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2003 Wastewater Land Application Site Performance Reports for the Idaho National Engineering and Environmental Laboratory

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Idaho Completion Project

Bechtel BWXT Idaho, LLC

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2003 Wastewater Land Application Site Performance Reports for the Idaho National Engineering and Environmental Laboratory

Central Facilities Area Sewage Treatment Plant
Idaho Nuclear Technology and Engineering Center New Percolation Ponds
Idaho Nuclear Technology and Engineering Center Sewage Treatment Plant
Test Area North/Technical Support Facility Sewage Treatment Plant

February 2004

Idaho National Engineering and Environmental Laboratory

Idaho Falls, Idaho 83415

Prepared for the
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Assistant Secretary for Environmental Management
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ABSTRACT

The *2003 Wastewater Land Application Site Performance Reports for the Idaho National Engineering and Environmental Laboratory* describe site conditions for the facilities with State of Idaho Wastewater Land Application Permits. Permit-required monitoring data are summarized, and permit exceedences or environmental impacts relating to the operation of the facilities during the 2003 permit year are discussed.

SUMMARY

The *2003 Wastewater Land Application Site Performance Reports for the Idaho National Engineering and Environmental Laboratory* (INEEL) describe site conditions for the following facilities as required by the applicable State of Idaho Wastewater Land Application Permits (WLAPs):

- Central Facilities Area (CFA) Sewage Treatment Plant (STP), Permit Number LA-000141-01
- Idaho Nuclear Technology and Engineering Center (INTEC) New Percolation Ponds, Permit Number LA-000130-03
- INTEC STP, Permit Number LA-000115-02
- Test Area North/Technical Support Facility (TAN/TSF) STP, Permit Number LA-000153-01.

These reports contain the following information:

- Site description
- Facility and system description
- Status of special compliance conditions
- Permit-required monitoring data
- Discussions of environmental impacts by the facilities.

The CFA report covers from December 1, 2002, through November 30, 2003, while the INTEC and TAN reports cover from November 1, 2002, through October 31, 2003. These reporting periods are based on the individual facility permits.

The original WLAP issued for the CFA STP expired August 7, 1999. A renewal application was submitted February 9, 1999. A letter authorizing the continued operation of the CFA STP under the original WLAP was issued by the Idaho Department of Environmental Quality (DEQ) on September 18, 2000.

The original WLAP issued for the INTEC STP expired September 17, 2000. A renewal application was submitted during March 2000. Authorization to continue to operate the INTEC STP was received in January 2001. The initial WLAP for the INTEC New Percolation Ponds was issued on September 10, 2001, and amended on March 28, 2002.

The original WLAP issued for the TAN/TSF STP expired on May 8, 2001. The renewal application for this facility was submitted on November 2, 2000. Authorization to continue to operate the TAN/TSF STP was received from DEQ on July 12, 2001.

Authorization by DEQ to continue to operate the CFA, INTEC, and TAN/TSF STPs is in effect until new WLAPs are issued for each of these facilities.

During the 2003 permit year, approximately 5.98 million gallons of treated wastewater was land applied in the irrigation area at CFA. Soil and weather conditions combined with the relatively low volume of wastewater applied during the 2003 permit year resulted in a very low leaching loss (0.10 in.) for the year, compared to the permit limit of 3 in. per year. As a result, land application of wastewater appeared to have negligible impact on soils and groundwater. While sodium adsorption ratios were elevated relative to preapplication sodium adsorption ratios, they remain well below those in soils classified with sodium problems.

Evaluations conducted to date regarding the high nitrate + nitrite concentrations detected in groundwater near the new CFA STP determined that the new STP was not the likely source. Because the source is not believed to be the STP, sampling of these wells in not required under the CFA STP WLAP. However, Waste Area Group (WAG) 4 (under the INEEL Federal Facilities Agreement/ Consent Order) will continue to monitor the groundwater nitrate + nitrite concentrations.

The INTEC New Percolation Ponds became operational on August 26, 2002, when wastewater from CPP-797 was diverted from the existing INTEC Percolation Ponds, which were then removed from service. During the 2003 permit year, daily and annual flow volume to the New Percolation Ponds remained within permit limits. The permit for the New Percolation Ponds does not specify concentration limits for the effluent to the ponds. However, in order to aid in monitoring plant efficiency, effluent concentrations were compared to the groundwater quality standards. During permit year 2003, when comparing the effluent concentrations to the groundwater quality standards as an indicator of plant efficiency, only total dissolved solids (TDS) and chloride fell above the standards (during 4 months of the permit year). However, because no permit limits are set for the effluent, these levels do not reflect permit noncompliances. During these same 4 months, the sodium concentrations in the effluent were also high. High concentrations of TDS, chloride, and sodium in the service waste effluent are usually indicative of a problem with the CPP-606 water treatment system. During the permit year, several evaluations were conducted in support of a project to upgrade the current INTEC water treatment system. These evaluations included a survey of the treated water demands, water quality requirements, and candidate conservation measures. Several design options to upgrade the water treatment system are currently being evaluated.

The concentrations of aluminum and manganese in April 2003 and of aluminum, iron, and manganese in October 2003 in aquifer well ICPP-MON-A-166 were above the applicable permit limits. Aluminum and iron concentrations were also above the applicable permit limits in April 2003 and October 2003 in well ICPP-MON-V-200. The concentrations of aluminum, iron, and manganese in the background aquifer well (ICPP-MON-A-167) also exceeded the applicable groundwater quality standards in both April 2003 and October 2003. These elevated concentrations are not believed to be related to operational activities at the INTEC New Percolation Ponds. Concentrations of these parameters in the effluent are well below their applicable groundwater quality standards. One possible explanation may be that the wells were insufficiently developed during construction activities. Another possible explanation is that the annular seals were placed incorrectly, thus allowing bentonite slurry to affect the water quality. Prior to each sampling event, additional purging was performed on these wells to try to remove any residual slurry that may be in the wells as a result of the well construction activities. In addition, filtered samples were collected along with the permit-required unfiltered samples during the October 2003 sampling event for each of these wells. The filtered sample concentrations were below the groundwater quality standards and were significantly less than the concentrations in the unfiltered samples. The filters have been submitted to the laboratory for additional analysis to try to verify the source of the aluminum, iron, and manganese in these wells.

Well ICPP-MON-V-200 also exceeded the permit limit for TDS in October 2003. This is expected to be directly related to the TDS concentrations in the effluent. Although not exceeding the permit limits, chloride and sodium concentrations have also increased significantly in this well.

INTEC STP effluent flow volumes and groundwater concentrations were all within permit limits. Both total nitrogen and total suspended solids concentrations in the effluent exceeded the permit limit (20 mg/L and 100 mg/L, respectively) 1 month during the 2003 permit year. Numerous maintenance and operational corrective actions have been implemented in the past to manage the total nitrogen concentration in the effluent. In 2003, a proposal to expand the operations associated with the New Percolation Ponds and reroute treated sanitary wastewater from the STP to the New Percolation Ponds was submitted to DEQ. As a result of this operation, the infiltration trenches associated with the STP would be closed and the WLAP for the STP would be terminated.

