TECHNICAL INFORMATION

1. Applicant

Fluor Daniel, Hanford, Inc.
P.O. Box 1000
Richland, Washington 99352

Fluor Daniel has assumed contractual responsibility for the NPDES permit(s) which are currently issued to the Department of Energy, including NPDES Permit No. WA-002591-7 (for 300 area) and NPDES Permit No. WA-000374-3 (for 100 and 300 areas). EPA received a NPDES permit application from Fluor Daniel on November 25, 1997 for discharges of wastewater from several outfall into the Columbia River from the Hanford Nuclear Reservation.

2. Proposed Permit Actions

EPA is proposing to issue one permit that authorizes and regulates discharges of pollutants from the outfalls on the Hanford Nuclear Reservation into the Columbia River. Currently, discharges from outfalls 003, 004, 005, 006, 007, 009, 013 and N-Springs are authorized under NPDES permit No. WA-000374-3. This permit was issued by EPA December 7, 1981. Discharge from the 300 Area Treated Effluent Disposal Facility (TEDF) to the Columbia River via outfall 001 was authorized by NPDES permit No. WA-002591-7. This permit was issued by EPA September 30, 1994.

In accordance with NPDES permit issuance regulations (40 CFR 122.62) EPA proposes to terminate the permits currently issued to the Department of Energy and reissue one permit (WA 002591-7) which establishes discharge requirements for the remaining discharges (outfalls 001, 003 and 004). The permittee has also requested that EPA modify some of the existing limitations for discharge 001 based upon information about operational performance of the TEDF.

3. Description of Discharges

Many of the activities and associated discharges in the 100 Area have ceased since permit issuance (WA-000374-3). Specifically, discharges to outfalls 005, 006, 007 and 009 have been eliminated. A more thorough explanation of the activities which led to elimination of these discharges is contained in a letter from Department of Energy, dated

August 10, 1995, which is attached to this fact sheet. Some wastes generated by operation of the 100 N Reactor were disposed to cribs which contributed pollutants to the N-Springs. Discharge to the cribs ceased after shutdown of this reactor. Cleanup of groundwater and discharge from the N-Springs is currently being addressed under an "Expedited Response Action Cleanup Plan". A CERCLA Record of Decision (ROD) is expected to replace this plan in Fiscal Year 1999. The "Expedited Response Action Cleanup Plan" and ROD will apply in place of requirements of the NPDES permit.

Discharge 003 is Columbia River water that is used to wash the intake structure for the 100 K Area water treatment plant. Discharge 004 is comprised of potable service water used for buildings and fire suppression in the K area. A diagram of these discharges is attached to this fact sheet.

The Yakama Indian Nation (YIN) operates a small fish rearing operation in some of the 100 K Area water treatment plant basins. It was determined that this operation is well under the production thresholds established for aquatic animal production facilities (fish hatcheries) in 40 CFR 122 Appendix C. The YIN is responsible for applying for an NPDES permit to discharge pollutants if production is increased to the levels specified in the regulations.

In the application and in subsequent discussion with EPA, facility representatives stated that all waste streams previously discharging to the Columbia River through outfall 013 have been eliminated except for a fish rearing operation and storm water at the 331 Building. The fish rearing operation is also well below the production thresholds established for aquatic animal production facilities. Therefore, permit requirements for this discharge are not necessary. Pacific Northwest National Laboratories (PNNL) is responsible for submitting a NPDES permit application if this contractor plans to increase fish production to levels addressed in the regulations.

TEDF receives wastewater from laboratory facilities, office buildings, maintenance shops and other support facilities in the 300 Area. Wastewater is generated from heating/ventilation/air conditioning systems, drains, sinks, storm water, process equipment and other laboratory and maintenance activities. Some wastewater generated by other areas on the Hanford reservation by similar facilities and processes are treated at the TEDF. A flow diagram showing treatment at TEDF is attached to this fact sheet.

Effluent limitations and reporting requirements for discharges from TEDF to outfall 001 were established by EPA prior to construction and operation of this facility. Most of the effluent limitations were based on the estimated treatment efficiency of the TEDF. Since beginning operation of this facility it has been determined that even with efficient operation and maintenance of TEDF, the effluent cannot consistently meet some of the technology-based discharge limitations for certain parameters. The existing permit specified that the permittee may request modification of effluent limitations if it was demonstrated that, with proper operation and maintenance, TEDF discharge exceeded these technology-based effluent limitations. Monitoring of the influent and discharge from TEDF has also demonstrated that some pollutants regulated by the existing permit are not present, or are not present at levels which have a reasonable potential to cause violation(s) of state water quality standards.

The permittee is also requesting to treat some additional wastes in the TEDF that are currently regulated under Washington Administrative Code (WAC) 173-303. EPA is proposing to include limitations in the permit that regulates discharges if this proposal is implemented.

4. Receiving Water Quality Standards

The Columbia River in the vicinity of the discharge is designated in Chapter 173-201 WAC, Water Quality Standards for Surface Waters of the State of Washington, as a Class A(excellent) receiving water with the following characteristic uses: water supply (domestic, industrial, agricultural); stock watering; migration, rearing, spawning, and harvesting of salmonids and other fish; wildlife habitat; recreation (primary contact recreation, sport fishing, boating, and aesthetic enjoyment); and commerce and navigation.

Receiving water quality criteria to protect these uses are contained in WAC 173-201A-030(2), 040, 050, and 130(21); EPA's Toxics Rule, 40 CFR Part 131 (57 FR 60848 December 22, 1992); EPA Quality Criteria for Water 1986 (so-called the Gold Book) as amended; and/or other criteria published by EPA. This is also in accordance with WAC 173-201A-040(5) which specifies that "Concentrations of toxic, and other substances with toxic propensities not listed in subsection (1) of this section shall be determined in consideration of USEPA Quality Criteria for Water, 1986, and as revised, and other relevant information as appropriate." Receiving water

quality criteria for protection of human health are also contained in the Toxics Rule.

For temperature, the water quality standards contain a "Special Condition" for the Columbia River in the vicinity of the discharge(s). It is specified in this condition that river temperatures shall not exceed 20.0°C due to human activities. When natural conditions exceed 20.0°C, no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3°C; nor shall such temperature increases, at any time, exceed $t = 34/(T+9)$ where "t" represents the maximum permissible temperature increase measured at a dilution zone boundary; and "T" represents the background temperature as measured at a point or points unaffected by the discharge and representative of the highest ambient water temperature in the vicinity of the discharge.

The applicable receiving water criterion for pH calls for hydrogen ion concentration (pH) to be maintained within the range of 6.5 to 8.5 with a human-caused variation within a range of less than 0.5 pH unit.

It is specified in the Washington Water Quality Standards at WAC 173-201A-100(7)(a) that the maximum size of discharge mixing zones shall not extend greater than 300 feet downstream nor greater than 25 percent of the width nor greater than 25 percent of river flow at the point of discharge. Acute criteria are applied at the most restrictive mixing occurring at either 10 percent of the mixing zone (30 feet) or 2.5 percent of the flow at critical flow conditions. For protection of aquatic life, critical conditions are defined as the 7Q10 river flow. Human health criteria are applied at the edge of the mixing zone using the harmonic mean flow (HMF) of the river (per EPA Technical Support document for Calculating Water Quality-Based Toxic Control, chapter 4.6.2.).

Other receiving water quality criteria most applicable to the discharge(s) are listed in this fact sheet under Basis for Limitations.

5. Statutory and Regulatory Requirements

A. Requirements Related to Control of Conventional, Nonconventional, and Toxic Pollutants

It is stipulated in the Water Quality Act of 1987 (Act) that issued NPDES permits must contain effluent limitations reflecting the most stringent of (1) receiving water quality standards established pursuant to state law or regulations and (2) technology-based effluent guidelines established by EPA for three levels of wastewater treatment technology. These levels include Best Practicable Control Technology Currently Available (BPT); Best Conventional Pollutant Control Technology Currently Available (BCT) for the parameters: BOD_5, TSS, pH, fecal coliform bacteria, and oil & grease; and Best Available Technology Economically Achievable (BAT) for nonconventional and toxic pollutants.

Where effluent guidelines have not been promulgated by EPA, the Act and NPDES regulations at 40 CFR § 125.3 require the permit writer to establish BPT, BCT, or BAT effluent limits on a case-by-case basis based on Best Professional Judgement (BPJ).

B. Control of Radioactivity and Radionuclides

This proposed permit does not cover any radioactivity and radionuclide parameters except radium which are considered to be a source, byproduct, or special nuclear materials that are controlled by the Department of Energy (DOE) under the Atomic Energy Act (AEA) in accordance with provisions of DOE Order 5400.5, "Radiation Protection of the Public and the Environment". The DOE, Richland Field Office will regulate and monitor the release of radionuclides to the environment pursuant to the AEA.

6. Basis of Limitations

Statistical effluent limitation derivation procedures contained in Section 5 of the Technical Support Document For Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991 (TSD) were used to calculate the "monthly average" and "daily maximum" effluent limitations, taking into account the principles of effluent variability. The Washington Department of Ecology has incorporated these principles into the state’s NPDES permit Writers Manual(updated version July 1998). Computer spreadsheets which calculate water quality-based effluent limitations were used to develop the proposed limitations and are attached to this fact sheet.

A. TEDF

There are no EPA promulgated effluent guidelines applicable to the TEDF. The suspended solids (TSS) and pH limitations of the existing permit were based on BPJ determination of BPT (BCT limits were also set equal to these limits). Effluent limitations for arsenic, temperature, and whole effluent toxicity were also technology-based because they were established using a mixing zone much smaller than allowed by state water quality standards. All of the other limitations in the existing permit were based on a BPJ/BAT determination of expected performance of the TEDF prior to operation.

Most of the limitations established in the existing permit were based on estimates of performance by TEDF, which was then under construction. Accordingly, EPA included a provision in the existing permit (part I.A.1.c.) which allows the permittee to request changes to limitations if through efficient operation and maintenance TEDF demonstrated the effluent was unable to consistently meet limitations. The permittee has submitted a request to EPA that limitations for certain parameters be changed.

Information about treatment efficiency obtained by actual operation of TEDF during the past two years is attached to this fact sheet. This information is used to modify some of the effluent limitations in the proposed permit. Also, the Washington Department of Ecology has updated it's procedure(s) for establishing water quality-based effluent limitations. These procedures were used in developing the proposed permit.

1. Mixing of TEDF effluent in receiving water

The TEDF outfall is located in the west channel of the Columbia River where Johnson Island splits river flow. The 7Q10 low flow is 50,400 cfs, based on river flow data from March 31, 1954 through March 1994. The harmonic mean flow at Priest Rapids was calculated as 90,100 cfs (EPA, Columbia River TMDL for Dioxin). Modeling by CH2MHill and ambient monitoring of different river flows in the vicinity of the outfall predicts the river velocity near the outfall. These velocities and other listed parameters were input to the computer model ERL-N PLUMES which calculated the dilution(s) occurring at the boundaries of the acute and chronic mixing zones.

Input parameters:
temperature receiving water = 21.5°C
temperature discharge = 40°C
outfall = single port, 3 inch pipe
river velocity in west channel at 7Q10 = 1.7 fps
river velocity in west channel at HMF = 2.9 fps
maximum daily effluent discharge flow = 0.468 mgd

mixing at edge of acute mixing zone (30 ft) at 7Q10 = 64:1
mixing at edge of chronic mixing zone (300 ft) at 7Q10 = 591:1
mixing at edge of chronic mixing zone (300 ft) at HMF = 386:1

In developing the existing permit, EPA established a mixing zone boundary at 71 feet downstream of the discharge in the existing permit. This distance was estimated to be the downstream point at which the effluent would surface during "extreme worse case" conditions (36,000 cfs)and where temperature criteria would be met. Limitations for arsenic and whole effluent toxicity were also establish based upon this size mixing zone. Effluent limitations based on a mixing zone of 71 feet, rather than the 300 feet authorized by state water quality standards, are BPJ-based and are more stringent than necessary to meet water quality criteria.

2. Ambient Monitoring

The existing permit require the permittee to monitor receiving water above the discharge and at the edge of the mixing zone (71 feet downstream of the discharge). Results of this monitoring are attached to this fact sheet.

3. Limitations

A. TEDF

The table below compares discharge monitoring results (since the TEDF became fully operational 1/95 - 8/98) to limitations established in the existing permit.

It should be noted that a large part of the reported information is below the analytical detection level and below or equal to effluent limitations for many parameters. The reported detection level was used, rather than zero, for calculating the average values listed below. Attached to this fact sheet is a table showing all the individual values reported for each of these parameters during this period.

