish facility monitors for residual chlorine daily and provided the data as part of the permit application. The data are summarized in the following table:

Table 3. Residual Chlorine in Effluent		
	Daily Average (June-Oct 1995)	Monthly Average (1991-1995)
Number of measurements	150	58
Range	0 - 1.7 mg/L	.01-1.47
Mean	0.48 mg/L	.46
Median	0.28 mg/L	.31
75th percentile	0.75 mg/L	.63
90th percentile	1.3 mg/L	1.21

ii) Compliance Schedule. The mean daily effluent concentration of chlorine is 0.48 mg/L which is considerably higher than the maximum daily limit of 0.020 mg/L. This facility will likely need to construct treatment capability in order to meet the chlorine limit and, therefore, a schedule of compliance has been established and incorporated into the permit. The schedule of compliance includes major milestones which outline how the facility will come into compliance with the final limit before the end of the 5 year term of the permit. Also, an interim chlorine effluent limit needs to be established for the time during which the water quality based effluent limit is being deferred. Federal requirements for schedules of compliance are specified under 40 CFR 122.47, and State of Washington requirements are found at WAC 173-201A-160(4) “Allowance for compliance schedules”.

Anticipating a permit effective date of early 1997, the final compliance date of January 1, 2002, or nearly the full five year term of the permit has been selected. During the period before the final limitation is effective, an interim limit needs to be established. State regulations require an interim limitation be established based on best professional judgement. The current improvements being made at the facility include new baffles in the chlorine mixing basins which should improve mixing of the chlorine with the treated wastewater. With this improvement, and with better chlorine management at the facility, an interim level is established below current high-end values. The interim level is established at the current 90th percentile level (1.3 mg/L daily, 1.2 mg/L monthly average) so that the high-end excursions from the median value will be eliminated and some control is established in the interim period.

The facility shall also submit a report to EPA in January of each year, which outlines the progress made towards reaching the final compliance date of January 1, 2002.

iii) Detection Limit. The final effluent limits cited above are near the capability of current analytical technology's ability to detect chlorine. The detection limit for chlorine is 0.010 mg/L for the DPD method cited in 40 CFR 136. The *detection limit* is the minimum concentration that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. The *minimum level* is defined as the lowest concentration that gives recognizable signals and an acceptable calibration point. When the effluent limit falls below the method detection limit, EPA Region 10 has adopted a policy in which: 1) the water quality based effluent limits are incorporated into the permit, 2) the minimum level will be used as the compliance evaluation level, and 3) in the absence of a promulgated minimum level, an interim minimal level should be used. The interim minimum level can be derived most effectively as a multiple of the method detection limit. In this case, the minimum level is 3.18 times the published method detection limit (from “EPA Region 10 Guidance for WQBELs Below Analytical Detection/Quantification Level”, 1996) or (3.18)(0.010 mg/L) or .032 mg/L. The interim minimum level is rounded to the nearest multiple of 1,2,5,10,20,50...(EPA memo Status of Detection Level Strategies, 9/9/93"). Therefore, 0.050 mg/L is the final compliance evaluation level for total residual chlorine.

c. Fecal Coliform Bacteria: The Water Quality Standards for the State of Washington require that fecal coliform organism levels in Class A waters "shall both not exceed a geometric mean value of 100 colonies/100 mL, and not have more than 10 percent of all samples obtained for calculating the geometric mean value exceeding 200 colonies/100 mL."

Grab samples were collected and analyzed for fecal coliform in the Toppenish Drain at the time of the last Department of Ecology inspection (report October 1991). Fecal coliform upstream of the effluent discharge was 5200 colonies/100 mL. Fecal coliform near the effluent discharge in the drain was 7200 colonies/100mL. Samples at 75 feet and 300 feet downstream of the effluent discharge point measured 4500 and 4100 colonies/100mL respectively. All of the samples collected in the drain (both upstream and downstream of the effluent discharge point) had substantially higher fecal coliform concentrations than the treatment facility effluent concentration and all measured concentrations in the drain violated the water quality standard for Class A waters.

Fecal coliform bacteria data were also collected on a monthly basis in 1994 by the Yakama Nation up and downstream from the facility. At the upstream site, fecal coliform exceeded the test method maximum of 1600 colonies/100ml on eleven of the twelve months. Downstream of the facility, the 1600 colonies/100ml level was exceeded during nine months. The other values recorded were 220, 500, and 1600 colonies/100ml.