Concentrations of permit-required parameters in groundwater samples collected from the aquifer compliance well (USGS-052) near the INTEC STP were all within permit limits during 2003. Total and fecal coliform were detected in the perched water well (ICPP-MON-PW-024) in October 2003. Fecal coliform consists of various genera and species of coliform that are specifically associated with human and animal wastes. The treatment processes at the INTEC STP do not include disinfecting the wastewater. Therefore, the source of coliform bacteria found in well ICPP-MON-PW-024 is probably the INTEC STP effluent.

The TAN/TSF effluent flow volumes and concentrations were within permit limits. Elevated iron concentrations historically have been detected in the TAN WLAP monitoring wells. Due to this, a corrosion evaluation was performed in 2000. The evaluation confirmed that the riser pipes for these wells were significantly corroded. The riser pipes attached to the dedicated pumps were replaced with stainless steel riser pipes in all four TAN WLAP monitoring wells during August 2001. Since then, the iron concentrations in three of the wells (TAN-13A, TANT-MON-A-001, and TANT-MON-A-002) have decreased. The iron concentrations in these three wells were below the groundwater quality standard in both April 2003 and October 2003. Iron concentrations in the remaining well (TAN-10A) exceeded the permit limit in both April 2003 and October 2003.

Of the four TAN WLAP wells, TAN-10A is cased with carbon steel well casing and video logging shows that the casing is corroded most of the way to the water table. The iron concentrations in TAN-10A increased after the riser pipes were replaced, and the October 2002 iron concentrations for TAN-10A were the highest reported for the four wells. The condition of the well casing, coupled with the residual effects from replacing the galvanized riser pipe, may have resulted in the increased iron concentrations in TAN-10A.

Fecal coliform was absent in all TAN/TSF samples and wells during the 2003 permit year. In addition, total coliform was absent in all wells during April 2003. However, total coliform was identified in the October 2003 samples from monitoring wells TANT-MON-A-001 (upgradient, background well), TANT-MON-A-002 (compliance well), and TAN-13A (compliance well). The groundwater standard for total coliform is 1 colony/100 ml. The total coliform in wells TANT-MON-A-001, TANT-MON-A-002, and TAN-13A were 4 colonies/100 mL, 17 colonies/100 mL (26 colonies/100 ml, duplicate), and 72 colonies/100 ml, respectively. The coliform species identified by the laboratory was *Hafnia alvei* in wells TANT-MON-A-001 and TANT-MON-A-002. Two coliform species, *Hafnia alvei* and *Serratia marcescens* were identified in well TAN-13A. The TAN/TSF Disposal Pond effluent contains total coliform bacteria; however, it is unlikely the coliform detected in wells TANT-MON-A-001 and TANT-MON-A-002 was the result of the Disposal Pond effluent. TANT-MON-A-001 is the background well and is not influenced by the Disposal Pond. TANT-MON-A-002 is west/southwest of the Disposal Pond, and groundwater flows at TAN are primarily to the south or southeast; therefore, it is unlikely that bacteria could be transported into the well without significant transverse dispersivity in the vadose zone. For well TAN-13A, the October 2003 detection is the first time that coliform has been detected in this well since 1996. Because well TAN-13A is located southeast of the disposal pond, it is possible that the coliform in the effluent discharged to the pond has affected this well. However, fecal coliform is also present in the effluent but was not detected in TAN-13A. There are many possible sources for the total coliform detected in the samples from these three wells. Further evaluation will be required to try and identify the specific source of the coliform contamination. If the source can be identified, then appropriate corrective actions can be taken.

Four monitoring wells associated with the TAN/TSF facility have been approved for a “no-longer-contained-in” determination from DEQ. These wells include two monitoring wells associated with the Wastewater Land Application Permit (TAN-10A and TAN-13A) and wells TAN-27 and TSFAG-05. During the 2003 permit year, no purge water was discharged to the TAN/TSF Disposal Pond as a result of sampling these wells.

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FIGURES

TABLES

ACRONYMS

BBWI	Bechtel BWXT Idaho, LLC
BOD	biochemical oxygen demand
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CES	Cascade Earth Sciences, Ltd.
CFA	Central Facilities Area
CFR	Code of Federal Regulations
COD	chemical oxygen demand
d	day
DEQ	Department of Environmental Quality
EPA	Environmental Protection Agency
ESRP	eastern Snake River Plain
ESRPA	eastern Snake River Plain aquifer
FFA/CO	Federal Facilities Agreement/Consent Order
ft	foot
gal/d/ft	gallons/day/foot
gpd	gallons per day
ICPP	Idaho Chemical Processing Plant
IDAPA	Idaho Administrative Procedures Act
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
MG	million gallons
mg/L	milligram per liter
mi	mile
N	nitrogen
NE-ID	Department of Energy, Idaho Operations Office
NH_3-N	ammonia as nitrogen
NH_4-N	ammonium
NLCI	no-longer-contained-in
NNN	nitrate + nitrite as nitrogen
NO_2-N	nitrite as nitrogen
NO_3-N	nitrate as nitrogen
O&M	Operations and Maintenance
OOS	out of service
OU	Operable Unit
PCS	primary constituent standard
RCRA	Resource Conservation and Recovery Act
RE	removal efficiency
RI	rapid infiltration

ROD	Record of Decision
SAR	sodium adsorption ratio
SCS	secondary constituent standard
STP	Sewage Treatment Plant
TAN	Test Area North
TDS	total dissolved solids
TKN	total Kjeldahl nitrogen
TSF	Technical Support Facility
TSS	total suspended solids
USGS	United States Geological Survey
WAG	Waste Area Group
WLAP	Wastewater Land Application Permit
WGS	Waste Generator Services

2003 Wastewater Land Application Site Performance Reports for the Idaho National Engineering and Environmental Laboratory

1. INTRODUCTION

The *2003 Wastewater Land Application Site Performance Reports for the Idaho National Engineering and Environmental Laboratory* (INEEL) describe site conditions for the facilities listed in Table 1-1 as required by the State of Idaho Wastewater Land Application Permits (WLAPs).

Table 1-1. Idaho National Engineering and Environmental Laboratory facilities and permit numbers.

Facility	Permit Number
Central Facilities Area (CFA) Sewage Treatment Plant (STP)	LA-000141-01
Idaho Nuclear Technology and Engineering Center (INTEC) New Percolation Ponds	LA-000130-03
INTEC STP	LA-000115-02
Test Area North/Technical Support Facility (TAN/TSF) STP	LA-000153-01

These reports contain the following information:

- Site description
- Facility and system description
- Status of special compliance conditions
- Permit-required monitoring data
- Discussions of environmental impacts by the facilities.

The Central Facilities Area (CFA) report covers from December 1, 2002, through November 30, 2003, while the Idaho Nuclear Technology and Engineering Center (INTEC) and Test Area North/Technical Support Facility (TAN/TSF) reports cover from November 1, 2002, through October 31, 2003. These reporting periods are based on the individual facility permits.