Parameter	Discharge [1]		Existing* Limitation	
	Avg [2]	Max.	Avg.	Max.
Bis(2-ethylhexyl phthalate)	3.9	20	3	5
Dichlorobromo-methane	ND	ND	2.2	4
Chlorodifluoro-methane	ND	ND	5	7
Methylene Chloride	3.6	18	3	5
Toluene	ND	ND	6	9
1,1,1-Trichloro-ethane	ND	ND	5	9
Trichloroethylene	ND	ND	1.9	5
Chloroform	5.5	20	15	26
1,1-Dichloroethane	ND	ND	4.7	7
Tetrachloroethylene	ND	ND	5	9
Aluminum (Al)	24.5	144	215	372
Arsenic (As)	1.2	11	3	5
Beryllium (Be)	0.5	1.5	2	4
Cadmium (Cd)	0.4	0.8	2	4
Copper (Cu)	3.5	8.7	3	5
Cyanide (CN)	5.1	14	6	10
Iron (Fe)	38.4	821	846	1460
Lead (Pb)	0.8	3	2	4
Manganese (Mn)	0.5	1.6	10	17
Mercury (Hg)	ND	ND	0.9	1.5
Nickel (Ni)	2.3	35	35	60
Nitrite (NO_2^-)	53.6	216	60	104
Selenium (Se)	ND	ND	5	7
Silver (Ag)	0.4	2.6	6	10
Zinc (Zn)	7.4	19.6	25	43
Radium (pCi/l)	0.2	0.4	0.2	0.4
Suspended Solids			3000	9000
fecal coliform (#/100ml)	0	0	85	146

[1] all units are ug/l except radium and fecal coliform
[2] the average of all measured values calculating ND = 0
ND = never reported above analytical detection level and less than effluent limitation

Discharge monitoring data demonstrates that the TEDF effluent has been able to consistently meet all of the limitations except the monthly average limitations for arsenic, lead, cyanide, methylene chloride, zinc and Bis(2-ethylhexyl) phthalate; and daily maximum limitations for arsenic, cyanide, lead, methylene chloride, nitrite, and

Bis(2-ethylhexyl) phthalate. EPA proposes to modify some of these limitations to reflect actual performance capabilities of the TEDF treatment plant when properly operated and maintained. Listed below are the limitations EPA is proposing as revisions for these parameters:

Parameter	Limitation	
	Monthly Average	Daily Maximum
Arsenic	5	9
Bis(2-ethylhexyl) phthalate	10	20
Copper	10	15
Lead	4	8
Methylene Chloride	5	10

Typically, performance-based limitations are statistically derived from the values reported during monitoring of the effluent. However, since the TEDF achieved operational status, many of the values reported for the measured parameters are below both the detection level and effluent limitation. Assigning values to these unknown, low concentrations skews the results of a purely statistical approach to determining performance-based effluent limitations. Therefore, EPA is proposing these limitations based on consideration of observed variability of the effluent and analytical results.

The proposed limitations are the most stringent of either the calculated water quality-based or performance-based limitations. Effluent limitations for other parameters remain unchanged. Monthly average lb/day limits were calculated by multiplying the average waste flow quantity (0.432 mgd) times the respective monthly average concentration limits and applying a conversion factor of 8.337 lb/gal [flow (mgd) x 8.337 lb/gal x concentration (ug/l) x 10^{-3} mg/ug = lb/day]. The daily maximum lb/day limits were calculated through use of the same formula but using instead, the daily maximum flow quantity (0.468 mgd) and the respective daily maximum concentration limits.

The existing permit established limitations and monitoring requirements for fecal coliform bacteria and chlorodifluoromethane. The permittee has certified that there are no waste streams containing these pollutants routed to the TEDF. Influent and effluent monitoring during plant

operation has also verified the complete absence of these pollutants. Accordingly, EPA is proposing to eliminate limitations and monitoring requirements for these pollutants.

The water quality criteria for the protection of human health for arsenic is 0.018 ug/l. Arsenic is a parameter for which human health criteria are more stringent than criteria for protection of aquatic life. Reasonable potential (to exceed permit limitations) and effluent limitations are calculated by using the computer spreadsheet HUMAN-H.XLS. The parameters applied in this spreadsheet include:

50th percentile effluent concentration = 0.3 ug/l

Coefficient of Variation (CV) = 0.6 and a sampling frequency of n = 2 samples per month.

Dilution of the effluent in receiving water for human health criteria is based upon the long term harmonic mean flow of the river and the average monthly discharge flow from the TEDF. The estimated harmonic mean flow in the west channel of the Columbia River in the vicinity of the outfall is 90,100 cfs. The long term average monthly flow from TEDF is 272,362 gpd. The edge of the authorized chronic mixing zone is 300 feet downstream from the point of discharge. Corresponding mixing of river water to effluent at this point is estimated to be 386:1.

These calculations indicate there is no reasonable potential for arsenic in the discharge to cause water quality criteria to be exceeded in receiving waters. EPA is proposing to modify this limitation to reflect actual performance of the TEDF to 5 ug/l for monthly average and 9 ug/l daily maximum, respectively.

Limitations for the other pollutants regulated by the existing permit are unchanged. The basis for these limitations are contained in the administrative record for the existing permit. EPA proposes to modify the monitoring frequency and analytic procedures specified in the existing permit to reflect the demonstrated consistency of treatment performance of TEDF.

B. <u>TEDF wastewater changes</u>

The permittee has requested authorization to route additional waste streams to the TEDF which the permittee believes are amenable to treatment and discharge. These wastes are presently managed pursuant to the State of Washington Dangerous Waste Regulations, WAC 173-303. The application included information, which is attached to this fact sheet, estimating TEDF influent and effluent concentrations after addition of these wastes.

EPA proposes to establish a second set of effluent limitations for discharges from the TEDF that apply if these wastes are treated through the TEDF. The proposed limitations apply when "Dangerous Wastes" are introduced into the TEDF influent in amounts that might cause the effluent to exceed the regular limitations despite proper operation and maintenance of this treatment facility. Based on the demonstrated treatment efficiency of the TEDF, the permittee has suggested that limitations associated with treatment of "Dangerous Wastes" apply when the estimated feed characteristics of the influent wastestream exceed 8 times the regular MDL for a limited metal constituent or 2 times the regular MDL for a limited organic constituent. The regular limitations (established in part I.A. of the permit) otherwise apply. These requirements reflect the more stringent of either water quality or BPJ-based limitations.

C. Outfall 003

The existing limitations and monitoring requirements established in NPDES permit WA 000374-3 for this discharge (inlet screen backwash) are proposed for inclusion in the proposed permit. These limitations include:

Flow = 0.080/0.132 mgd (monthly avg./daily max)
Suspended Solids = 30/45 mg/l (monthly avg./daily max.)
No floating solids or visible foam in other than trace amounts.

D. Outfall 004

Discharges through outfall 004 are from various sources associated with water supply for the K area. Facility modifications have been made at the K Basins since the existing (WA-000374-3) permit was issued which preclude the need for secondary cooling water. This function is now being performed by air cooled chillers and no thermal discharges

are routed to the 004 discharge. It is noted that some solar heating of the water in the supply system occurs in the K basins and discharge structure. However, complete or near complete mixing of effluent and receiving water is accomplished within the 7 foot diameter outfall pipe and there appears to be no reasonable potential for temperature criteria to be exceeded in the river from this discharge.

The following information was used for calculating discharge 004 effluent to receiving water mixing:

- Width of river at outfall = 1800 feet
- Depth of discharge = 36 feet
- Distance from shoreline to outfall = 550 feet
- Diameter of outfall = 7 feet
- 7Q10 Flow of River = 50,400 cfs
- Discharge flow = 4.9 mgd (daily max.)
- temperature receiving water = 21.5°C
- discharge temperature (at outfall structure)= 27°C (80°F)

Proposed limitations for outfall 004 include:

Total Combined Discharge
Flow = 2.0/4.9 mgd (monthly avg./daily max.)
Temperature = 80°F
pH shall be between 6.0 and 9.0 standard units.
There shall be no discharge of floating solids or visible foam in other than trace amounts.
There shall be no visible oil sheen.
Free Available Chlorine = 0.08/0.1 mg/l (monthly avg./daily max.)

Water Filter Plant Backwash Water
Suspended Solids = 30/45 mg/l (monthly avg./daily max.)
Sampling of water filter plant backwash discharge shall be taken prior to mixing with any other flow. The suspended solids limitations are from the existing permit (WA-000374-3).

7. Monitoring Requirements

Self-monitoring of discharge parameters is necessary for the permittee to demonstrate compliance with effluent limitations and to assure that water quality standards are being met. The monitoring requirements are based on the Agency's determination of the sample types and minimum sampling frequencies needed to adequately characterize the discharge.

A. Effluent Monitoring

The Outfall 001 discharge as measured in the effluent flow from the EF-T-10 Effluent Tank will be required to be monitored on a biweekly (two samples/month) grab sample basis for all limited parameters except for flow, temperature and pH which are monitored continuously. As required in the existing permit (WA-002591-7), both the quantity of waste influent flow to the TEDF as well as effluent flow is required to be monitored daily.

B. Biomonitoring Requirements

Attached to this fact sheet is a summary of results of whole effluent toxicity testing (WET) of the TEDF discharge. These results demonstrate no reasonable potential to cause either acute or chronic toxicity conditions to occur in the receiving waters. At the edge of the mixing zones established in the proposed permit, the calculated acute and chronic critical effluent concentrations are 1.6% and 0.17% effluent, respectively. Accordingly, EPA is proposing to establish WET monitoring and reporting requirements that are consistent with requirements applied to other dischargers in the state of Washington. The permittee is required to repeat WET characterization of the TEDF effluent if the proposal to route RARA wastes to this facility for treatment is implemented.

D. Quality Assurance and Quality Control Plan

The existing and the proposed permit requires the applicant to develop and/or have in operation an acceptable Quality Assurance and Quality Control Plan to assist in the planning for and conducting of sample collection and analysis of waste discharge and receiving water samples, and explaining any data anomalies that may occur.

E. Reporting Requirements

The existing permit requires the permittee to utilize specified analytical procedure and achieve associated minimum levels (MLs)for measuring parameters limited in the permit. EPA proposes to modify the monitoring requirements such that the permittee may use EPA approved analytical methods that are sufficiently sensitive to demonstrate compliance with effluent limitations.

The permittee is required to report actual quantified analytical results whenever possible and all analytical values at or above the ML of the analytical method used will be reported as the measured values. When the analytical results cannot be quantified, values below the ML will be reported as "0" on the DMRs. The main purpose for these requirements is to establish consistency in the reporting of effluent values that fall below the MLs.

9. Endangered Species

Section 7 of the Endangered Species Act of 1973 requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) to ensure that any federal action, such as reissuance of this NPDES permit, jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat. NPDES regulations at 40 CFR Part 122.49(c) also require this showing for the issuance of NPDES permits.

In compliance with the Section 7 - Endangered Species Act requirements, the Department of Energy through its contractors, conducted field studies/biological evaluations in the vicinity of the then proposed discharge site for the TEDF. Based on the results of these evaluations, the Department of Energy concluded that the two listed species or their critical habitats will not be adversely affected by the proposed discharge. The Department of Energy made a "no effect" determination relative to this discharge and consulted with the USFWS. The Service subsequently concurred with the Department of Energy's "no effect" determination.

In a letter dated June 15, 1998, USFWS responded to EPA’s request for listing of threatened or endangered species that might be present in the vicinity of the discharges from the Hanford Nuclear Reservation. The letter listed Peregrine falcon (*Falco peregrinus*)as endangered and Bald eagle (*haliaeetus leudcocephalus*)and Bull trout*(Salvelinus confuentus*)as threatened.

In a letter dated June 19, 1998, the National Marine Fisheries Service provided a list of threatened or endangered species that may range in the vicinity of the NPDES discharges from the Hanford Nuclear Reservation. The letter listed upper Columbia River steelhead trout *(Oncorhynchus mykiss)* as endangered and upper Columbia River spring chinook salmon *(O.tshawytscha)* as proposed for listing as endangered.

EPA believes that discharges in compliance with the proposed effluent limitations and monitoring requirements shall not cause any violation of water quality standards established for the protection of aquatic life nor affect listed or endangered species. The discharges are from existing facilities. Nevertheless, EPA is providing copies of the proposed permit and fact sheet to these agencies for their review. Based on comments received from these agencies, EPA may engage in formal conference and consultation processes for ESA section 7 considerations (per 50 CFR Part 402).