As a result of these high values in the drain upstream of the facility, there is no ability for the receiving water to dilute effluent discharge to the water quality standards. Therefore, the water quality standard for fecal coliform for

Class A waters is incorporated into this permit as an end-of-pipe effluent limit for the facility.

The water quality standard is expressed as not exceeding a geometric mean value of 100 colonies/100 ml and not more than 10% of samples shall exceed 200 colonies/100 ml. Wastewater treatment plant permits typically express fecal coliform limits as average monthly and average weekly limits. This proposed permit incorporates the geometric mean value of the water quality standards (not to exceed 100 colonies/100ml) as the longer term average monthly limit of the permit and not more than 10% of the samples during any calendar month shall not exceed 200 colonies/100ml. The existing permit has fecal coliform bacteria levels of 200/100mL monthly average, and a weekly average of 400/100mL.

d. pH: The proposed permit requires pH to be between 6.5 to 8.5 standard units. This requirement is in accordance with the Washington State Water Quality Standards for class A waters (WAC 173-201A-030).

e. Total Ammonia as N:

The water quality criteria for ammonia are found in the Washington Water Quality Standards for surface waters (WAC 173-201A-040). The water quality criteria for ammonia are dependent on the receiving water pH and temperature. The ammonia standard was calculated for each day that temperature and pH data were available from the data in Appendix 1. In order to be conservative, the lowest ammonia criteria calculated from the data base was selected as the ammonia water quality criteria. The acute ammonia criterion is 12.18 mg/L and the chronic ammonia criterion is 1.73 mg/L for the Toppenish Drain.

Appendix 1 lists the ammonia data that is available for the drain. The 1994 data was collected within 20-50 feet of the outfall. Within 50 feet of the outfall, the instream data show compliance at all times with the acute criteria, and exceedances of the chronic criteria on 8 out of 12 measurements. This monitoring point is well within the maximum 300 foot allowance for a mixing zone according to State of Washington regulations. The 1990 and 1991 data was collected at Wilson Road approximately 1.5 miles downstream from the facility. Of the 29 days of monitoring, 17 days show an ammonia value of 0.0 mg/l. Except for 2 days which were above the chronic criteria, all other data was in compliance with acute and chronic criteria.

The existing permit does not limit ammonia and the facility has not historically collected effluent ammonia data. The only effluent data available are from the Ecology inspection report collected on May 29-30, 1990: 6.99 mg/L (grab), 8.44 mg/L (grab), 7.56 mg/L (24 hr composite), 7.90 mg/L (24 hr composite).

Due to the limited data available from the facility an ammonia limit is not established in this permit. Also, from the data in Appendix 1, the acute criteria are being met in stream

within 50 feet of the outfall and the chronic criteria is likely being met at the edge of a mixing zone that extends the maximum downstream distance of 300 feet, though this cannot be determined with certainty from the data that have been collected. The values at Wilson Road, 1.5 miles downstream of the facility are largely in compliance with criteria. For these reasons, this permit establishes both effluent, upstream, and downstream ammonia monitoring criteria so that effluent limits can be evaluated more thoroughly in the next permit reissuance, but does not establish ammonia effluent limits at this time.

f. Metals: During the 1990 Ecology inspection an effluent sample was analyzed for the presence of metals. The following metals were detected:

Table 3. Effluent Metals Analysis	
Metal	Effluent (mg/L)
Antimony	.001
Arsenic	.004
Copper	.019
Lead	.003
Mercury	.0004
Selenium	.002
Zinc	.087
Note: Total recoverable metals analysis except Mercury which is a total metal analysis.	

Copper, present in the effluent at 19 ug/L, exceeded the acute (13.4 ug/L) and chronic (9.2 ug/L) criteria for freshwater calculated using the average of four hardness measurements made in the Toppenish Drain. Lead, mercury, and zinc were measured at levels exceeding chronic criteria. The inspection report stated that dilution with the drain receiving water (24:1 during the inspection) should reduce the metals concentrations to non-toxic levels.