The original WLAP issued for the CFA Sewage Treatment Plant (STP) expired August 7, 1999 (Green 1994). A renewal application was submitted February 9, 1999 (Bennett 1999). A letter authorizing the continued operation of the CFA STP under the original WLAP was issued September 18, 2000 (Johnston 2000).

The original WLAP issued for the INTEC STP (Green 1995) expired September 17, 2000. A renewal application was submitted during March 2000 (Graham 2000). Authorization to continue operation was received in January 2001 for the INTEC STP (Johnston 2001). The initial WLAP for the INTEC New Percolation Ponds was issued by the Department of Environmental Quality (DEQ) on September 10, 2001

(Eager 2001), and was amended on March 28, 2002 (Eager 2002). The amended permit is effective as of March 28, 2002, and expires on April 1, 2007. On August 26, 2002, wastewater discharge to the existing Percolation Ponds ceased. The existing Percolation Ponds were permanently taken out of service and will be closed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requirements. A letter (Guymon 2002a) requesting cancellation of the WLAP (LA-000130-02) was submitted to DEQ on October 23, 2002. DEQ acknowledged that the existing Percolation Ponds permit was considered ineffective as of November 4, 2002 (Rackow 2002a). Because there are no post-WLAP closure or monitoring requirements for the existing Percolation Ponds or their associated groundwater monitoring wells, WLAP Performance Reports are no longer required for the existing Percolation Ponds.

The original WLAP issued for the TAN/TSF STP expired on May 8, 2001 (Green 1996). A renewal application was submitted on November 2, 2000 (Guymon 2000). Authorization to continue operating the TAN/TSF STP was received in July 2001 (Teuscher 2001).

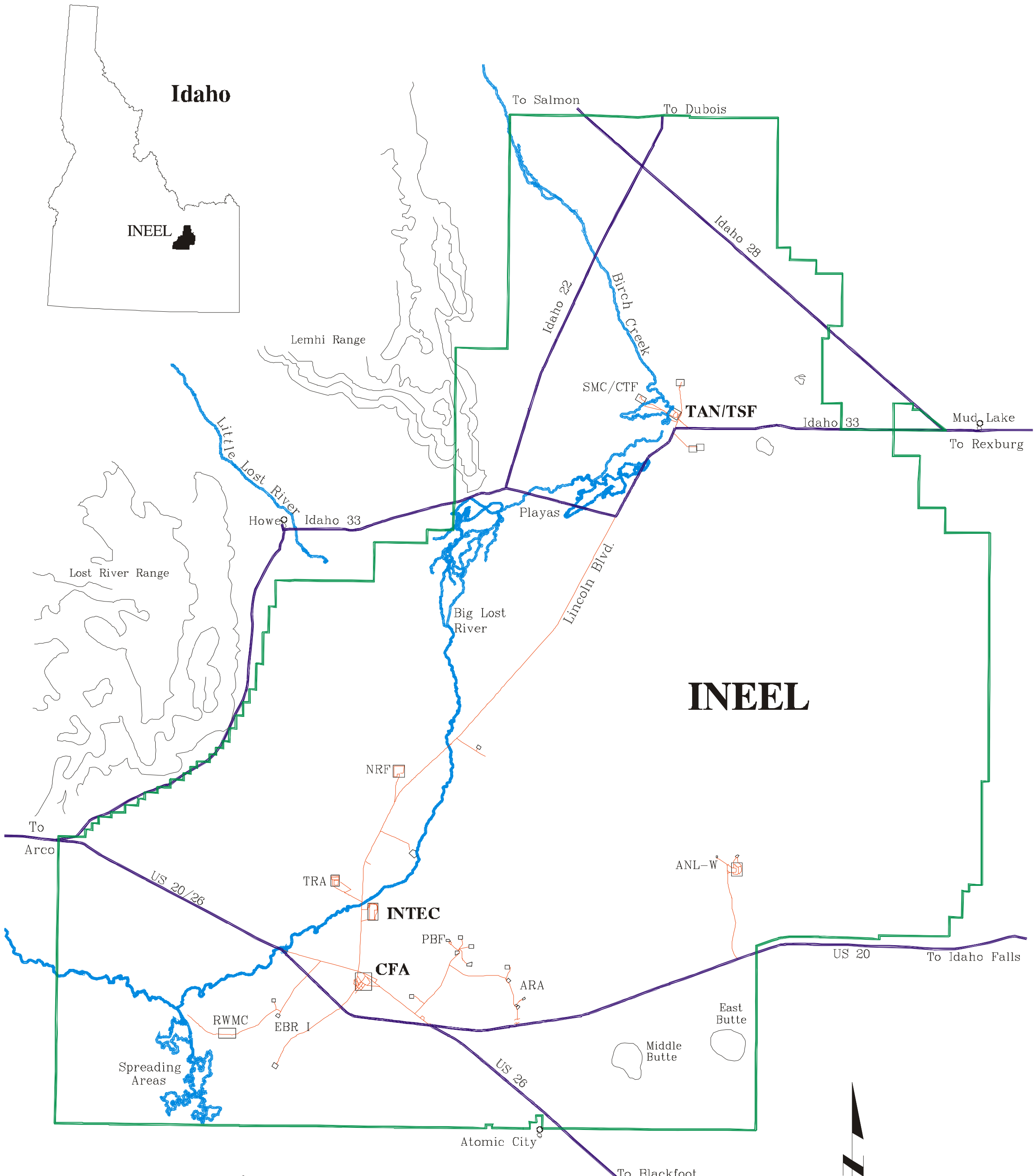
Operations at all facilities are conducted by Bechtel BWXT Idaho, LLC (BBWI) for the Department of Energy, Idaho Operations Office (NE-ID).

1.1 Idaho National Engineering and Environmental Laboratory Site Description

The INEEL is approximately 890 mi^2 and is located on the eastern Snake River Plain (ESRP) in southeastern Idaho (Figure 1-1). It was established as a nuclear energy research and development testing station in the late 1940s and was designated a National Environmental Research Park in 1975. All land within the INEEL is protected as an outdoor laboratory where the effects of energy development and industrial activities on the environment and the complex ecological relationships of this cool desert ecosystem can be studied. The INEEL serves as a research area for scientists from several universities and state and federal agencies.

Subsurface geology at the INEEL consists of successive layers of basalt and sedimentary strata, overlaid at the surface by wind- and water-deposited sediments. The primary groundwater source of the region is the eastern Snake River Plain aquifer (ESRPA). Most of the INEEL is located in the Mud Lake-Lost River Basin (Pioneer Basin), which is an informally named, closed drainage basin. Surface water within the Pioneer Basin includes that from the Big Lost River, the Little Lost River, and Birch Creek, all of which drain mountain watersheds located to the north and northwest of the INEEL. All three water bodies may flow onto the INEEL during high flow years, but are otherwise intermittent. In addition, local rainfall and snowmelt contribute to surface water mainly during the spring. The portion of surface water that is not lost to evapotranspiration infiltrates into the subsurface. Both aquifer and surface waters are used for irrigating crops and other applications outside the INEEL.