Attachments

1. Letter from permittee re: elimination of discharges
2. Diagram of discharges 003 and 004
3. Diagram of discharge 001 from TEDF
4. Water quality spreadsheets
5. TEDF ambient monitoring data
6. Summary of TEDF operational performance
7. TEDF Whole Effluent Toxicity testing results
8. Information about treating “dangerous wastes” through TEDF

Attachment 1

Information Provided By Permittee Regarding Elimination of Discharges

NATIONAL POLLUTANT DISCHARGE PERMIT
NO: WA-000374-3
OUTFALL REMOVAL JUSTIFICATION

Outfall 005

Outfall 005 discharged overflow from the 182-N water storage tanks and yard steam condensate as a part of the N Facility building heating system. Discharges were ceased during the facility lay-up activities for the N-Reactor located in the 100 Area of the Hanford Site. "Facility lay-up" means that a facility has been permanently shut down and deactivated. In conjunction with the permanent deactivation of the N-Reactor, numerous lay-up procedures were developed to shutdown, isolate, and drain systems that supported the operation of this facility.

Four procedures and one work package initiated during facility lay-up resulted in the elimination of all discharges to this outfall. These procedures are listed below including the date of completion.

1. Procedure L-04-3, completed in April 1990, permanently deactivated the Foster Wheeler Boiler.

2. Procedure L-10-01, completed in May 1990, deactivated the Circulating Raw Water System.

3. Procedure L-04-4, completed in May 1990, deactivated the C.E. Boilers.

4. Procedure L-16-02, completed in May 1991, deactivated the Demineralized Water Plant.

5. Work Package IN-94-00127, completed in May 1994, re-routed the 182-N building roof drains to the ground adjacent to the building.

All discharges to Outfall 005 have been eliminated.

Outfall 006

Outfall 006 discharged water from the Emergency Diesel Fog Spray Pumps during routine monthly performance tests. Permanent lay-up procedure L-22-A-02 was completed in March 1990. This procedure consisted of removal of the "starting air" to the diesel engines, permanently isolating fuel to the engines, and removing any lubrication products; thus rendering the diesel pumps inoperable.

All discharges to Outfall 006 have been eliminated.

Outfall 007

Outfall 007 discharged water from back-washing procedures for the river pump inlet fish screens at the river pumphouse. The inlet fish screens and backwash system were permanently abandoned when procedure L-10-01 was completed in May 1990.

Discharges to Outfall 007 have been eliminated.

Outfall 009

Outfall 009 discharged circulated raw river water and flows from heating, ventilation and air conditioning equipment, air compressor cooling water and stormwater from roof drains located at Buildings 105N, 109N and 184N. When procedure L-10-01 was completed in May 1990, the majority of these discharges were eliminated. Several permanent facility changes listed below were completed to eliminate the remaining discharges.

1. Work Package IN-94-00145, completed in January 1995, installed a sump pump at 183-N to re-route effluent to the filtered water backwash pond.

2. Work Package IN-94-00103, completed in September 1994, re-routed 184-N building roof drains to the ground adjacent to the building.

3. Work Package IN-94-00133, completed in November 1994, deactivated the 105-N swamp cooler.

4. Work Package IN-94-00132, completed in December 1994, diverted 105-N swamp cooler drains to the ground.

5. Work Package IN-94-00166, completed in January 1995, re-route spray wash drains from the 105-N air conditioner to the ground.

6. Work Package IN-94-00185, completed in January 1995, isolated and re-routed equipment drains located in the 105-N building to the 100-N Area Sanitary Sewer System.

7. Work Package IN-94-00104, completed in October 1994, re-routed 109-N building's roof drains to the ground adjacent to the building.

These work packages eliminated all discharge to Outfall 009. All discharges that have been re-routed for ground discharge are being permitted under the Washington State Waste Discharge System.

N-Springs

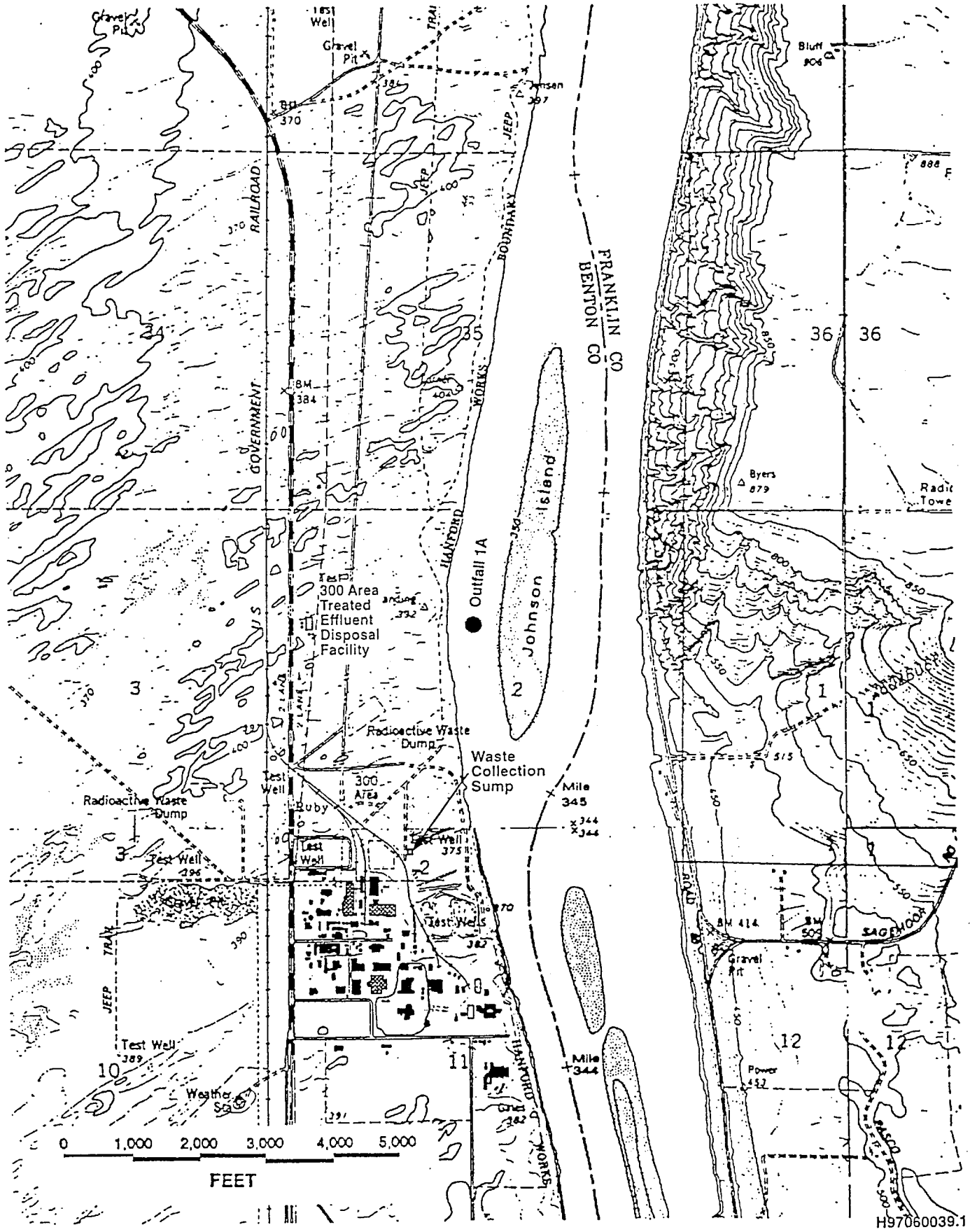
The N-Springs are located on the bank of the Columbia River near the 100 N Reactor Facilities and are naturally occurring springs. Discharges to two different cribs contributed to the N-Springs discharges and contained certain pollutants. Discharges to 1301-N crib were ceased in September 1985, when plant effluents were re-routed to the new 1325-N Crib. The 1325-N Crib ceased receiving discharges from the N Reactor Facility in April 1991. Facility isolation procedure IN-93-01543 was initiated in September 1993, to assure no inadvertent discharge could occur to either the 1301-N Crib or the 1325-N Crib.

On September 23, 1994, the State of Washington Department of Ecology issued an Action Memorandum titled, "N Springs Expedited Response Action Cleanup Plan, U.S. Department of Energy Hanford Site, Richland, WA." (Enclosed copy.)

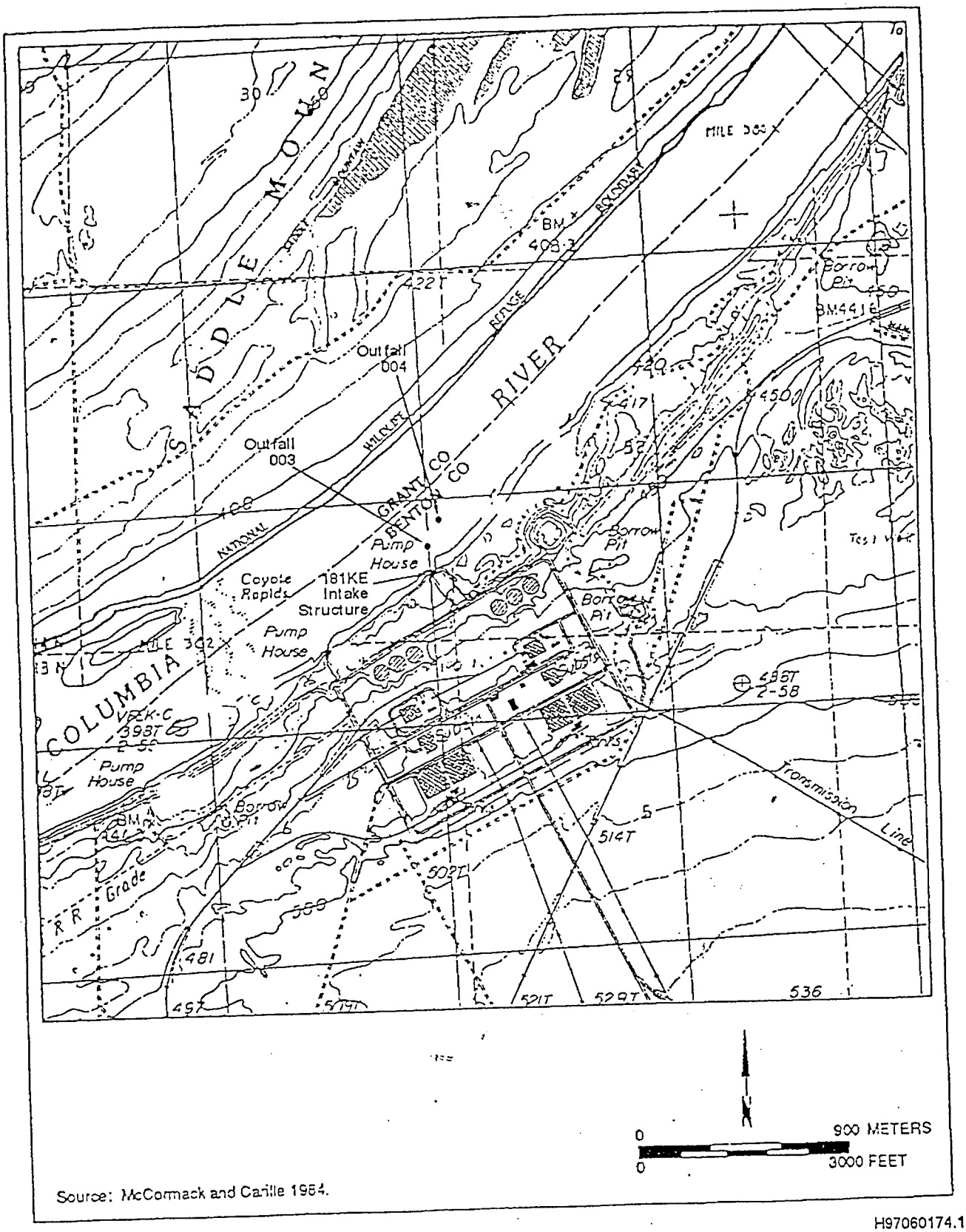
National Pollutant Discharge Elimination Permit No. WA-000374-3, specifically authorizes discharges from the 1301-N Crib. Since all discharges from the 1301-N and 1325-N Cribs were eliminated four years ago and any remaining pollutants in the soil column are being addressed by the above listed action memorandum, flow to this "outfall" is considered to be eliminated.