EPA regulations cited above require a determination of whether the data indicates a "reasonable potential" of the pollutants in the effluent to contribute to or cause an exceedance of water quality criteria under critical flow conditions (low receiving stream flow, high effluent flow). The only effluent data for metals is the single sample collected during the Ecology inspection and there is no instream metals data. Determining a reasonable potential for exceedance is difficult with one data point using a statistically based methodology. Due to lack of both effluent and ambient metal data and the difficulty in determining the reasonable potential, this proposed permit does not proceed with the determination of effluent limits for metals, rather, additional monitoring requirements are established. Also affecting the decision not to write metals limits at this time is the fact that there is no known industrial contributor to the sewage waste treatment plant. The purpose of additional metals monitoring is to develop a statistically stronger data base in order to better understand the metals character of the effluent. If additional monitoring data indicate a reasonable potential to violate metals water quality criteria, the permit may be reopened and metals effluent limits will be established at that time.

g). TSS TMDL. Federal, State, Tribal, and local environmental agencies are developing a TSS Total Maximum Daily Load (TMDL) for the lower Yakima River. The TMDL will in effect, define the amount of TSS loading that can occur in the lower Yakima River. When completed, TSS levels from the drain and hence from the facility could be affected. This permit may be reopened to incorporate any necessary additional restrictions on TSS in the discharge when the TSS TMDL is completed for the lower Yakima River.

B. Water Quality Monitoring Program

The purpose of the water quality monitoring program is to monitor ambient 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 instream monitoring station shall be located upstream of the influence of the Toppenish outfall. The permittee will be required to monitor the following parameters:

pH, standard units
flow, mgd
Temperature, ^{o}C
Total ammonia as N
Hardness as $CaCO_3$
Copper
Lead
Mercury
Zinc
Arsenic
Selenium
Antimony
(Metals shall be analyzed and reported as dissolved and total recoverable.)
TSS

Downstream ammonia, pH, and temperature data will also be gathered to gain a better understanding of ammonia concentrations downstream of the facility near the edges of the potential acute and chronic mixing zones. The permittee will select the sampling locations and submit them to EPA and the Yakama Nation Environmental Protection Program for approval. The samples will be collected twice a year, once in the winter season and once in the summer season, which reflects the seasonal variation of flow in the drain. Ambient water samples will be conducted only during the first three years of the permit (six sampling events).

C. Effluent Monitoring Requirements

Self-monitoring of effluent parameters is necessary for the permittee to demonstrate compliance with effluent limitations and to assure that state water quality standards are met (40 CFR 122.41 (i)). Monitoring frequencies are based on the Agency's determination of the minimum sampling frequency required to adequately monitor the facility's performance. Required sample types are based on the Agency's determination of the potential for effluent variability. These

determinations take into consideration several factors, of which the most important are the type of pollutants of concern and the type of treatment system. Metals monitoring will be done twice per year for the first three years of the permit and shall coincide with the ambient water quality sampling program discussed in the previous section.

D. Additional Monitoring Requirements

To ensure that quality data is collected, the permit requires the development of a Quality Assurance Plan. The purpose of the Quality Assurance Plan is to establish appropriate sampling, handling and analytical procedures for all effluent and ambient water samples taken.

E. Sludge Management Requirements

Section 405(d)(4) of the Clean Water Act requires the Administrator to impose conditions in permits issued to publicly owned treatment works under Section 402 or take such other measures as the Administrator deems appropriate to protect public health and the environment from any adverse effects which may occur from toxic pollutants in sewage sludge. In addition, the sludge permitting regulations in 40 CFR §§ 122 and 124 apply to all treatment works treating domestic wastewater, even in a transfer situation. As a treatment works treating domestic sewage, the WWTP is considered the "sludge generator".

Pursuant to 40 CFR §122.41(a), a condition has been incorporated into the proposed permit requiring the permittee to comply with all existing federal and state laws, and all regulations applying to sludge use and disposal. This includes future self-implementing standards under the Act.

Under Section 405 of the Act, the applicant is required to handle and dispose of sewage sludge in such a manner as to protect public health and the environment. Sludge from the Toppenish facility will be dewatered and disposed of in the Cheyne municipal solid waste landfill unit (MSWLF) located at Yakima, Washington.