The ESRPA is approximately 199 mi long and 20 to 60 mi wide and encompasses an area of about 9,650 mi^2. The depth to the ESPRA varies from 200 ft in the northern part of the INEEL to over 900 ft in the southern part. The ESRPA is the ESRP's source of groundwater. It is also the source of process water and drinking water both on and off the INEEL. The aquifer is recharged from infiltration of precipitation and irrigation seepage, runoff from the surrounding highlands, and groundwater underflows from the surrounding watersheds (DOE-ID 2002). Groundwater in the ESRPA flows generally to the



INEEL Facilities

ANL-W - Argonne National Laboratory-West
ARA - Auxiliary Reactor Area
CFA - Central Facilities Area
CTF - Containment Test Facility
EBR-I - Experimental Breeder Reactor-I
INTEC - Idaho Nuclear Technology & Engineering Center
NRF - Naval Reactor Facility
PBF - Power Burst Facility
RWMC - Radioactive Waste Management Complex
SMC - Specific Manufacturing Capability
TAN - Test Area North
TSF - Technical Support Facility
TRA - Test Reactor Area

LEGEND

INEEL Roads
Public Roads
Streams and Rivers
INEEL Boundary
Cities
INEEL Facilities

Date Drawn: January 06, 2003
(/projects/ineel/location_maps: ineel_sel_fac-ap_v1)

Figure 1-1. Idaho National Engineering and Environmental Laboratory.

southwest, although locally the direction of flow is influenced by recharge from rivers, surface water, spreading areas, and heterogeneities in the aquifer. Tracer studies at the INEEL indicate that natural flow rates range from 5 to 20 ft/d. Aquifer transmissivities range from 3×10^4 to 1.8×10^7 gal/d/ft; storage coefficients range from 0.01 to 0.06 (Robertson, Shoen, and Barrachlough 1974).

Meteorological and climatological data that apply to the INEEL region are collected and compiled from several meteorological stations operated by the National Oceanic and Atmospheric Administration field office in Idaho Falls, Idaho. Thirteen stations are located on the INEEL. Annual rainfall at the INEEL is light, and the region is classified as arid to semiarid (Clawson, Start, and Ricks 1989). The long-term average (from March 1950 through 2002) annual precipitation at the INEEL is 8.5 in. (at the CFA station). Monthly precipitation is usually highest in April, May, and June and lowest in July and October. The average daytime maximum temperature is 87°F (July), while the average daytime minimum temperature is 5°F (January) (Hukari 2003). The INEEL is in the belt of prevailing westerly winds, which are channeled within the plain to produce a west-southwesterly or southwesterly wind at most locations on the INEEL.

1.2 Liquid Effluent Monitoring Program

The INEEL Liquid Effluent Monitoring Program monitors effluent discharges at facilities operated by Bechtel BWXT Idaho, LLC (BBWI) at the INEEL. This program involves sampling, analysis, and data interpretation carried out under a quality assurance program. The INEEL Liquid Effluent Monitoring Program conducted effluent and influent monitoring as required by the Wastewater Land Application Permits (WLAPs) for the CFA STP, the INTEC STP, and the TAN/TSF STP during the 2003 permit year. INTEC Operations monitored effluent to the INTEC New Percolation Ponds.

Daily flow and monthly coliform readings were taken by CFA Wastewater Operations for the CFA STP, the INTEC STP, and the TAN/TSF STP during the 2003 permit year. Daily flow readings for the INTEC New Percolation Ponds were taken by INTEC Operations.

Effluent samples were collected each month according to INEEL sampling procedures and a randomly generated sampling schedule. Effluent samples were analyzed using methods described in 40 Code of Federal Regulations (CFR) 136, (40 CFR 136), with the following exceptions. For the INTEC New Percolation Ponds effluent samples, anions were analyzed using Environmental Protection Agency (EPA) Method 300.0 (EPA 1984) approved for drinking water. For the INTEC New Percolation Pond effluent samples, total phosphorus was analyzed using EPA Method 200.7 (MacConnel 2002). CFA Wastewater Operations and INTEC Operations personnel follow INEEL technical procedures to take the daily flow readings.

1.3 Drinking Water Program

For the INTEC New Percolation Ponds, Section G of the permit requires reporting the results of water quality testing performed at the Weapons Range B21-608 Building, which is monitored in accordance with the DEQ Drinking Water Program. These samples are collected by the INEEL Drinking Water Program and analyzed using approved drinking water methods.

1.4 Groundwater Monitoring Program

Groundwater was monitored in support of the WLAPs for the INTEC New Percolation Ponds, the INTEC STP, and the TAN/TSF STP following the sampling and analysis plan and INEEL procedures. All samples were collected in spring (April) and fall (October) at INTEC and TAN facilities. All samples were analyzed using EPA-approved methods.

1.5 Soil Sample Collection

The CFA STP WLAP requires the soil within the land application area to be sampled annually during each permit period. Five soil subsamples are collected from the land application area at two depths and then are composited in accordance with INEEL procedures and as specified in the permit. The samples are analyzed using *Methods of Soil Analysis* (Page 1982).

2. CENTRAL FACILITIES AREA SEWAGE TREATMENT PLANT DATA SUMMARY AND ASSESSMENT

2.1 Site Description

The Central Facilities Area (CFA) is about 50 mi west of Idaho Falls, Idaho, in Butte County Idaho, approximately 5 mi from the INEEL southern boundary. The CFA provides functional space for crafts, offices, services, and laboratories for approximately 900 employees. CFA includes approximately 72 buildings and 62 other structures.

The CFA STP serves all major facilities at CFA. The STP is southeast of CFA (Figure 2-1), approximately 2,200 ft downgradient of the nearest drinking water well. A public road passes approximately 0.75 mi south of the STP, and the nearest inhabited building is approximately 2,000 ft from the wastewater land application area.

2.2 System Description and Operation

The CFA STP was built in 1994 and put into service on February 6, 1995. Approximately 103,000 gallons per day (gpd) of water were processed from sanitary sewage drains throughout CFA during the 2003 permit year. Wastewater is derived from restrooms, showers, and the cafeteria, a significant portion of which is comprised of noncontact cooling water from air conditioners and heating systems. This large volume of cooling water dilutes the wastewater effluent. Other contributing discharge sources include those from bus and vehicle maintenance areas, analytical laboratories, and a medical dispensary.

The STP consists of:

- 1.7-acre partial-mix, aerated lagoon (Lagoon No. 1)
- 10.3-acre facultative lagoon (Lagoon No. 2)
- 0.5-acre polishing pond (Lagoon No. 3)
- Sprinkler pivot irrigation system, which applies wastewater on up to 73.5 acres of native desert rangeland.

Lagoon sizes presented for Lagoon Nos. 1 and No. 2 are based on the 8-foot design depth (INEEL 2003a). Under existing flow conditions, the winter storage capacity of the lagoons or ponds has been at least 8 months. Aeration can be used to mix, aerate, and agitate the wastewater within the cell of Lagoon No. 1.