Attachment 2

Diagram of discharges 001, 003 and 004



300 Area Treated Effluent Disposal Facility Site Map

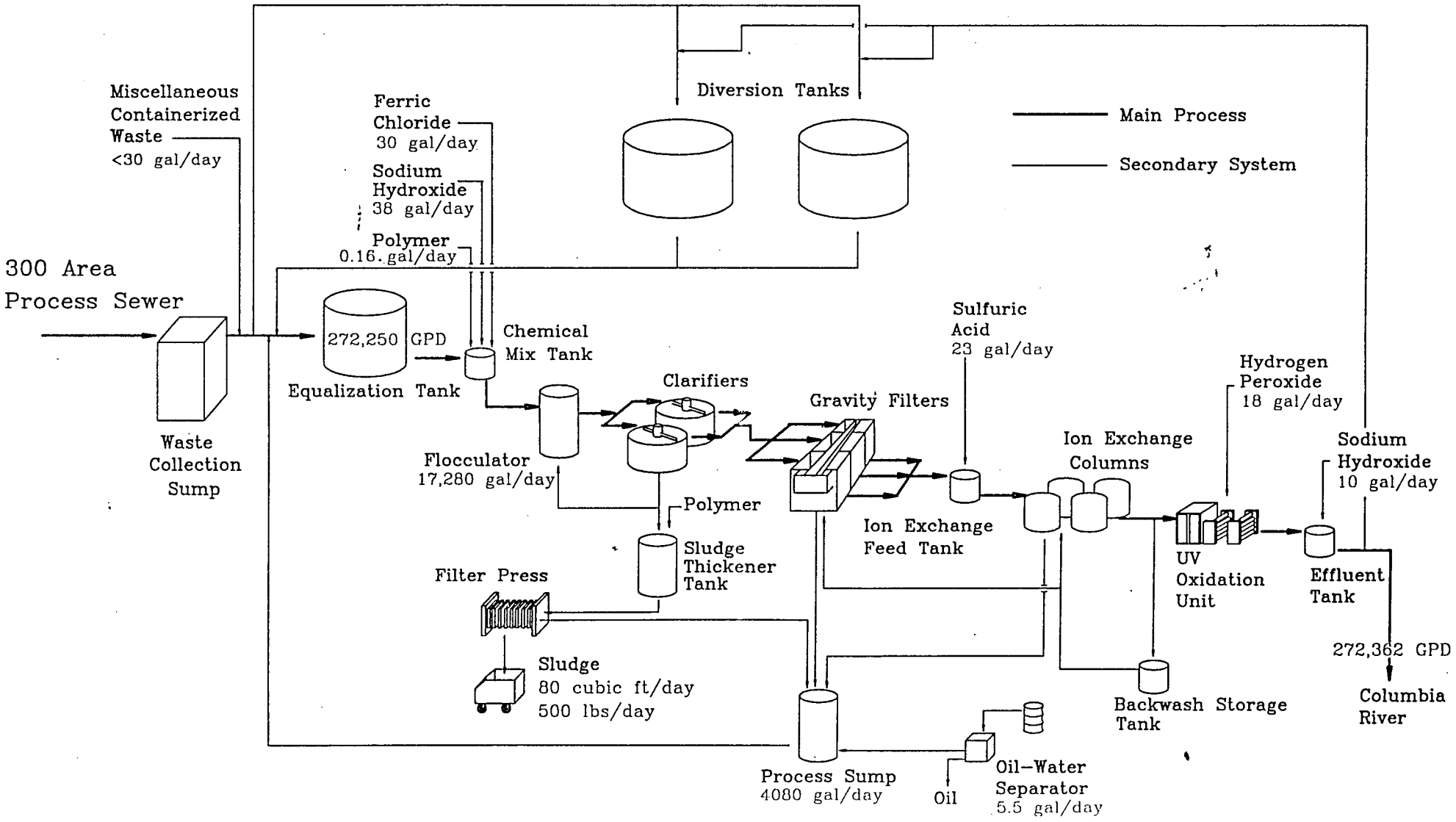


Source: McCormack and Carlile 1984.

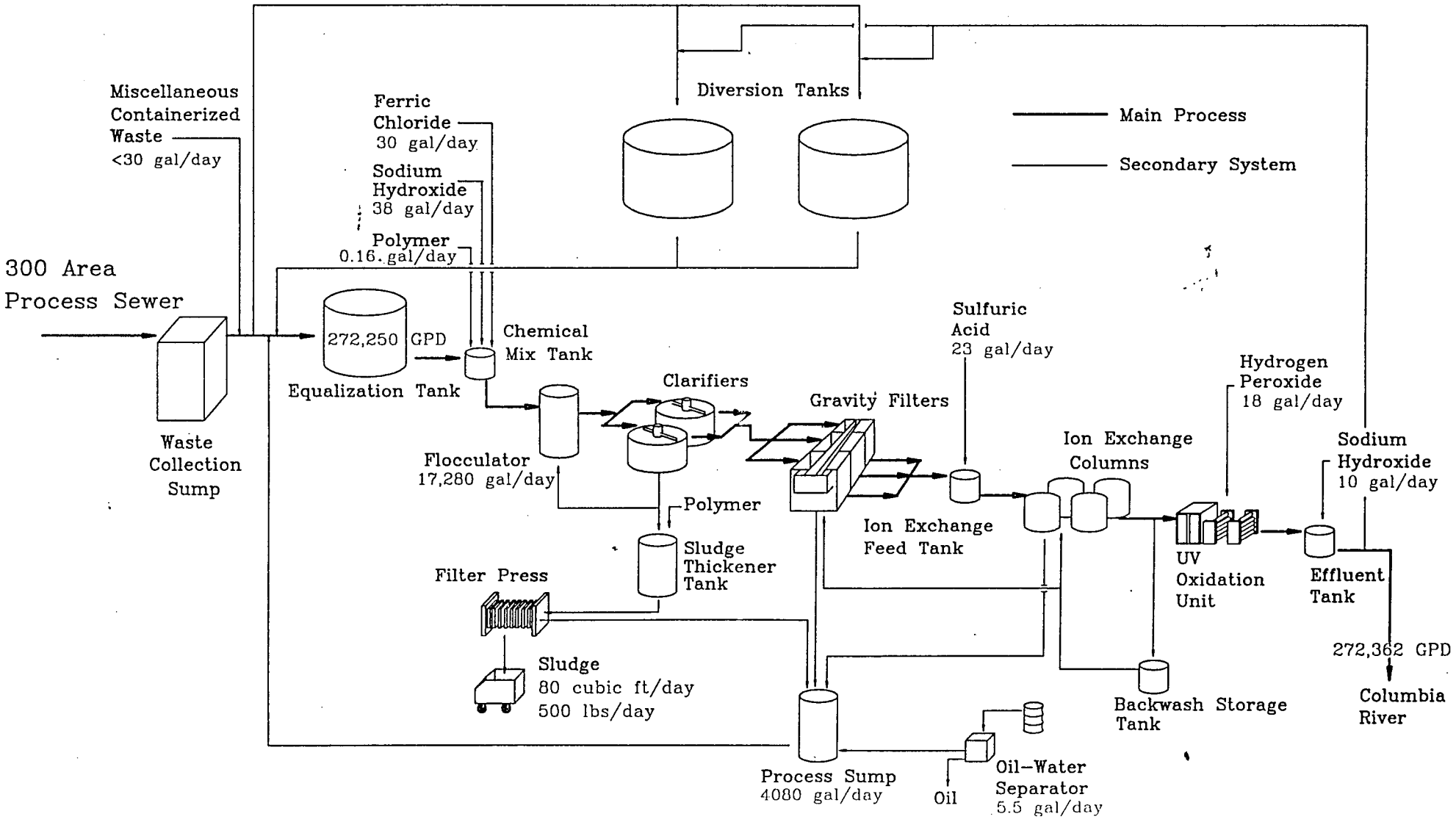
H97060174.1
R1

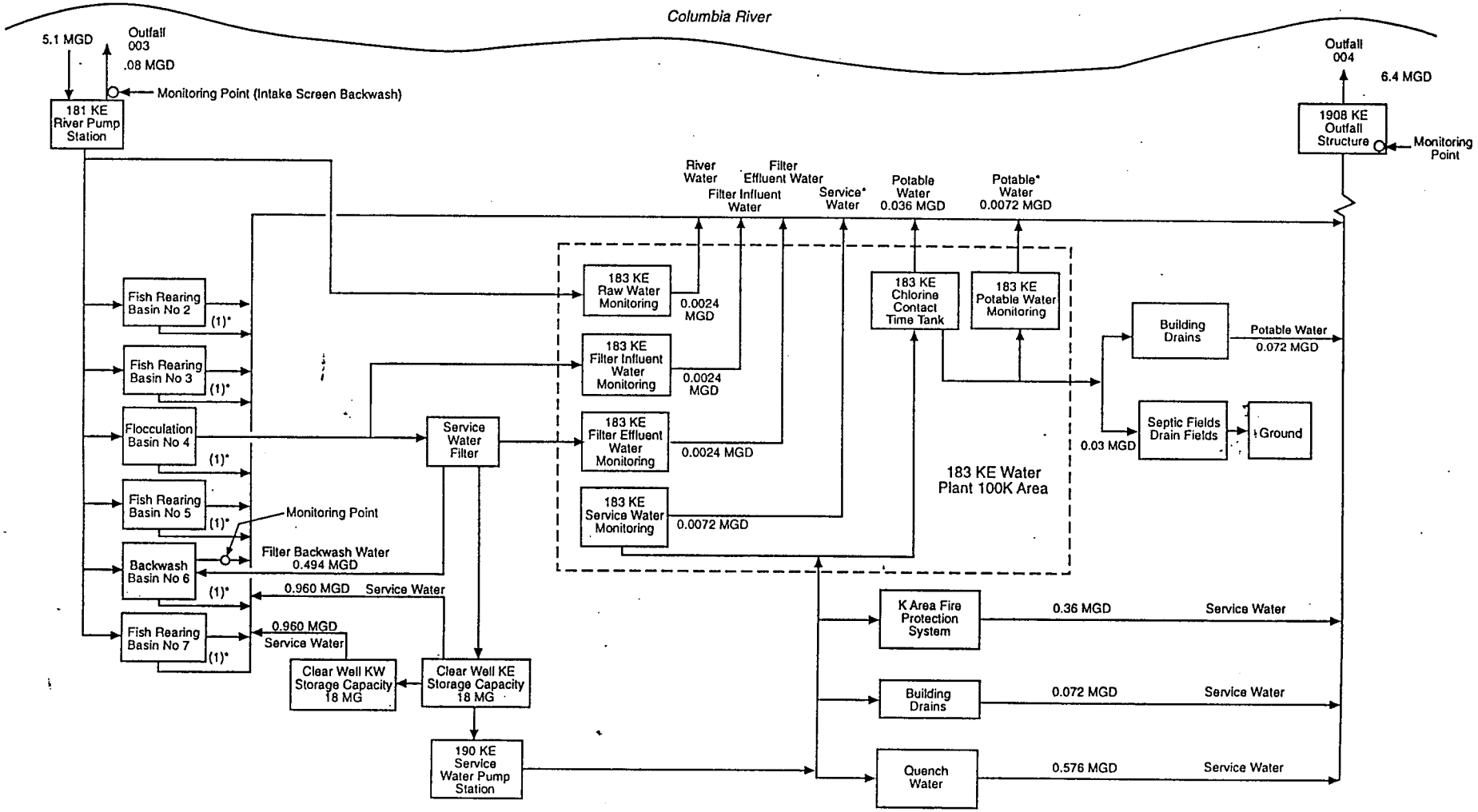
100K Area Outfalls 003 and 004

300 Area TEDF Schematic



300 Area TEDF Schematic





Notes:
1. Streams marked with an * are continuous flows.
2. Streams marked with (1) are basin subdrains, including valve leakage (0.144 MGD to .864 MGD)
3. The difference between 5.1 MGD intake and 6.4 MGD effluent is attributed to the discharge of stored water inventories.

Outfalls 003 and 004 Flow Diagram

H97070087.1R1

Attachment 3

Water Quality Spreadsheets

REASONABLE POTENTIAL CALCULATION

NPDES Permit No.