The 1987 amendments to the Act require that all permits to facilities treating domestic sewage contain appropriate sludge conditions. Technical criteria for sludge were promulgated on February 19, 1993 (40 CFR Part 503). While these regulations contain some applicable requirements, the regulations governing disposal of sewage sludge in a MSWLF unit are contained mainly in 40 CFR Part 258 (regulations promulgated under both the authority of section 405(d) of the Act and sections 1008, 2002, 4004, and 4010 of the Resource Conservation and Recovery Act of 1978 (RCRA). In that rule, the Agency determined that public health and the environment are protected from reasonably anticipated adverse effects of pollutants in sewage sludge when the sludge is disposed in a MSWLF unit that meets the criteria in Part 258. Disposal of sewage sludge in a MSWLF unit that meets the Part 258 criteria constitutes compliance with section 405(d) of the Clean Water Act, as amended.

A MSWLF "unit" is the area of the solid waste landfill operation that actually receives the household waste, and is subject to another set of federal standards (40 CFR 258). Disposal of sludge elsewhere at the landfill, such as in a separate trench, would be a different sludge practice known under the federal sludge rules as Surface Disposal. This permit may not protect the environment from Surface Disposal or other sludge practices, so it is a violation of this permit to place sludge anywhere else than in a MSWLF unit without first notifying EPA.

The sludge regulations are self-implementing, which means that facilities must comply with the requirements regardless of the existence of a permit. Therefore, in addition to requiring compliance with existing regulations, the draft permit requires that the facility comply with future requirements of 40 CFR 503.

The draft permit ensures the quality of the sludge is appropriate to go into landfill, that the sludge is disposed of at a properly designed and run landfill, that the sludge is properly handled before reaching the landfill and after arrival at the landfill, that monitoring is performed to ensure that the sludge does not contain free liquid and is not a hazardous material, that records are kept and reports submitted, and that EPA is notified of major changes. The draft permit also ensures that the sludge is disposed of in a manner such that compliance with applicable stormwater requirements is ensured.

Monitoring is required in the permit to ensure that the sludge meets the requirements of 40 CFR 258. Annual paint filter tests are required. In addition, the City is required to test its sludge twice, once in the first year and once in the fourth year of the permit, to ensure that it does not meet the definition at 40 CFR 261 Subpart C, and include ignitability, corrosivity, reactivity, or toxicity (defined for the purposes of the subpart at 40 CFR 261.24).

Facility sludge records (and an annual report) of information on the location of the facilities handling and receiving the sludge, the quality of the sludge, and the amounts of sludge being handled is necessary to demonstrate compliance with the permit and provide minimum information needed for inspections. In addition, the permittee is required to notify EPA if it changes its method of sludge handling, so that EPA may reopen the permit, if necessary, to include conditions to protect public health and the environment.

The permittee is also required to develop a storage capacity assessment to address the possibility that the MSWLF may not be able to accept sludge for a period of time. The Clean Water Act requires that sludge operations must be able to comply with the standards at all times. Since treatment processes are dependent on mechanical systems, there is a potential for periods of break-down, major repair, or maintenance. An assessment of possible disruptions and in-facility storage is necessary to maintain compliance with 40 CFR §503, and with the effluent limits in this permit, in the

event that the MSWLF unit is unavailable for some period. If any measures or changes are needed so that safe disposal will always be available, those changes should be implemented within a reasonable time frame (36 months from the effective date of the permit).

F. Endangered Species

Section 7(a) and (c) of the Endangered Species Act requires federal agencies to request a consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USF&WS) regarding potential effects an action may have on listed endangered species. EPA has requested a listing of threatened and endangered species in the vicinity of the Toppenish Wastewater Treatment facility from NMFS and USF&WS. A letter from NMFS dated April 11, 1996 indicated that there were no threatened or endangered species listed or proposed for listing under their jurisdiction in the vicinity of the facility. A letter from the USF&WS dated March 19, 1996, indicated that the bald eagle, listed as threatened, may occur in the vicinity of the facility during the winter season (November 1 through February 28). No other species are listed or proposed for listing as threatened or endangered under their jurisdiction, in the vicinity of the facility. EPA has determined that the discharge for the Toppenish Wastewater Treatment plant will not affect the listed species.