A 400-gallon-per-minute pump applies wastewater from the lagoons to the land through a computerized center pivot system. The center pivot operates at low pressures (30 lbs/in.^{2}) to minimize aerosols and spray drift. The permit limits wastewater application to 25 acre-in./acre/year from March 15 through November 15 and limits leaching losses to 3 in./year.

In 2003, wastewater application began June 16 and continued through September 25. The end gun on the pivot was used during 2003, resulting in an application area of approximately 73.5 acres. Aerial photographs of the STP area are presented in Appendix A as a visual record of changes in vegetation due

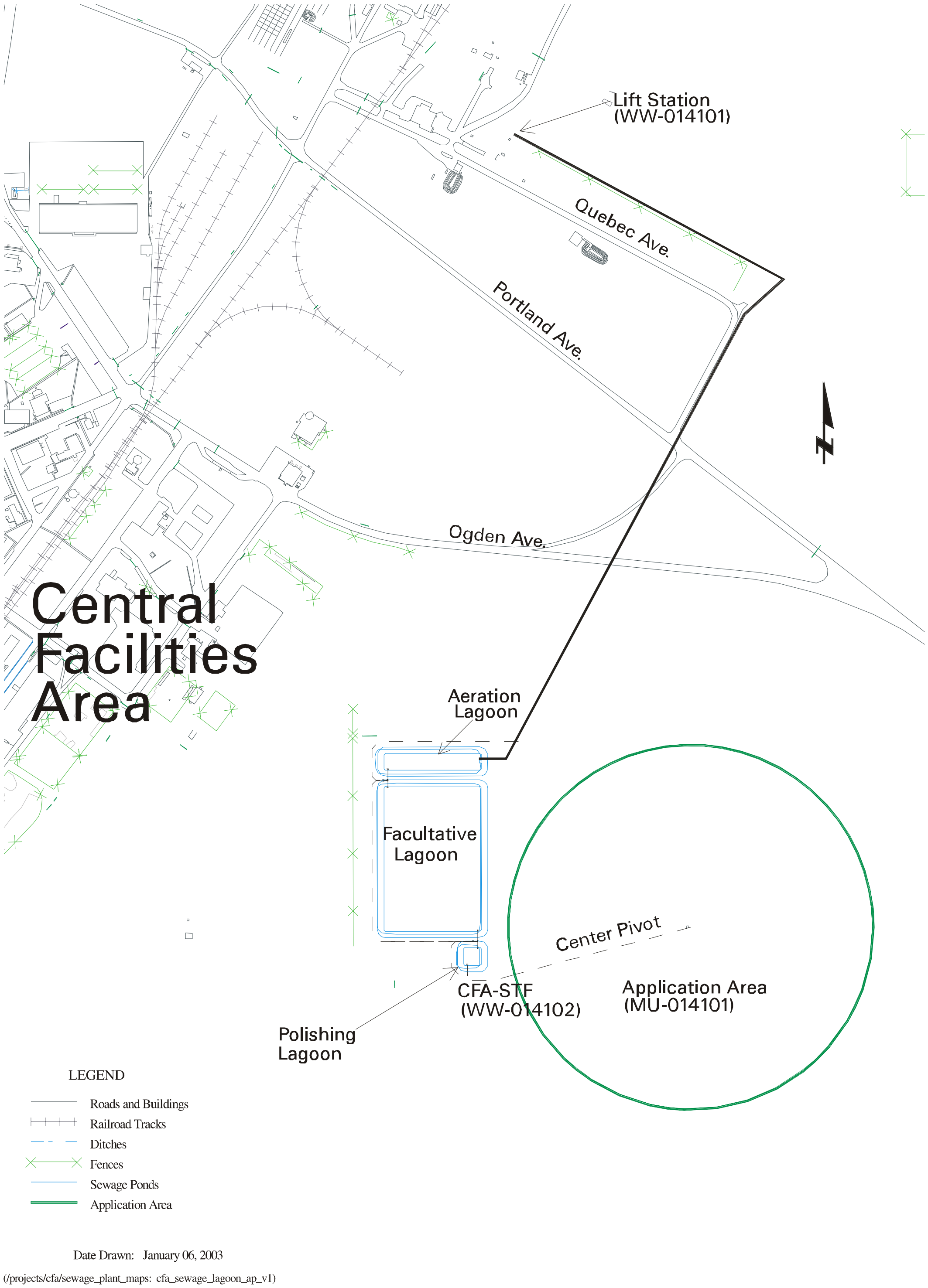


Figure 2-1. Central Facilities Area Sewage Treatment Plant.

to the operation of the pivot. A photograph is included for each year since the permit was issued, except for the 2001 permit year. Photographs were scheduled to be taken in late fall 2001. However, due to the increased security and closed airspace over the INEEL after September 11, 2001, aerial photographs could not be taken prior to the end of the 2001 permit year.

The original WLAP issued for the CFA STP expired August 7, 1999 (Green 1994). A renewal application was submitted February 9, 1999 (Bennett 1999). A letter authorizing the continued operation of the CFA STP under the original WLAP was issued September 18, 2000 (Johnston 2000). In compliance with Section 1 of the WLAP, which states that "wastewater shall be managed substantially in accordance with the plan of operation," the CFA STP Operations and Maintenance (O&M) Manual was modified to reflect current operating methodologies. The manual was submitted to DEQ on November 29, 2001 (Rugg 2001). DEQ provided comments (Rackow 2002b) on the modified O&M Manual, the INEEL submitted a response to DEQ on April 9, 2002 (Rugg 2002), and the INEEL provided additional supporting information on January 20, 2003 (Guymon 2003a). The O&M Manual, dated November 2001, was approved by the DEQ on April 2, 2003 (Rackow 2003a).

2.3 Status of Special Compliance Conditions

No special compliance conditions were in effect during the 2003 permit year.

2.4 Influent and Effluent Monitoring Results

The permit year is from November 16, 2002, through November 15, 2003. However, to provide a more complete data set and for water balance calculations, data are reported from December 1, 2002, through November 30, 2003.

Influent samples were collected monthly from the lift station at CFA (prior to Lagoon No. 1) during the permit year. Effluent samples were collected from the pump pit (prior to the pivot) starting in June and continued through the months of pivot operation. All samples collected were 24-hour composite samples, except the pH and coliform samples, which are grab samples. CFA Wastewater Operations personnel collect coliform samples. Tables 2-1 and 2-2 summarize the influent and effluent results.

Yearly average concentrations for all parameters measured in the influent to the lagoons were at or below concentrations typically classified as "weak" municipal wastewater (biochemical oxygen demand [BOD] < 110, chemical oxygen demand [COD] < 250, total suspended solids [TSS] < 100, and total nitrogen [N] < 20 mg/L) (Metcalf and Eddy 1979). The average TSS and BOD concentrations in the influent were greater than those for the 2002 permit year, while the yearly average concentrations for the remainder of the permit parameters were less than those for the 2002 permit year. However, all permit parameters were within historical ranges.