This spreadsheet calculates the reasonable potential to exceed state water quality standards for a small number of samples. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, March, 1991 (EPA/505/2-90-001) on page 56. User input columns are shown with red headings. Corrected formulas in col G and H on 5/98 (GB)

CALCULATIONS

				State Water Quality Standard		Max concentration at edge of...												
Parameter	Metal Criteria Translator as decimal Acute	Metal Criteria Translator as decimal Chronic	Ambient Concentration (metals as dissolved) ug/L	Acute ug/L	Chronic ug/L	Acute Mixing Zone ug/L	Chronic Mixing Zone ug/L	LIMIT REQ'D?	Effluent percentile value	Pn	Max effluent conc. measured (metals as total recoverable) ug/L	Coeff Variation CV	s	# of samples n	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor	COMMENTS
chromium (hexavalent)				15	10			NO	0.95	0.224		0.60	0.55	2	3.79	64	591	
aluminum			17.9	750	87	21.95	18.34	NO	0.95	0.224	73.00	0.60	0.55	2	3.79	64	591	
iron			27.0	#########	1000	75.26	32.23	NO	0.95	0.224	821.00	0.60	0.55	2	3.79	64	591	
manganese			4.2	#########	50000	4.23	4.20	NO	0.95	0.224	1.60	0.60	0.55	2	3.79	64	591	
beryllium				130	5.3000	0.01	0.00	NO	0.95	0.224	0.20	0.60	0.55	2	3.79	64	591	
cadmium	0.94	0.94		2.13	0.17			NO	0.95	0.224		0.60	0.55	2	3.79	64	591	
chromium (trivalent)				#########	3511			NO	0.95	0.224		0.60	0.55	2	3.79	64	591	
copper	0.99	0.99		10.52	7.3400	0.51	0.06	NO	0.95	0.224	8.70	0.60	0.55	2	3.79	64	591	
lead	0.46	0.46	0.79	36.88	1.44	0.78	0.79	NO	0.95	0.224		0.60	0.55	2	3.79	64	591	
mercury				2.1	0.012			NO	0.95	0.224		0.60	0.55	2	3.79	64	591	
nickel	0.97	0.97		918	102	0.63	0.07	NO	0.95	0.224	11.00	0.60	0.55	2	3.79	64	591	
selenium				20	5			NO	0.95	0.224		0.60	0.55	2	3.79	64	591	
silver	0.85			1.4	#########	0.01	0.00	NO	0.95	0.224	0.20	0.60	0.55	2	3.79	64	591	
zinc			10.0	74.24	67.79	11.43	10.16	NO	0.95	0.224	26.80	0.60	0.55	2	3.79	64	591	
cyanide				22	5.2			NO	0.95	0.224		0.60	0.55	2	3.79	64	591	
benzene				530	#########	5.93	0.64	NO	0.95	0.224	100.00	0.60	0.55	2	3.79	64	591	
carbon tetrachloride				35200	#########	5.93	0.64	NO	0.95	0.224	100.00	0.60	0.55	2	3.79	64	591	
chloroform				28900	1240	1.13	0.12	NO	0.95	0.224	19.00	0.60	0.55	2	3.79	64	591	
1,1-dichloroethane				11600	#########	0.59	0.06	NO	0.95	0.224	10.00	0.60	0.55	2	3.79	64	591	
tetrachloroethylene				5280	840	0.59	0.06	NO	0.95	0.224	10.00	0.60	0.55	2	3.79	64	591	
toulene				17500	#########			NO	0.95	0.224		0.60	0.55	2	3.79	64	591	
1,1,1-trichloroethane								NO	0.95	0.224		0.60	0.55	2	3.79	64	591	
tricholoroethlyene				45000	21900			NO	0.95	0.224		0.60	0.55	2	3.79	64	591	
Bis (2-ethylhexyl) phthalate				940	3	1.19	0.13	NO	0.95	0.224	20.00	0.60	0.55	2	3.79	64	591	
radium				#########	5	0.02	0.00	NO	0.95	0.224	0.40	0.60	0.55	2	3.79	64	591	
barium				#########	1000	2.37	0.26	NO	0.95	0.224	40.00	0.60	0.55	2	3.79	64	591	
ammonia (total as N)				14100	1300			NO	0.95	0.224		0.60	0.55	2	3.79	64	591	
						#DIV/0!	#DIV/0!	#DIV/0!	0.95	#DIV/0!		0.60	0.55		#DIV/0!			

9/8/98 11:58 AM
energy3
AMMONIA.XLS

AMMONIA WATER QUALITY CRITERIA CALCULATION

NPDES Permit #

Calculation Of Ammonia Concentration and Criteria for fresh water. Based on EPA Quality Criteria for Water (EPA 400/5-86-001) and WAC 173-201A. Revised 1-5-94 (corrected total ammonia criterion). Revised 3/10/95 to calculate chronic criteria in accordance with EPA Memorandum from Heber to WQ Stds Coordinators dated July 30, 1992.

INPUT	
1. Ambient Temperature (deg C; 0<T<30)	21.5
2. Ambient pH (6.5<pH<9.0)	7.25
3. Acute TCAP (Salmonids present- 20; absent- 25)	20
4. Chronic TCAP (Salmonids present- 15; absent- 20)	15

OUTPUT	
1. Intermediate Calculations:	
Acute FT	1.00
Chronic FT	1.41
FPH	1.93
RATIO	24
pKa	9.35
Fraction Of Total Ammonia Present As Un-ionized	0.7841%
2. Un-ionized Ammonia Criteria	
Acute (1-hour) Un-ionized Ammonia Criterion (ug NH3/L)	134.7
Chronic (4-day) Un-ionized Ammonia Criterion (ug NH3/L)	12.4
3. Total Ammonia Criteria:	
Acute Total Ammonia Criterion (mg NH3+ NH4/L)	17.2
Chronic Total Ammonia Criterion (mg NH3+ NH4/L)	1.6
4. Total Ammonia Criteria expressed as Nitrogen:	
Acute Ammonia Criterion as mg N	14.1
Chronic Ammonia Criterion as N	1.30

REASONABLE POTENTIAL CALCULATION
FOR
PROTECTION OF HUMAN HEALTH

NPDES Permit No. WA-002937-8

Date of Last Modification = 4/1/98

Parameter	Ambient Concentration (Geometric Mean)	Water Quality Criteria for Protection of Human Health	Max concentration at edge of chronic mixing zone.	LIMIT REQ'D?	Expected Number of Compliance Samples per Month	AVERAGE MONTHLY EFFLUENT LIMIT	MAXIMUM DAILY EFFLUENT LIMIT	Estimated Percentile at 95% Confidence		Max effluent conc. measured	Coeff Variation		# of samples from which # in col. J was taken	Multiplier	Calculated 50th percentile Effluent Conc. (When n>10)	Dilution Factor
	ug/L	*ug/L*	*ug/L*			*ug/L*	*ug/L*		*Pn*	*ug/L*	*CV*	**S**	*n*			
arsenic	0.00	0.02	0.01	NO	2	NONE	NONE	0.50	0.95	11.00	0.60	0.6	54	0.41	0.00	386.0
dichlorobromomethane		0.27	0.00	NO	2.00	NONE	NONE	0.50	0.95	0.00	0.60	0.6	54	0.41		386.0
chlorobromomethane		0.41	0.00	NO	2.00	NONE	NONE	0.50	0.95	0.00	0.60	0.6	54	0.41		386.0
metylene chloride		4.70	0.01	NO	2.00	NONE	NONE	0.50	0.95	7.00	0.60	0.6	54	0.41		386.0
chloroform		5.70	0.02	NO	2.00	NONE	NONE	0.50	0.95	20.00	0.60	0.6	54	0.41		386.0

REASONABLE POTENTIAL CALCULATION

NPDES Permit No.

This spreadsheet calculates the reasonable potential to exceed state water quality standards for a small number of samples. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, March, 1991 (EPA/505/2-90-001) on page 56. User input columns are shown with red headings. Corrected formulas in col G and H on 5/98 (GB)

CALCULATIONS

				State Water Quality Standard		Max concentration at edge of...												
Parameter	Metal Criteria Translator as decimal Acute	Metal Criteria Translator as decimal Chronic	Ambient Concentration (metals as dissolved)	Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone	LIMIT REQ'D?	Effluent percentile value		Max effluent conc. measured (metals as total recoverable)	Coeff Variation		# of samples	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor	COMMENTS
			ug/L	*ug/L*	*ug/L*	*ug/L*	*ug/L*			*Pn*	*ug/L*	*CV*	*s*	*n*				
chromium (hexavalent)				15	10			**NO**	0.95	0.946		0.60	0.55	54	1.02	64	591	
aluminum			17.9	750	87	33.57	19.60	**NO**	0.95	0.946	1000.00	0.60	0.55	54	1.02	64	591	
iron			27.0	#########	1000	49.87	29.48	**NO**	0.95	0.946	1460.00	0.60	0.55	54	1.02	64	591	
manganese			4.2	#########	50000	4.41	4.22	**NO**	0.95	0.946	17.00	0.60	0.55	54	1.02	64	591	
beryllium				130	5.3000	0.11	0.01	**NO**	0.95	0.946	7.00	0.60	0.55	54	1.02	64	591	
cadmium	0.94	0.94		2.13	0.17	0.25	0.03	**NO**	0.95	0.946	17.00	0.60	0.55	54	1.02	64	591	
chromium (trivalent)				#########	3511	0.56	0.06	**NO**	0.95	0.946	35.00	0.60	0.55	54	1.02	64	591	
copper	0.99	0.99		10.52	7.3400	1.39	0.15	**NO**	0.95	0.946	88.00	0.60	0.55	54	1.02	64	591	
lead	0.46	0.46	0.79	36.88	1.44	0.90	0.80	**NO**	0.95	0.946	16.00	0.60	0.55	54	1.02	64	591	
mercury				2.1	0.012	0.05	0.01	**NO**	0.95	0.946	3.00	0.60	0.55	54	1.02	64	591	
nickel	0.97	0.97		918	102	0.93	0.10	**NO**	0.95	0.946	60.00	0.60	0.55	54	1.02	64	591	
selenium				20	5	0.14	0.02	**NO**	0.95	0.946	9.00	0.60	0.55	54	1.02	64	591	
silver	0.85			1.4	#########	0.14	0.02	**NO**	0.95	0.946	10.00	0.60	0.55	54	1.02	64	591	
zinc			10.0	74.24	67.79	10.96	10.10	**NO**	0.95	0.946	70.00	0.60	0.55	54	1.02	64	591	
cyanide				22	5.2	0.22	0.02	**NO**	0.95	0.946	14.00	0.60	0.55	54	1.02	64	591	
benzene				530	#########	1.60	0.17	**NO**	0.95	0.946	100.00	0.60	0.55	54	1.02	64	591	
carbon tetrachloride				35200	#########	1.60	0.17	**NO**	0.95	0.946	100.00	0.60	0.55	54	1.02	64	591	
chloroform				28900	1240	0.30	0.03	**NO**	0.95	0.946	19.00	0.60	0.55	54	1.02	64	591	
1,1-dichloroethane				11600	#########	0.16	0.02	**NO**	0.95	0.946	10.00	0.60	0.55	54	1.02	64	591	
tetrachloroethylene				5280	840	0.16	0.02	**NO**	0.95	0.946	10.00	0.60	0.55	54	1.02	64	591	
toulene				17500	#########	1.60	0.17	**NO**	0.95	0.946	100.00	0.60	0.55	54	1.02	64	591	
1,1,1-trichloroethane								**NO**	0.95	0.946		0.60	0.55	54	1.02	64	591	
tricholoroethlyene				45000	21900	0.08	0.01	**NO**	0.95	0.946	5.00	0.60	0.55	54	1.02	64	591	
Bis (2-ethylhexyl) phthalate				940	3	0.32	0.03	**NO**	0.95	0.946	20.00	0.60	0.55	54	1.02	64	591	
radium				#########	5	0.01	0.00	**NO**	0.95	0.946	0.40	0.60	0.55	54	1.02	64	591	
barium				#########	1000	0.64	0.07	**NO**	0.95	0.946	40.00	0.60	0.55	54	1.02	64	591	
ammonia (total as N)				14100	1300			**NO**	0.95	0.946		0.60	0.55	54	1.02	64	591	
						#DIV/0!	#DIV/0!	**#DIV/0!**	0.95	#DIV/0!		0.60	0.55		#DIV/0!			