G. Whole Effluent Toxicity Testing

Acute and chronic whole effluent toxicity tests were conducted in May of 1990. The results were reported in the Washington Department of Ecology Inspection Report (October 1991). The effluent was not toxic to either Ceriodaphnia dubia or flathead minnow. Both organisms showed no observable effects concentrations of 100% effluent for both the acute and chronic portions of the tests. Rainbow trout survival was 100% after 96 hours in effluent dechlorinated with sodium thiosulfate. Microtox results on dechlorinated effluent indicated an EC50(15 minutes) of 40.4% effluent. Since the results from the tests showed no toxicity, whole effluent toxicity based limitations will not be developed for this proposed permit and routine toxicity testing will not be required. However, during the final year of the five year permit cycle, the facility will be required to conduct chronic whole effluent toxicity tests for submittal with the permit reapplication (as required in 40 CFR 122.21(j)). Results of the test will be considered during permit reissuance.

H. State Water Quality Standards and State Certification

Since the discharge is from a facility located within the boundaries of the Yakama Indian Reservation, the provisions of Section 401 of the Clean Water Act requiring state certification of the permit do not apply.

I. Interstate Waters

Under 40 CFR 124.10 (c)(1)(iii), EPA must give notice of this permit action to any affected state. Notice has been given to

Washington Department of Ecology and other Washington state agencies (as defined in this regulation) potentially impacted by this action. A copy of the proposed permit action has also been provided to the Yakama Indian Tribe, Bureau of Indian Affairs and Bureau of Land Management.

Appendix 1. Toppenish Drain Monitor Data

Date	Upstream Data					Downstream Data				
	flow (cfs)	temp (oC)	pH	F. Col (#/100ml)	NH3-N (mg/L)	flow (cfs)	temp (oC)	pH	F. Col (#/100ml)	NH3-N (mg/L)
3/18/90						8.4	16.2	6.7		0.0
4/3/90						28.8	17.5	7.9		0.8
4/16/90						32.6	18.0	7.0		0.0
4/25/90						32.6	14.2	6.9		0.4
5/1/90						48.2	16.9	7.2		0.0
5/15/90						44.6	15.7	7.0		0.0
5/31/90						80.5	14.7	6.3		0.0
6/13/90						62.3	16.4	6.9		0.0
6/27/90						60.9	18.1	6.8		0.0
7/11/90						22.8	18.9	6.7		0.0
7/26/90						29.2		7.6		0.0
8/14/90						28.8	18.8	6.9		0.0
8/22/90						77	17.8	6.7		0.0
9/4/90						67.2	19.2	6.8		0.0
9/16/90						45.2	17.0	7.1		0.0
10/4/90						25.2	15.6	7.2		0.5
10/18/90						28.4	14.6	7.0		2.8
10/31/90						18.8	14.7	7.1		0.0
11/15/90						10.8	13.0	7.2		0.0
11/27/90						14.8	12.4	7.1		2.1
12/12/90						12.8	11.5	7.1		0.0
1/2/91						6.4	10.6	7.7		1.4
1/17/91						10.4	11.0	7.2		1.1
1/30/91						9.6	9.8	7.2		0.6
2/13/91						8.4	13.6	7.4		0.3
2/27/91						8.8	11.0	7.4		0.0
3/14/91						11.2	14.0	7.3		1.1
3/27/91						11.2	16.5	7.4		0.9
4/10/91						10.4	15.0	7.5		1.3
4/26/91						52.4	15.3	7.5		-
1/94	6	14.1	6.3	>1600	0.1	8	14.2	6.7	>1600	1.3

Date	Upstream Data					Downstream Data				
	flow (cfs)	temp (oC)	pH	F. Col (#/100ml)	NH3-N (mg/L)	flow (cfs)	temp (oC)	pH	F. Col (#/100ml)	NH3-N (mg/L)
2/94	6	13	7.2	>1600	0.0	8	13.2	6.5	>1600	3.8
3/94	3	16.4	7.5	>1600	0.0	7	16.5	7.4	>1600	7.2
4/94	7	14.3	7.4	>1600	0.0	9	14.5	7.4	>1600	2.5
5/94	23	15.2	6.8	>1600	0.1	26	15.5	7.1	>1600	1.3
6/94	14	17.5	6.9	>1600	0.1	17	17.8	7.0	>1600	1.7
7/94	11	16.9	7.0	130	0.0	15	15.6	7.0	220	0.6
8/94	24	17.6	6.7	>1600	0.0	25	18.3	6.9	>1600	2.5
9/94	18	15.2	6.9	>1600	0.0	31	16.3	7.0	500	2.6
10/94	11	15.1	7.1	>1600	0.1	18	15.5	7.2	>1600	2.4
11/94	9	13.3	6.8	>1600	0.3	16	13.7	6.9	>1600	4
12/94	8	13.1	7.1	>1600	0.1	12	13.1	7.1	>1600	3.9