The yearly average concentrations for TSS and pH measured in the effluent discharged to the pivot were lower than those of the 2002 permit year, while the remaining parameters were higher than those for the 2002 permit year. However, all parameters were within the historical ranges.

Removal efficiencies (REs) were calculated to estimate treatment in the lagoons (Table 2-3). Average REs were lower than the previous year for total nitrogen, BOD, and COD, but equal to the previous year for TSS. Only BOD and TSS achieved the projected efficiency (i.e., total nitrogen, BOD, and TSS of 80% and COD of 70%). During the 2003 permit year, the average REs indicate that treatment in the lagoons was sufficient to produce a good quality effluent for land application.

Table 2-1. Central Facilities Area Sewage Treatment Plant influent water quality data from lift station (WW-014101).

Sample Month	Sample Date	TKN (mg/L)	NNN[a] (mg/L)	BOD (mg/L)	COD (mg/L)	TSS (mg/L)	pH
December	12/10/2002	18.20	0.420	58.4	119.0	76.0	7.92
January	01/22/2003	19.50	0.499	49.7	196.0	28.3	7.65
February	02/04/2003	1.73	0.336	51.2	147.0	95.7	7.92
March	03/05/2003	24.90	0.774	54.6	93.3	55.9	8.15
April	04/29/2003	1.60[b]	0.481[b]	29.85[b]	102.5[b]	36.45[b]	8.21
May	05/28/2003	12.80	1.220	56.8	77.4	40.5	7.70
June	06/19/2003	12.30	0.642	53.5	56.5	31.1	7.62
July	07/30/2003	10.30	0.979	23.0	73.5	18.9	7.66
August	08/20/2003	11.60	0.409	37.4	41.8	33.8	7.95
September	09/24/2003	5.13	0.765	44.1	54.6	48.4	7.76
October	10/14/2003	17.70	0.354	47.8	79.2	68.5	7.75
November	11/04/2003	14.60	0.479	59.1	120.0	324.0	7.82
Yearly Average[c]		12.53	0.613	47.1	96.7	71.5	7.84

a. NNN—Nitrate + nitrite as nitrogen..

b. The result shown is the average of the duplicate samples taken for the month.

c. Yearly average is determined from the average of the monthly values.

Table 2-2. Central Facilities Area Sewage Treatment Plant effluent water quality data prior to pivot (WW-014102).

Sample Month	Sample Date	TKN (mg/L)	NNN[a] (mg/L)	BOD (mg/L)	COD (mg/L)	TSS (mg/L)	pH	Total Phosphorus (mg/L)	Fecal Coliform[b] (col/100 mL)	Total Coliform[b] (col/100 mL)
June	6/19/2003	1.81	0.071	4.35	35.3	6.5	9.89	0.316	1	8
July	7/30/2003	4.25	0.034	2.14	34.5	4.0 U[c]	9.13[d]	0.408	1	6
August	8/20/2003	6.70	0.012	7.38	40.1	4.0 U	9.48	0.235	29	80
September	9/24/2003	2.90	0.012	3.15	41.6	4.0 U	9.56	0.213	1	1
Yearly Average[e]		3.92	0.032	4.26	37.9	3.1	9.52	0.293	8	24

a. NNN—Nitrate + nitrite as nitrogen.

b. Coliform samples were collected independent of the composite samples on 6/18/2003, 7/31/2003, 8/20/2003, and 9/25/2003.

c. U flag indicates that the result was reported as below the detection limit.

d. The result shown represents the average of multiple samples taken for the month.

e. Yearly average is determined from the average of the monthly values. Half the reported detection limit was used in the yearly average calculation for those results reported as below the detection limit.

Table 2-3. 2003 removal efficiency[a] percentages for Central Facilities Area Sewage Treatment Plant permit monitoring parameters.

Sample Month	Total Nitrogen[b] (%)	BOD (%)	COD (%)	TSS (%)
June 2003	85	92	38	79
July 2003	62	91	53	89[c]
August 2003	44	80	4	94[c]
September 2003	51	93	24	96[c]
Yearly Average RE	61	89	30	90

a. Removal efficiency (RE) = [(average monthly influent concentration – average monthly effluent concentration) ÷ average monthly influent concentration] × 100.

b. Total nitrogen is calculated as the sum of the TKN and NNN results.

c. For TSS, half the detection limit was used in the RE calculation for the effluent concentration because the effluent result was reported as below the detection limit.

2.4.1 Flow Volumes and Loading Rates

Daily influent flow readings were recorded at the flow meter prior to the first lagoon during the permit year. Daily effluent flow readings were recorded at the pivot control panel when the pivot was operating. All flow readings were recorded in gallons per day (gpd). Table 2-4 summarizes monthly and annual flow data, and Appendix A presents daily flow readings and copies of the required electronic WLAP data files (DEQ 2002a).

Daily influent flows averaged less than 104,000 gpd, which was much less than the design flow of 250,000 gpd. Average daily flows continued to be greatest during the summer. Total influent flow volume was approximately 38 million gallons (MG) for the permit year. Discharge to the pivot averaged less than 158,000 gpd. The end gun was used during the entire 2003 application period (June 16, 2003, through September 25, 2003). Application rates ranged from 0.07 to 0.08 acre-in./day.

Table 2-5 presents hydraulic and nutrient loading rates. The total volume of applied wastewater for 2003 was approximately 5.98 MG, which is significantly less than the design hydraulic loading of 40.5 MG. Hydraulic loading peaked in September. Nitrogen loading rates were significantly lower (2.7 lb/acre/yr) than the projected maximum loading rate of 32 lb/acre/year. As a general rule, nitrogen loading should not exceed the amount necessary for crop utilization plus 50%. However, wastewater is applied to native rangeland without nitrogen removal via crop harvest. To estimate nitrogen buildup in the soil under this condition, a nitrogen balance was prepared by Cascade Earth Sciences, Ltd. (CES), which estimated it would take 20 to 30 years to reach normal nitrogen agricultural levels in the soil (based on a loading rate of 32 lb/acre/year) (CES 1993). The extremely low 2003 nitrogen loading rate of 2.7 lb/acre/year had a negligible effect on nitrogen accumulation.

The 2003 annual total COD loading rate at CFA STP (26 lb/acre/year) was less than the previous year and was substantially less than the state guidelines of 50 lb/acre/day (which is equivalent to 18,250 lb/acre/year).

Table 2-4. Central Facilities Area Sewage Treatment Plant flow summaries.