 + dangerous waste

REASONABLE POTENTIAL CALCULATION
FOR
PROTECTION OF HUMAN HEALTH

NPDES Permit No. WA-002937-8

Date of Last Modification = 4/1/98

Parameter	Ambient Concentration (Geometric Mean)	Water Quality Criteria for Protection of Human Health	Max concentration at edge of chronic mixing zone.	LIMIT REQ'D?	Expected Number of Compliance Samples per Month	AVERAGE MONTHLY EFFLUENT LIMIT	MAXIMUM DAILY EFFLUENT LIMIT	Estimated Percentile at 95% Confidence		Max effluent conc. measured	Coeff Variation		# of samples from which # in col. J was taken	Multiplier	Calculated 50th percentile Effluent Conc. (When n>10)	Dilution Factor
	ug/L	*ug/L*	*ug/L*			*ug/L*	*ug/L*		*Pn*	*ug/L*	*CV*	**S**	*n*			
arsenic	0.00	0.02	0.01	NO	2	NONE	NONE	0.50	0.95	11.00	0.60	0.6	54	0.41	0.00	386.0
dichlorobromomethane		0.27	0.01	NO	2.00	NONE	NONE	0.50	0.95	5.00	0.60	0.6	54	0.41		386.0
		0.41	0.00	NO	2.00	NONE	NONE	0.50	0.95	0.00	0.60	0.6	54	0.41		386.0
metylene chloride		4.70	0.01	NO	2.00	NONE	NONE	0.50	0.95	10.00	0.60	0.6	54	0.41		386.0
chloroform		5.70	0.03	NO	2.00	NONE	NONE	0.50	0.95	26.00	0.60	0.6	54	0.41		386.0
radium		5.00	0.00	NO	2.00	NONE	NONE	0.50	0.95	0.40	0.60	0.6	54	0.41		386.0
bis (2-ethylhexyl phthalate)		1.80	0.11	NO	2.00	NONE	NONE	0.50	0.95	100.00	0.60	0.6	54	0.41		386.0

Attachment 4

Results of Ambient Monitoring in Columbia River Near Outfall 001

	A	B	C	D	E	F	G	H	I	J	K
1		**September, 1995, Receiving Water Quality Monitoring (Matrix Table)**									
2		**Sampled on 9/21/95**									
3											
4											
5	**Constituent**	**Method**	**Sample**	**ICP-MS**	**ICP-MS**	**Sample**	**ICP-MS**	**ICP-MS**	**Lab**	**Lab**	
6		**Used**	**Results**	**Dissolved**	**Total**	**Results**	**Dissolved**	**Total**	**Detect.**	**Detect.**	
7		**for**	**Upstream**	**Upstream**	**Upstream**	**Dwnstream**	**Dwnstream**	**Dwnstream**	**Level**	**Level**	
8		**Reporting**	**Ug/L**	**Ug/L**	**U/g/L**	**Ug/L**	**Ug/L**	**Ug/L**	**Ug/L**	**ICP-MS**	
9	Ammonia	350.1	0.0			456.0			50		
10	Arsenic	200.8			0.0			0.0	1	1	
11	Iron	236.2	37.8			57.3			8		
12	Selenium	270.2	0.0			0			3		
13	Beryllium	200.8			0.0			0.0	1	1	
14	Nickel	200.8		0.0	0.0		0.0	0.0	1.9	1.9	
15	Silver	200.8		0.0	0.0		0.00	0.0	0.1	0.1	
16	Zinc	200.8		9.5	0.0		10.5	0.0	7.0	7.0	
17	Aluminum	200.8			27.6			28.8	3	3	
18	Cadmium	200.8		0.0	0.0		0.0	0.0	0.8	0.8	
19	Lead	200.8		0.0	0.0		0.0	0.0	1.4	1.4	
20	Copper	220.2	0.0	1.7	2.7	0.0	1.8	1.7	3	1.7	
21	Radium (pCi/L)	-	0.0			0.0			0.12		
22	Manganese	200.8			6.3			5.9	0.8	0.8	
23	Dichlorobromomethane	624	0.0			0.0			2.2		
24	Chloroform	624	0			0			5		
25	Toluene	624	0.0			0.0			6.00		
26	Methylene chloride	624	0.0			0.0			3		
27	Tetrachloroethylene	624	0.0			0.0			5		
28	1 1-Dichloroethane	624	0.0			0.0			4.7		
29	1 1 1-Trichloroethane	624	0.0			0.0			5.00		
30	Bis(2-ethylhexyl) phthalate	625	0.00			14.0			3		
31	Trichloroethylene	624	0.0			0.0			1.9		
32	Chlorodifluoromethane	624	0.0			0.0			-		
33	Mercury	245.2	0.00			0			0.2		
34	Coliform (# per 100 ml)	SW9132	0.00			0			3.70		
35	Cyanide	SM4500	0.00			0			5.00		
36	Nitrite (mg/L)	353.1	0.00			0			60.00		
37	Hardness (mg/L)	130.2	62			60			2.00		
38	TSS (mg/L)	160.2	2.00			3.0			1.0		
39	Notes: 0.00 - undetected										
40	B - Constituent was detected in blank sample										
41	The listed lab detection corresponds to the method used for reporting.										
42											
43											
44											
45											
46											
47											
48											

	A	B	C	D	E	F	G	H	I	J	K
1		**September, 1996, Receiving Water Quality Monitoring (Matrix Table)**									
2		**Sampled on 9/9/96**									
3	West Channel Flowrate (MGPD):	**9,245**									
4											
5											
6	**Constituent**	**Method Used for Reporting**	**Sample Results Upstream**	**metals Dissolved Upstream**	**metals Total Upstream**	**Sample Results Dwnstream**	**metals Dissolved Dwnstream**	**metals Total Dwnstream**	**Lab Detect. Level**	**Lab Detect. Level**	**Instantaneous Max Total Downstream**
7											
8											
9											
10		**Reporting**	**Ug/L**	**Ug/L**	**U/g/L**	**Ug/L**	**Ug/L**	**Ug/L**	**Ug/L**	**ICP-MS**	**lb/day**
11	Ammonia	350.1	266.0			139.0			50		10700.65
12	Arsenic	200.8			0.0			0.0	1.5	1.5	0.00
13	Iron	236.2	33.0			34.9			8		2686.71
14	Selenium	270.2	0.0			0.0			3		0.00
15	Beryllium	200.8			0.0			0.0	0.2	0.2	0.00
16	Nickel	200.8		0.0	0.0		0.0	0.0	2.6	2.6	0.00
17	Silver	200.8		0.0	0.0		0.0	0.0	1.5	1.5	0.00
18	Zinc	200.8		0.0	0.0		0.0	0.0	3.2	3.2	0.00
19	Aluminum	200.8			20.8			18.9	3	1.4	1454.98
20	Cadmium	200.8		0.0	0.0		0.0	0.0	0.5	0.5	0.00
21	Lead	200.8		0.0	0.0		0.7	0.0	0.5	0.5	0.00
22	Copper	220.2		1.7	2.0		15.0	2.3	0.4	0.4	177.06
23	Radium (pCI/L)	-	0.0			0.0			0.12		0.00
24	Manganese	200.8			6.5			6.0	0.8	0.2	461.90
25	Dichlorobromomethane	624	0.0			0.0			2.2		0.00
26	Chloroform	624	0.0			0.0			5		0.00
27	Toluene	624	0.0			0.0			6.00		0.00
28	Methylene chloride	624	0.0			0.0			3		0.00
29	Tetrachloroethylene	624	0.0			0.0			5		0.00
30	1 1-Dichloroethane	624	0.0			0.0			4.7		0.00
31	1 1 1-Trichloroethane	624	0.0			0.0			5.00		0.00
32	Bis(2-ethylhexyl) phthalate	625	0.0			0.0			3		0.00
33	Trichloroethylene	624	0.0			0.0			1.9		0.00
34	Chlorodifluoromethane	624	0.0			0.0			-		0.00
35	Mercury	245.2	0			0			0.2		0.00
36	Coliform (# per 100 ml)	SW9132	64.0			39.0			3.70		0.005
37	Cyanide	SM4500	0.0			0.0			5.00		0.00
38	Nitrite (mg/L)	353.1	0.0			0.0			60.00		0.00
39	Hardness (mg/L)	130.2	56.0			58.0			2.00		4465020.67
40	TSS (mg/L)	160.2	0.0			4.0			1.0		307932.46
41	Notes: 0.00 - undetected										
42	B - Constituent was detected in blank sample										
43											
44	The listed lab detection corresponds to the method used for reporting.										
45											
46											
47											
48											
49											
50											

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		**September, 1997, Receiving Water Quality Monitoring (Matrix Table)**											
2		**Sampled on 9/17/97**											
3													
4		Flow (MGPD)		**7,909**									
5													
6	**Constituent**	**Method Used for Reporting**	**Lab Detect. Level Ug/L**	**Sample Results Upstream Ug/L**	**Q**	**metals Dissolved Upstream Ug/L**	**metals Total Upstream U/g/L**	**Daily Max Upstream lbs/day**	**Sample Results Dwnstream Ug/L**	**Q**	**metals Dissolved Dwnstream Ug/L**	**metals Total Dwnstream Ug/L**	**Daily Max Dwnstream lbs/day**
11	Ammonia	350.1	50	80.1					84.3				
12	Arsenic	200.8	0.4	0.0					1.0	B			65.96
13	Iron	236.2	8	27.2					18.2				1200.49
14	Selenium	270.2	3	0.0					0.0				0.00
15	Beryllium	200.8	0.2	0.0					0.0				0.00
16	Nickel	200.8	0.5			0.8	0.7				2.5	1.0	
17	Silver	200.8	0.3			0.0	0.0				0.0	0.0	
18	Zinc	200.8	0.3			8.0	9.2				13.7	7.1	
19	Aluminum	200.8	0.5	17.9					17.3				1141.13
20	Cadmium	200.8	0.2			0.0	0.0				0.0	0.0	
21	Lead	200.8	0.2			0.0	0.0				0.0	0.0	
22	Copper	220.2	3			0.0	0.0				0.0	0.0	
23	Ra-226 (pCi/L)	-	0.02	0.3					5.7				
24	Ra-228 (pCi/L)	-	1.65	0.0					4.8				
25	Manganese	200.8	0.2	4.2					4.1				
26	Dichlorobromomethane	624	2.2	0.0				0.00	0.0				0.00
27	Chloroform	624	5	0.0				0.00	0.0				0.00
28	Toluene	624	6.00	0.0				0.00	0.0				0.00
29	Methylene chloride	624	3	0.0				0.00	0.0				0.00
30	Tetrachloroethylene	624	5	0.0				0.00	0.0				0.00
31	1 1-Dichloroethane	624	4.7	0.0				0.00	0.0				0.00
32	1 1 1-Trichloroethane	624	5.00	0.0				0.00	0.0				0.00
33	Bis(2-ethylhexyl) phthalate	625	15	0.0				0.00	0.0				0.00
34	Trichloroethylene	624	1.9	0.0				0.00	0.0				0.00
35	Chlorodifluoromethane	624	-	0.0				0.00	0.0				0.00
36	Mercury	245.2	0.2	0.0				0.00	0.0				0.00
37	Coliform (# per 100 ml)	SW9132	3.70	63.0					58.0				
38	Cyanide	SM4500	5.00	0.0				0.00	0.0				0.00
39	Nitrite (mg/L)	353.1	50.00	0.0					0.0				
40	Hardness (mg/L)	130.2	1.19	56.2					55.6				
41	TSS (mg/L)	160.2	1.0	4.5					3.0				
42													
43	B - Constituent was detected in blank sample												
44													
45													
46													
47													
48													
49													
50													
51													