NOTES: 1) All data collected by the Yakama Nation Environmental Protection Program.
2) 1990 and 1991 data are from Wilson Road approximately 1.5 miles down gradient of the Toppenish Waste Water Treatment Facility.
3) 1994 data was collected within 20 to 50 feet up and down gradient of the facility.

APPENDIX 2

EFFLUENT LIMITATION CALCULATION FOR TOTAL RESIDUAL CHLORINE

REASONABLE POTENTIAL DETERMINATION

Variables:
Qe = effluent flow = 1.9 mgd
Qu = upstream flow = 5.43 mgd
Qd = downstream flow = Qu + Qe
Ce = effluent concentration = 1.70 mg/L (maximum)
Cu = upstream concentration = 0.0 mg/L
RWC = receiving water concentration
RPM = reasonable potential multiplying factor = 1.2 (with n=5, Table 3-1 TSD)
%MZ = allowable mixing = 25% for chronic
2.5% for acute

If the RWC exceeds the aquatic life criteria then a water quality based effluent limitation is required.

From mass balance: RWC(Qd) = QuCu + QeCe

with Qu = 0.25(Qu) due to allowed mixing zone, and
Qd = 0.25(Qu) + Qe

Solve for RWC and multiply by the RPM

$$RWC = \frac{(\%MZ(Qu \times Cu) + (Qe \times Ce))}{Qe + (\%MZ \times Qu)} \times RPM$$

$$= \frac{(.25(5.43 \times 0.0) + (1.9 \times 1.70))}{1.9 + (.25 \times 5.43)} \times 1.2 = 1.19 \text{ mg/L}$$

Since 1.19 mg/L is greater than the allowable chronic aquatic life criteria (.011 mg/L) a water quality based effluent limitation is required.

EFFLUENT LIMITATION CALCULATION

The acute and chronic criteria are converted to acute and chronic waste load allocations (WLAa or WLAc) for the receiving waters based on the following mass balance equation:

QdCd = QeCe + QuCu
where,

Qd = downstream flow = Qu + Qe
Cd = aquatic life criteria that cannot be exceeded downstream; acute criteria = 19 ug/L; chronic criteria = 11 ug/L
Qe = effluent flow = 1.9 mgd
Ce = allowable concentration of pollutant in effluent = WLAa or WLAc
Qu = upstream flow available for mixing with effluent flow
= Drain flow x %MZ
= 5.43 mgd x %MZ
Cu = upstream concentration of pollutant = 0.0
%MZ = allowable mixing = 25% for chronic
2.5% for acute
LTA = long term average
CV = coefficient of variation = .6
AML = average monthly limit
MDL = maximum daily limit

Rearranging the above equation to determine the effluent concentration (Ce) or the wasteload allocation (WLA) results in the following:

$$WLA = Ce = \frac{QdCd - QuCu}{Qe}$$

$$= \frac{Cd[(Qu + Qe]}{Qe} - \frac{QuCu}{Qe}$$

$$WLAacute = \frac{19[(5.43 \times .025) + 1.9])}{1.9} - \frac{(5.43 \times 0.0)\ .025}{1.9} = 20.36 \text{ ug/L}$$

$$WLAchronic = \frac{11[(5.43 \times .25) + 1.9]}{1.9} - \frac{(5.43 \times 0.0)\ .25}{1.9} = 18.86 \text{ ug/L}$$

LTAacute = WLAacute X acute wasteload allocation multiplier
LTAchronic = WLAchronic X Chronic wasteload allocation multiplier

Wasteload allocation multipliers are found in Table 5-1 of the Technical Support Document (EPA/505/2-90-001, March 1991)

LTAacute = WLAa x .321 = 6.53 ug/L
LTAchronic = WLAc x .527 = 9.94 ug/L

To determine the MDL and AML, the minimum LTA is used:

MDL = LTAacute X long term average multiplier
AML = LTAchronic X long term average multiplier

Long term average multipliers can be found in Table 5-2 of the Technical Support Document.