Sample Month	Influent to Pond (WW-014101) Average (gpd[a])	Minimum (gpd)	Maximum (gpd)	Total (MG)[b]	Effluent to Pivot (WW-014102) Average (gpd)	Minimum (gpd)	Maximum (gpd)	Total to Field 1 (MU-014101) (MG)[b]
December 2002	76,770	49,298	104,673	2.38	NF[c]	NF	NF	NF
January 2003	81,294	58,886	106,169	2.52	NF	NF	NF	NF
February 2003	79,717	58,806	103,273	2.23	NF	NF	NF	NF
March 2003	82,097	50,963	114,566	2.55	NF	NF	NF	NF
April 2003	85,701	59,748	108,291	2.57	NF	NF	NF	NF
May 2003	96,605	62,695	153,865	2.99	NF	NF	NF	NF
June 2003	119,263	74,027	178,156	3.58	155,863	139,600	163,200	1.25
July 2003	135,727	20,637	188,795	4.21	157,967	150,700	165,400	1.42
August 2003	152,026	95,065	188,256	4.71	157,670	148,900	159,300	1.58
September 2003	130,676	96,830	168,057	3.92	157,336	150,300	162,500	1.73
October 2003	112,646	69,239	174,677	3.49	NF	NF	NF	NF
November 2003	86,377	66,633	114,132	2.59	NF	NF	NF	NF
Yearly Summary	103,410	20,637	188,795	37.74	157,263	139,600	165,400	5.98

a. gpd—Gallons per day.

b. Monthly and annual totals are shown in million gallons (MG).

c. NF—No flow.

Table 2-5. 2003 hydraulic and nutrient loading rates.[a]

Sample Month	Applied Wastewater Total (MG)[b]	Applied Wastewater Per Acre (MG)	Total Nitrogen[c] (lb/acre)	COD (lb/acre)	Total Phosphorus (lb/acre)
June	1.25	0.017	0.266	4.997	0.045
July	1.42	0.019	0.678	5.458	0.065
August	1.58	0.021	1.174	7.012	0.041
September	1.73	0.024	0.582	8.314	0.043
Yearly Total	5.98	0.081	2.700	25.781	0.194

a. Loading rates calculated for wastewater application on up to 73.5 acres (hydraulic management unit MU-014101).

b. MG—Million gallons.

c. Total nitrogen is determined from the sum of the TKN and NNN results.

The annual total phosphorus loading rate (0.194 lb/acre/year) was well below the projected maximum loading rate of 4.5 lb/acre/year. The small amount of phosphorus applied was probably removed by sorption reactions in the soil and utilized by vegetation, rather than lost to groundwater.

2.4.2 Soil Water Balance

A monthly water balance software package was prepared by Cascade Earth Sciences, Ltd. to determine leaching losses (Maloney 1993; Bruner 1994). This water balance software calculates leaching losses based on:

- Soil available water capacity
- Precipitation
- Wastewater application
- Evapotranspiration.

This calculation:

- Assumes full soil profile water storage on April 1
- Applies an adjustment factor of 84% to the measured precipitation values to account for interception by vegetation onsite
- Applies an irrigation efficiency factor to the measured wastewater flows to account for evaporation resulting from spraying. (Irrigation efficiencies of 70% were used for the center pivot for June, July, and August, and 80% for September.)

Potential and actual evapotranspiration values are estimated based on average monthly temperatures and the volume of water stored in the soil, respectively. The National Oceanic and Atmospheric Administration measures monthly precipitation and temperature at the CFA Weather Station.

A projected water balance was submitted with the original WLAP application to the DEQ. Table 2-6 shows the water balance for the 2003 permit year. A total of 2.99 acre-in./acre of wastewater was applied over approximately 73.5 acres during the 2003 permit year, which was 4.26 in. less than that applied in 2002. This total, when adjusted for irrigation efficiency and added to the total adjusted precipitation for the permit year, yields 5.62 acre-in./acre, which is well below the permit limit of 25 acre-in./acre/year. The relatively low volume of wastewater, coupled with below average annual precipitation (lower by 4.4 in.) and above average monthly temperatures for all months of the permit year (with the exception of November 2003), resulted in a leaching loss of only 0.10 in.

The leaching loss of 0.10 in. occurred in April 2003 when the model assumes full soil profile water storage. While there was no wastewater applied during the month of April 2003, the calculated leaching loss can be attributed to the model's assumed full soil profile and the addition of 1.56 inches of precipitation during the month (more than double the monthly average). The assumption of a full soil profile in April and the calculated leaching loss of 0.10 in. are considered very conservative based on the below average annual precipitation volumes for the previous several years.

Table 2-6. Central Facilities Area Sewage Treatment Plant monthly water balance for 5.98 MG wastewater applied to the irrigation area.[a]

Month	Water Applied (in.)				Total (in.)	Evapotranspiration[b] (in.)		Stored in Soil (in.)	Leaching Loss[e] (in.)
	PPT[c]	ADJ PPT[c]	Waste[d]	ADJ Waste[d]		PET	ACT		
December 2002	0.25	0.21	0	0	0.21	0.25	0.25	0	0
January 2003	0.16	0.13	0	0	0.13	0.24	0.24	0	0
February 2003	0.42	0.35	0	0	0.35	0.25	0.25	0.11	0
March 2003	0.26	0.22	0	0	0.22	0.69	0.67	0	0
April 2003	1.56	1.31	0	0	1.31	1.22	1.22	8.22	0.10
May 2003	0.46	0.39	0	0	0.39	2.74	2.32	6.29	0
June 2003	0.03	0.03	0.62	0.43	0.46	4.14	3.08	3.67	0
July 2003	0.00	0.00	0.71	0.50	0.50	6.20	3.43	0.74	0
August 2003	0.18	0.15	0.79	0.55	0.70	5.28	3.52	0	0
September 2003	0.44	0.37	0.87	0.70	1.07	2.52	2.29	0	0
October 2003	0.08	0.07	0	0	0.07	1.32	1.21	0	0
November 2003	0.26	0.22	0	0	0.22	0.30	0.30	0	0
Total:	4.10	3.44	2.99	2.18	5.62	25.14	18.75	0	0.10
					Soil Available Water Capacity[f]:			8.22	

a. Water balance was calculated using the method in *Irrigation Water Requirements* (Department of Agriculture 1979).

b. PET—potential evapotranspiration; ACT—actual evapotranspiration.

c. PPT— precipitation. ADJ PPT—adjusted precipitation. An efficiency factor was applied to the raw monthly data to account for interception by native vegetation (Linsley, Kohler, and Paulhus 1982).

d. Waste—applied wastewater. ADJ Waste—applied wastewater adjusted for irrigation losses. A monthly efficiency factor was applied to correct for irrigation losses due to evaporation (Department of Agriculture 1986).

e. Leaching losses of water moving below the rooting zone (assumed to be a depth of 52 in.).

f. Soil available water capacity was determined from field measurements and textural analyses to be 8.22 in.

2.5 Evaluation of Groundwater Data

Groundwater monitoring is not required by the current permit based on the following:

- Quantity and quality of water discharged
- Local geology and hydrology
- Distance to nearest downgradient drinking water well (Experimental Breeder Reactor-I production well approximately 3.5 mi southwest).

However, as discussed in previous WLAP reports, groundwater sampling results of several wells downgradient of the STP identified nitrate + nitrite near or above the applicable state groundwater quality concentration limits of 10 mg/L. These limits are the primary constituent standards (PCSs) specified in IDAPA 58.01.11, “Ground Water Quality Rule.”