Attachment 5

Summary of TEDF Operational Performance

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1				Ammonia	Arsenic	Iron	Selenium	Antimony	Barium	Chromium	Molybdenum	Uranium	Vanadium	Beryllium	Nickel	Silver	Zinc	Aluminum	Cadmium	Lead	Copper
2	Date																				
3	1/6/95			578.0	3.0	12.3	3.0							0.5	35.0	1.0	51.9	42.2	0.5	2.0	3.0
4	1/19/95			187.0	3.0	7.0	3.0							0.5	3.0	1.0	28.2	23.2	0.5	2.0	3.0
5	2/1/95			132.0	3.0	29.1	3.0							0.5	4.8	2.6	19.7	27.0	0.5	2.0	3.0
6	2/15/95			99.9	3.0	8.7	3.0							0.5	3.0	1.0	37.8	27.0	0.5	2.0	3.0
7	3/2/95			78.5	3.0	9.3	3.0							0.5	3.0	1.0	67.0	26.5	0.5	2.0	3.0
8	3/16/95			299.0	3.0	16.4	3.0							0.5	3.0	1.0	7.0	144.0	0.5	2.0	4.8
9	4/6/95			173.0	3.0	8.0	3.0							0.5	3.0	0.3	13.6	17.4	0.5	2.0	3.0
10	4/16/95			178.0	3.0	19.4	3.0							0.5	3.0	0.3	11.2	29.4	0.5	2.0	3.0
11	5/5/95			268.0	1.0	10.2	3.0							0.6	13.5	0.1	11.0	11.8	0.3	0.9	5.3
12	5/15/95			50.0	1.0	8.0	3.0							0.1	9.2	0.2	10.2	16.3	0.4	1.3	3.0
13	6/8/95			110.0	1.0	8.0	3.0							1.0	0.8	0.1	15.2	15.5	0.4	1.3	5.7
14	6/22/95			50.0	1.0	8.0	3.0							1.5	0.8	0.1	3.5	28.9	0.6	1.3	1.3
15	7/6/95			106.0	1.0	8.0	3.0							1.0	1.6	0.1	4.0	105.0	0.5	1.3	3.0
16	7/21/95			114.0	1.0	8.0	3.0							1.5	1.0	0.1	4.6	35.2	0.4	1.3	3.0
17	8/3/95			59.1	1.0	8.0	3.0							1.0	1.6	0.1	2.4	66.5	0.4	1.3	4.2
18	8/17/95			50.0	1.0	51.2	3.0							1.0	1.9	0.1	7.0	81.7	0.8	1.7	3.0
19	9/7/95			72.7	1.0	15.0	3.0							1.0	1.9	0.1	7.0	61.1	0.8	2.3	3.0
20	9/21/95			103.0	1.0	22.6	3.0							1.0	1.9	0.2	9.1	24.3	0.8	1.4	3.0
21	10/4/95			203.0	1.0	22.5	3.0							1.0	1.9	0.1	7.0	98.5	0.8	1.4	4.1
22	10/19/95			50.0	1.0	75.1	3.0							1.0	1.9	0.1	7.0	51.8	0.8	1.4	3.0
23	11/2/95			50.0	1.0	8.0	3.0							1.0	1.9	0.1	7.0	39.2	0.8	1.4	3.0
24	11/16/95			50.0	1.0	58.9	3.0							1.0	1.9	0.1	7.0	29.3	0.8	1.4	3.0
25	12/4/95			96.6	1.0	18.5	3.0							1.0	1.9	0.1	7.0	13.2	0.8	1.4	3.0
26	12/18/95			50.0	1.0	65.8	3.0							1.0	1.9	0.1	7.0	8.7	0.8	1.4	3.0
27	1/4/96			100.0	1.0	9.4	3.0							1.0	1.9	0.1	7.0	12.9	0.8	1.4	3.0
28	1/18/96			50.0	1.0	8.6	3.0							1.0	1.9	0.1	7.0	48.1	0.8	1.4	4.6
29	2/5/96			50.0	1.0	821.0	3.0							1.0	1.9	0.1	7.0	14.1	0.8	1.4	3.7
30	2/20/96			87.5	1.0	8.0	3.0							1.0	1.9	0.1	7.0	72.6	0.8	1.4	3.0
31	3/4/96			50.0	1.0	34.0	3.0							1.0	1.9	0.2	7.0	24.0	0.8	1.4	3.0
32	3/18/96			50.0	1.0	167.0	3.0							1.0	1.9	0.1	8.6	22.0	0.8	1.4	5.4
33	4/1/96			82.4	1.0	19.0	3.0							1.0	1.9	0.1	7.0	13.1	0.8	1.4	3.0
34	4/15/96			73.0	1.0	12.9	3.0							1.0	1.9	0.1	8.6	9.8	0.8	1.4	3.0
35	5/6/96			62.2	1.0	31.0	3.0							1.0	1.9	0.1	7.0	9.7	0.8	1.4	3.4
36	5/20/96			68.4	1.0	15.8	3.0							1.0	1.9	0.1	7.0	13.8	0.8	1.4	5.3
37	6/3/96			50.0	1.0	12.9	3.0							1.0	1.9	0.1	8.6	11.5	0.8	1.4	3.0
38	6/12/96			50.0	1.0	22.6	3.0							0.2	11.0	0.1	6.0	16.0	0.8	1.4	3.0
39	7/8/96			50.0	11.0	22.5	3.0	0.6	1.2	2.5	32.4	0.2	4.0	0.2	2.6	1.5	3.2	10.0	0.5	0.5	3.0
40	7/22/96			50.0	3.0	20.9	3.0	0.3	1.2	2.0	30.0	0.1	2.1	0.2	2.6	1.5	3.2	5.0	0.5	0.5	3.0
41	8/5/96			50.0	3.0	16.9	3.0	0.6	0.8	2.0	4.4	0.1	4.3	0.2	2.6	1.5	3.2	12.0	0.5	0.5	8.7
42	8/19/96			50.0	2.0	8.0	3.0	0.4	4.2		5.5	0.1	1.7	0.2	2.6	1.5	3.2	12.0	0.5	0.5	3.0
43	9/9/96			50.0	1.5	12.3	3.0	0.5	17.2		3.2	0.1	0.6	0.2	2.6	1.5	3.2	6.6	0.5	0.5	3.0
44	9/23/96			50.0	1.7	24.6	3.0	0.6	10.8		32.0	0.5	1.2	0.2	2.6	1.5	3.2	8.0	0.5	0.6	3.0
45	10/1/96			50.0	1.5	19.7	3.0	0.5	17.0		13.4	0.2	1.4	0.2	2.6	1.5	3.2	43.0	0.5	0.5	4.8
46	10/14/96			50.0	1.5	11.1	3.0	0.4	5.5		55.2	0.1	1.2	0.2	2.6	1.5	3.2	11.0	0.5	0.5	3.0
47	11/4/96			50.0	0.4	81.8	3.0	0.4	3.7	3.6	102.0	0.3	1.4	0.2	1.5	0.3	11.4	21.8	0.2	0.2	5.1
48	11/11/96			50.0	0.4	10.3	3.0	0.5	7.7	3.7	1.6	0.3	0.9	0.2	2.2	0.3	3.2	17.0	0.2	0.2	3.0
49	12/2/96			50.0	7.5	32.4	3.0	0.5	41.4	2.3	1.6	0.3	0.9	0.2	0.5	0.3	0.3	11.7	0.2	0.2	3.0
50	12/16/96			50.0	0.4	13.2	3.0	0.6	3.5	3.6	1.5	0.3	2.6	0.2	1.8	0.3	0.3	8.5	0.2	0.2	8.6
51	1/9/97			119.0	0.4	18.2	3.0	0.4	4.6	1.6	1.8	0.3	5.0	0.2	0.5	0.3	0.3	6.2	0.2	0.2	3.0
52	1/20/97			50.0	0.4	54.4	3.0	0.3	7.1	1.1	1.9	0.3	2.0	0.2	0.9	0.3	0.3	5.5	0.2	0.2	3.0
53	2/4/97			260.0	0.4	10.3	3.0	0.7	4.5	1.1	1.5	0.3	3.4	0.2	0.5	0.3	8.5	7.5	0.2	0.2	3.6
54	2/18/97			50.0	0.4	9.8	3.0	0.4	2.3	1.1	1.7	0.3	4.4	0.2	0.5	0.3	0.3	14.0	0.2	0.2	3.0
55	3/3/97			50.0	0.4	13.1	3.0	0.3	3.6	3.1	0.9	0.4	2.3	0.2	0.5	0.3	2.6	4.3	0.2	0.2	3.0
56	3/17/97			50.0	0.4	27.8	3.0	0.3	2.5	1.5	1.2	0.3	3.5	0.2	0.5	0.3	4.8	4.0	0.2	0.2	3.0

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1				Ammonia	Arsenic	Iron	Selenium	Antimony	Barium	Chromium	Molybdenum	Uranium	Vanadium	Beryllium	Nickel	Silver	Zinc	Aluminum	Cadmium	Lead	Copper
57	4/7/97			50.0	0.4	15.6	3.0							0.2	1.0	0.3	9.0	5.6	0.2	0.2	3.0
58	4/21/97			50.0	0.4	11.0	3.0							0.2	1.6	0.3	0.3	12.6	0.2	0.2	3.0
59	5/6/97			50.0	0.4	8.0	3.0							0.2	2.3	0.3	6.8	15.5	0.2	0.2	3.0
60	5/19/97			50.0	0.4	9.9	3.0							0.2	0.5	0.3	0.3	16.4	0.2	0.2	3.0
61	6/2/97			50.0	0.4	10.1	3.0							0.2	0.6	0.3	12.3	26.8	0.2	0.2	3.0
62	6/16/97			50.0	0.4	22.7	3.0							0.2	0.5	0.3	26.8	37.5	0.2	3.0	3.0
63	7/1/97			50.0	0.4	8.0	3.0							0.2	0.5	0.3	0.3	4.0	0.2	0.2	3.0
64	7/10/97			78.3	0.4	16.1	3.0							0.2	0.5	0.3	16.2	10.9	0.2	3.0	3.3
65	8/5/97			50.0	0.4	8.0	3.0							0.2	0.5	0.3	16.2	12.2	0.2	0.2	3.0
66	8/18/97			50.0	0.4	15.9	3.0							0.2	0.5	0.3	18.4	5.1	0.2	0.2	3.8
67	9/4/97			50.0	0.4	8.0	3.0	0.4	3.4	1.2	4.8	0.3	2.4	0.2	0.7	0.3	0.3	53.0	0.2	0.2	3.0
68	9/17/97			97.3	0.4	8.0	3.0	0.3	2.8	1.1	3.0	0.3	2.3	0.2	0.5	0.3	9.8	10.4	0.2	0.2	3.0
69	10/2/97			50.0	0.4	8.0	3.0							0.2	0.8	0.3	1.0	16.0	0.2	0.2	3.0
70	10/16/97			50.0	0.4	8.8	3.0							0.2	1.0	0.3	0.3	11.2	0.2	0.2	3.0
71	11/10/97			50.0	0.4	15.4	3.0							0.2	1.3	0.3	0.3	13.5	0.2	0.2	3.0
72	11/24/97			50.0	0.4	8.0	3.0							0.2	1.6	0.3	0.5	21.6	0.2	0.2	3.0
73	12/10/97			50.0	0.4	16.2	3.0							0.2	1.1	0.3	0.7	17.9	0.2	0.2	3.0
74	12/22/97			50.0	0.4	12.6	3.0							0.2	0.7	0.3	0.3	20.5	0.2	0.2	3.0
75	1/8/98			50.0	0.4	58.1	3.0							0.2	0.5	0.3	0.3	8.3	0.2	0.2	5.2
76	1/26/98			50.0	0.4	13.9	3.0							0.2	4.8	0.3	2.1	24.4	0.2	0.2	2.6
77	2/5/97			50.0	0.4	15.3	3.0							0.2	0.5	0.3	1.3	7.4	0.2	0.2	3.0
78	2/17/98			50.0	0.4	10.9	3.0							0.2	1.2	0.3	3.1	13.1	0.2	0.2	3.0
79	3/5/98			50.0	0.4	7.6	3.0							0.2	2.3	0.3	8.5	24.0	0.2	0.2	3.7
80	3/19/98			50.0	0.4	6.3	3.0							0.2	2.5	0.3	1.6	9.7	0.2	0.2	4.2
81	4/2/98			82.5	0.4	10.4	3.0							0.2	0.5	0.3	0.3	13.6	0.2	0.2	3.0
82	4/16/98			50.0	0.4	12.1	3.0							0.2	1.0	0.3	1.3	29.5	0.2	0.2	3.6
83	5/7/98			50.0	0.4	5.6	3.0							0.2	1.8	0.3	0.3	21.9	0.2	0.2	4.7
84	5/13/98			50.0	0.4	11.3	3.0							0.2	1.2	0.3	0.9	15.0	0.2	0.2	3.0
85	6/4/98			50.0	0.4	8.0	3.0							0.2	1.1	0.3	2.6	30.2	0.2	0.2	3.0
86	6/18/98			50.0	0.4	8.0	3.0							0.2	1.0	0.3	1.1	24.0	0.2	0.2	6.7
87	7/6/98			50.0	0.4	8.0	3.0							0.2	1.0	0.3	3.6	23.1	0.2	0.2	3.0
88	7/20/98			50.0	0.4	10.1	3.0							0.2	1.0	0.3	0.7	27.8	0.2	0.2	3.0
89	8/6/98			50.0	0.7	19.4	3.0							0.2	1.0	0.3	0.7	39.9	0.2	0.2	7.5
90	8/20/98			50.0	0.4	8.0	3.0							0.2	0.6	0.3	0.7	32.6	0.2	0.2	3.0
91																					
92	Max.	Daily	ppb	578.0	11.0	821.0	3.0	0.7	41.4	3.7	102.0	0.5	5.0	1.5	35.0	2.6	67.0	144.0	0.8	3.0	8.7
93	Max.	30-Day	ppb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
94	Long-term	Average	ppb	79.2	1.2	28.4	3.0	0.5	7.3	2.1	15.0	0.3	2.4	0.5	2.3	0.4	7.3	24.5	0.4	0.8	3.5