MDL = 6.53 mg/L x 3.11 = 20.32 ug/L
AML = 6.53 mg/L x 1.19 = 7.78 ug/L

Effluent Limitation Calculation for Ammonia:

REASONABLE POTENTIAL DETERMINATION

Variables:
Qe = effluent flow = 1.90 mgd
Qu = upstream flow = 5.43 mgd
Qd = downstream flow = Qu + Qe
Ce = effluent concentration = 8.44 mg/L (maximum)
Cu = upstream concentration = 0.26 mg/L
RWC = receiving water concentration
RPM = reasonable potential multiplying factor = 4.7 (with n=4, Table 3-1 TSD)
%MZ = allowable mixing = 25% for chronic
2.5% for acute

If the RWC exceeds the aquatic life criteria then a water quality based effluent limitation is required.

From mass balance: RWC(Qd) = QuCu + QeCe

with Qu = 0.25(Qu) due to allowed mixing zone, and
Qd = 0.25(Qu) + Qe

Solve for RWC and multiply by the RPM

$$RWC = \frac{(\%MZ(Qu \times Cu) + (Qe \times Ce))}{Qe + (\%MZ \times Qu)} \times RPM$$

$$= \frac{(.25(5.43 \times .26) + (1.9 \times 8.44))}{1.9 + (.25 \times 5.43)} \times 4.7 = 23.7 \text{ mg/L}$$

Since 23.7 mg/L is greater than the allowable chronic aquatic life criteria (1.7 mg/L) a water quality based effluent limitation is required.

EFFLUENT LIMITATION CALCULATION

The acute and chronic criteria are converted to acute and chronic waste load allocations (WLAa or WLAc) for the receiving waters based on the following mass balance equation:

QdCd = QeCe + QuCu
where,

Qd = downstream flow = Qu + Qe
Cd = aquatic life criteria that cannot be exceeded downstream; acute criteria = 12.18 mg/L; chronic criteria = 1.73 mg/L
Qe = effluent flow = 1.9 mgd
Ce = allowable concentration of pollutant in effluent = WLAa or WLAc
Qu = upstream flow available for mixing with effluent flow
= Drain flow x %MZ
= 5.43 mgd x %MZ
Cu = upstream concentration of pollutant = .260
%MZ = allowable mixing = 25% for chronic
2.5% for acute
LTA = long term average
CV = coefficient of variation = .6
AML = average monthly limit
MDL = maximum daily limit

Rearranging the above equation to determine the effluent concentration (Ce) or the wasteload allocation (WLA) results in the following:

$$WLA = Ce = \frac{QdCd - QuCu}{Qe}$$

$$= \frac{Cd[(Qu + Qe]}{Qe} - \frac{QuCu}{Qe}$$

$$WLAacute = \frac{12.18[(5.43 \times .025) + 1.9])}{1.9} - \frac{(5.43 \times .26)\ .025}{1.9} = 13.03 \text{ mg/L}$$

$$WLAchronic = \frac{1.73[(5.43 \times .25) + 1.9]}{1.9} - \frac{(5.43 \times .26)\ .25}{1.9} = 2.78 \text{ mg/L}$$

LTAacute = WLAacute X acute wasteload allocation multiplier
LTAchronic = WLAchronic X Chronic wasteload allocation multiplier

Wasteload allocation multipliers are found in Table 5-1 of the Technical Support Document (EPA/505/2-90-001, March 1991)

LTAacute = WLAa x .321 = 4.18 mg/L
LTAchronic = WLAc x .527 = 1.47 mg/L

To determine the MDL and AML, the minimum LTA is used:

MDL = LTAacute X long term average multiplier
AML = LTAchronic X long term average multiplier

Long term average multipliers can be found in Table 5-2 of the Technical Support Document.

MDL = 1.47 mg/L x 3.11 = 4.56 mg/L
AML = 1.47 mg/L x 2.13 = 3.12 mg/L

Appendix 2 shows the application of the methods of the TSD along with the assumptions listed above in deriving water quality-based effluent limitations for ammonia for the Toppenish facility.

Table 2. Total Ammonia as N Effluent Limitations	
Maximum Daily Limit (mg/L)	4.6
Average Monthly Limit (mg/L)	3.1