	A	B	C	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
1				Radium	Manganese	Dichlorobromomethane	Chloroform	Toluene	Methylene chloride	Tetrachloroethene	1,1-Dichloroethane	1,1,1-Trichloroethane	Bis(2-ethylhexyl) phthalate	Trichloroethene	Chlorodifluoromethane	Mercury	Total/Fecal Coliform	Cyanide	Nitrite	Flowrate Max. GPD
2	Date																			
3	1/6/95			0.2	0.5	2.2	4.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	422000.0
4	1/19/95			0.2	0.5	2.2	4.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
5	2/1/95			0.2	0.8	2.2	3.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	399000.0
6	2/15/95			0.2	0.5	2.2	4.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
7	3/2/95			0.2	0.5	2.2	6.0	6.0	3.0	5.0	4.7	5.0	0.5	1.9	0.0	0.2	3.7	5.0	50.0	450000.0
8	3/16/95			0.2	0.5	2.2	9.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
9	4/6/95			0.2	0.5	2.2	6.0	6.0	3.0	5.0	4.7	5.0	2.0	1.9	0.0	0.2	3.7	5.0	50.0	410000.0
10	4/16/95			0.2	0.5	2.2	8.0	6.0	1.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
11	5/5/95			0.2	0.7	2.2	11.0	6.0	1.0	5.0	4.7	5.0	2.0	1.9	0.0	0.2	3.7	5.0	50.0	413116.0
12	5/15/95			0.2	0.5	2.2	6.0	6.0	1.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
13	6/8/95			0.2	0.5	2.2	7.0	6.0	1.0	5.0	4.7	5.0	2.0	1.9	0.0	0.2	3.7	5.0	50.0	395586.0
14	6/22/95			0.2	0.5	2.2	9.0	6.0	1.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
15	7/6/95			0.1	0.5	2.2	10.0	6.0	3.0	5.0	4.7	5.0	2.0	1.9	0.0	0.2	3.7	5.0	50.0	398851.0
16	7/21/95			0.1	0.9	2.2	12.0	6.0	6.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
17	8/3/95			0.2	1.2	2.2	6.0	6.0	8.0	5.0	4.7	5.0	16.0	1.9	0.0	0.2	3.7	5.0	50.0	409576.0
18	8/17/95			0.2	0.8	2.2	10.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
19	9/7/95			0.2	0.8	2.2	6.0	6.0	7.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	445110.0
20	9/21/95			0.2	1.5	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
21	10/4/95			0.2	0.8	2.2	6.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	376594.0
22	10/19/95			0.2	0.8	2.2	5.0	6.0	6.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
23	11/2/95			0.2	0.8	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	237685.0
24	11/16/95			0.2	0.8	2.2	3.0	6.0	7.0	5.0	4.7	5.0	1.0	1.9	0.0	0.2	3.7	5.0	50.0	
25	12/4/95			0.2	0.8	2.2	1.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	328989.0
26	12/18/95			0.2	0.8	2.2	3.0	6.0	3.0	5.0	4.7	5.0	1.0	1.9	0.0	0.2	3.7	14.0	50.0	
27	1/4/96			0.2	0.8	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	398929.0
28	1/18/96			0.2	0.8	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
29	2/5/96			0.2	0.8	2.2	3.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	383355.0
30	2/20/96			0.2	0.8	2.2	5.0	6.0	3.0	5.0	4.7	5.0	10.0	1.9	0.0	0.2	3.7	5.0	50.0	
31	3/4/96			0.2	0.8	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	377061.0
32	3/18/96			0.2	1.1	2.2	3.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
33	4/1/96			0.2	0.9	2.2	3.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	381696.0
34	4/15/96			0.2	0.8	2.2	2.0	6.0	7.0	5.0	4.7	5.0	2.0	1.9	0.0	0.2	3.7	5.0	50.0	
35	5/6/96			0.2	0.8	2.2	3.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	358468.0
36	5/20/96			0.2	1.6	2.2	2.0	6.0	3.0	5.0	4.7	5.0	2.0	1.9	0.0	0.2	3.7	5.0	50.0	
37	6/3/96			0.2	0.8	2.2	7.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	286737.0
38	6/12/96			0.2	1.0	2.2	8.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
39	7/8/96			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	326872.0
40	7/22/96			0.2	0.4	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
41	8/5/96			0.2	0.2	2.2	3.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	298597.0
42	8/19/96			0.2	0.2	2.2	2.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
43	9/9/96			0.2	0.7	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	372348.0
44	9/23/96			0.2	1.6	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
45	10/1/96			0.2	0.4	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	370407.0
46	10/14/96			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
47	11/4/96			0.2	1.0	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	364049.0
48	11/11/96			0.2	0.8	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
49	12/2/96			0.2	0.8	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	278382.0
50	12/16/96			0.2	1.1	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
51	1/9/97			0.2	0.5	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	351928.0
52	1/20/97			0.2	0.6	2.2	5.0	6.0	3.0	5.0	4.7	5.0	4.0	1.9	0.0	0.2	3.7	5.0	50.0	
53	2/4/97			0.2	0.8	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	340033.0
54	2/18/97			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
55	3/3/97			0.2	0.2	2.2	5.0	6.0	4.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	305991.0
56	3/17/97			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	9.0	1.9	0.0	0.2	3.7	5.0	50.0	

	A	B	C	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
1				Radium	Manganese	Dichlorobromomethane	Chloroform	Toluene	Methylene chloride	Tetrachloroethene	1,1-Dichloroethane	1,1,1-Trichloroethane	Bis(2-ethylhexyl) phthalate	Trichloroethene	Chlorodifluoromethane	Mercury	Total/Fecal Coliform	Cyanide	Nitrite	Flowrate Max. GPD
57	4/7/97			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
58	4/21/97			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	4.0	1.9	0.0	0.2	3.7	5.0	50.0	356956.0
59	5/6/97			0.2	0.4	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
60	5/19/97			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	358486.0
61	6/2/97			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	15.0	1.9	0.0	0.2	3.7	5.0	216.0	
62	6/16/97			0.2	0.4	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	147.0	357976.0
63	7/1/97			0.2	0.9	2.2	5.0	6.0	3.0	5.0	4.7	5.0	6.0	1.9	0.0	0.2	3.7	5.0	50.0	
64	7/10/97			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	374024.0
65	8/5/97			0.2	0.2	2.2	5.0	6.0	5.0	5.0	4.7	5.0	20.0	1.9	0.0	0.2	3.7	5.0	50.0	
66	8/18/97			0.2	0.2	2.2	20.0	6.0	3.0	5.0	4.7	5.0	6.0	1.9	0.0	0.2	3.7	5.0	50.0	358333.0
67	9/4/97			0.2	0.2	2.2	7.0	6.0	3.0	5.0	4.7	5.0	13.0	1.9	0.0	0.2	3.7	5.0	50.0	
68	9/17/97			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	12.0	1.9	0.0	0.2	3.7	5.0	50.0	371081.0
69	10/2/97			0.2	0.6	2.2	5.0	6.0	3.0	5.0	4.7	5.0	4.0	1.9	0.0	0.2	3.7	5.0	50.0	
70	10/16/97			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	8.0	1.9	0.0	0.2	3.7	5.0	50.0	353934.0
71	11/10/97			0.1	0.7	2.2	5.0	6.0	3.0	5.0	4.7	5.0	4.0	1.9	0.0	0.2	3.7	5.0	50.0	
72	11/24/97			0.2	0.5	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	345658.0
73	12/10/97			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	N/A	5.0	50.0	
74	12/22/97			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	316480.0
75	1/8/98			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
76	1/26/98			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	348103.6
77	2/5/97			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	87.6	
78	2/17/98			0.2	0.2	2.2	5.0	6.0	7.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	303089.0
79	3/5/98			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	60.6	
80	3/19/98			0.2	0.2	2.2	6.0	6.0	8.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	311474.0
81	4/2/98			0.2	0.2	2.2	5.0	6.0	10.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
82	4/16/98			0.2	0.2	2.2	5.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	328923.0
83	5/7/98			0.2	0.2	2.2	6.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
84	5/13/98			0.2	0.2	2.2	0.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	326197.0
85	6/4/98			0.2	0.2	2.2	8.0	6.0	3.0	5.0	4.7	5.0	4.0	1.9	0.0	0.2	3.7	5.0	50.0	
86	6/18/98			0.2	0.2	2.2	10.0	6.0	4.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	324829.0
87	7/6/98			0.2	0.2	2.2	12.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
88	7/20/98			0.2	0.2	2.2	9.0	6.0	18.0	5.0	4.7	5.0	5.0	1.9	0.0	0.2	3.7	5.0	50.0	357404.0
89	8/6/98			0.2	0.2	2.2	8.0	6.0	3.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	
90	8/20/98			0.2	0.2	2.2	0.0	6.0	9.0	5.0	4.7	5.0	3.0	1.9	0.0	0.2	3.7	5.0	50.0	401135.0
91																				
92	Max.	Daily	ppb	0.2	1.6	2.2	20.0	6.0	18.0	5.0	4.7	5.0	20.0	1.9	0.0	0.2	3.7	14.0	216.0	401135.0
93	Max.	30-Day	ppb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
94	Long-term	Average	ppb	0.2	0.5	2.2	5.5	6.0	3.6	5.0	4.7	5.0	3.9	1.9	0.0	0.2	3.7	5.1	53.5	343777.2

Attachment 6

TEDF WET Testing Results

WET TEST SUMMARY

	ACUTE				CHRONIC					
	Minnows		Ceriodaphnia		Minnows		Ceriodaphnia		Selenastrum	
Date	NOEC	LOEC	NOEC	LOEC	NOEC	LOEC	NOEC	LOEC	NOEC	LOEC
Feb-95	100	100	100	100	100	100	32	100	100	100
May-95	100	100	100	100	100	100	100	100	100	100
Aug-95	32	100	100	100	32	100	32	100	100	100
Dec-95	100	100	100	100	100	100	32	100	32	100
Feb-96	100	100	100	100	100	100	32	100	100	100
May-96	100	100	100	100	32	100	100	100	100	100
Aug-96	100	100	100	100	0.3	0.3	32	100	32	100
Nov-96	32	100	100	100	32	100	32	100	100	100
Feb-97	32	100	100	100	1	3	32	100	100	100
May-97	32	100	100	100	32	100	32	100	100	100
Aug-97	100	100	100	100	100	100	32	100	100	100
Nov-97	100	100	100	100	100	100	32	100	100	100
Feb-98	100	100	100	100	100	100	32	100	100	100
May-98	100	100	100	100	100	100	100	100	100	100

Attachment 7

Information From Permittee Regarding Treatment of "Dangerous Wastes" Through TEDF

Estimated Future Discharges From Outfall 001A

The 300 Area Treated Effluent Disposal Facility (TEDF) plans to begin treating a new waste stream in the near future. This waste stream will consist of hazardous wastewasters suitable for treatment of metals or organics at the TEDF. The following table contains estimates of the influent and effluent streams taking into account the impact from the expected new stream. Estimates for the new stream characteristics come from historical data of the waste types generated on the Hanford Site. The estimated influent concentrations to the facility are based on the addition of the new waste to the maximum concentration of the existing influent. The resulting effluent concentrations were calculated using the treatment capability information from full scale operation of the facility. The 30 day data are based on two samples per month.

ESTIMATED INTAKE AND EFFLUENT CHARACTERISTICS

POLLUTANT	INTAKE (plant influent)			EFFLUENT	
	Max. Daily Value Concentration (ug/l)	Max. 30 Day Value Concentration (ug/l)		Max. Daily Value Concentration(ug/l)	Max. 30 Day Value Concentration (ug/l)
Ammonia as N	32000	2400		32000	2400
Nitrate as N	25000	13000		25000	13000
Aluminum	4200	2300		1000	550
Barium	700	450		40	20
Iron	6800	3800		800	440
Manganese	800	400		16	8
Arsenic	15	8		11	6
Beryllium	23	12		4	2
Cadmium	120	60		17	8
Chromium	700	360		35	13
Copper	1250	700		88	49
Lead	272	145		16	9
Mercury	300	150		3	1
Nickel	550	300		22	12
Selenium	11	6		9	6
Silver	16	8		2	1
Zinc	1000	600		70	42
Cyanide	20	10		14	7
Benzene	485	242		100	50
Carbon Tetrachloride	225	110		100	50
Chlorodibromomethane	6	3		5	3
Chloroform	42	26		19	12
Dichlorobromomethane	6	3		5	3
1,1-Dichloroethane	13	9		10	5
Methylene Chloride	12	6		10	5
Tetrachloroethylene	12	6		10	5
Toluene	273	136		100	50
1,1,1-Trichloroethane	13	7		10	5
Trichloroethylene	32	20		5	3
Methyl Ethyl Ketone	220	110		100	50
Bis (2-Ethylhexyl) Phthalate	138	69		100	50