Three wells, which were constructed as part of the CFA regional groundwater monitoring network in 1995 (CFA-MON-A-001, -002, and -003), are located generally downgradient of the new CFA STP (Figure 2-2). Since 1995, nitrate + nitrite concentrations in well CFA-MON-A-001 were well below the primary constituent standard of 10 mg/L (Figure 2-3). Over the same period, the nitrate + nitrite concentrations in wells CFA-MON-A-002 and -003 (Figures 2-4 and 2-5, respectively) were above or near the primary constituent standard.

Previous evaluations have indicated that the new CFA STP is not a likely source of nitrate + nitrite based on effluent concentrations and the vadose zone and groundwater travel time between the new CFA STP and the wells (INEEL 2000). Total nitrogen concentrations in the CFA STP effluent are consistently too low to provide a steady source of nitrate + nitrite from lagoon seepage at the concentrations detected in the wells. In addition, based on water balance calculations showing minimal leaching losses from land application, it is unlikely that the effluent is migrating from the land application area to the aquifer.

Several evaluations have been conducted to determine the potential source of the nitrate + nitrite. Waste Area Group (WAG) 4, which is responsible for implementing characterization and cleanup activities at CFA under the INEEL's Federal Facilities Agreement and Consent Order (FFA/CO) as part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Program, continues to monitor and evaluate the nitrate concentrations in these three wells. Based on current information, the two most likely sources of nitrate found in these wells are the CFA-04 dry pond and the CFA-08 drainfield (INEEL 2003b). Because the source of the nitrate + nitrite concentrations are still not believed to be from the new CFA STP, the wells will continue to be monitored by the INEEL FFA/CO Program.

2.6 Soil Monitoring

Cascade Earth Sciences, Ltd. characterized soils at the CFA STP prior to construction. Soils in the upper 6 in. are predominantly silty clay loam and from 6 to 52 in. are predominantly silt loam. Soils at CFA were determined to be suitable for slow-rate wastewater application (EG&G 1993).

Soils have since been sampled from the land application area (locations 1 through 5 shown in Figure 2-6) following each application season. Subsamples were taken from 0–12 in. and 12–24 in. at each location and composited, yielding two composite samples, one from each depth. These results are presented in Table 2-7. In addition, preapplication data collected by Cascade Earth Sciences, Ltd. are presented for comparison purposes.

During 2003, pH levels and percent organic matter at both the 0–12 in. and the 12–24 in. intervals were similar to preapplication levels. The soil salinity levels were within acceptable ranges based on electrical conductivity results. Soil salinity levels between 0–2 mmhos/cm are generally accepted to have negligible effects on plant growth. During 2003, while the electrical conductivity in the 0–12 in. interval represented the historic high, both intervals remained within the 0–2 mmhos/cm range.

Soils with sodium adsorption ratios (SARs) below 15 and electrical conductivity levels below 2 mmhos/cm are generally classified as not having sodium or salinity problems (Bohn, McNeal, and O'Connor 1985). During 2003, SARs were elevated at both depths relative to preapplication SARs. However, they remain well below 15. The SAR is an indicator of the exchangeable sodium levels in the soil. Soils with high exchangeable sodium levels tend to crust badly or disperse, which greatly decreases soil hydraulic conductivity.

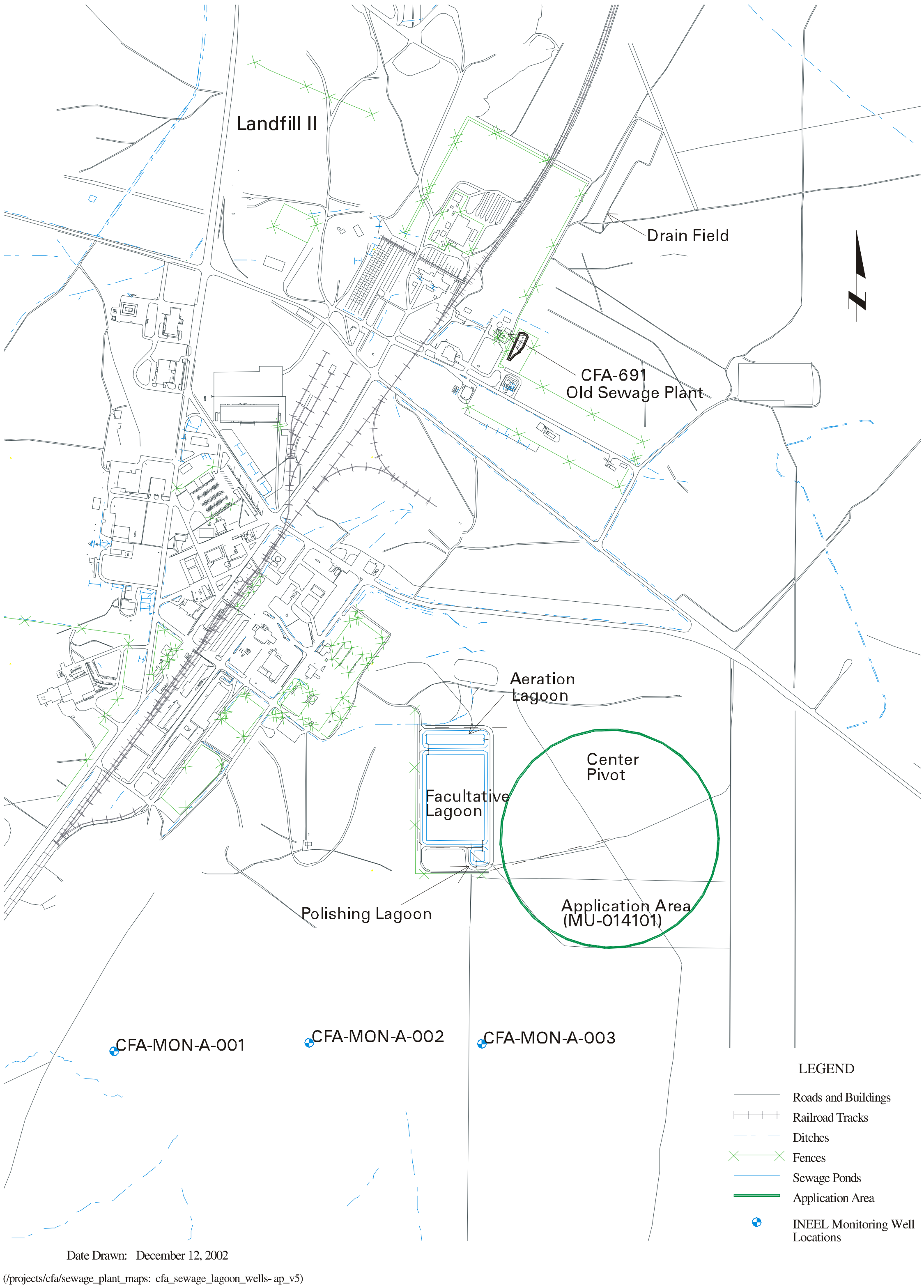


Figure 2-2. Locations of monitoring wells in the vicinity of the Central Facilities Area Sewage Treatment Plant.

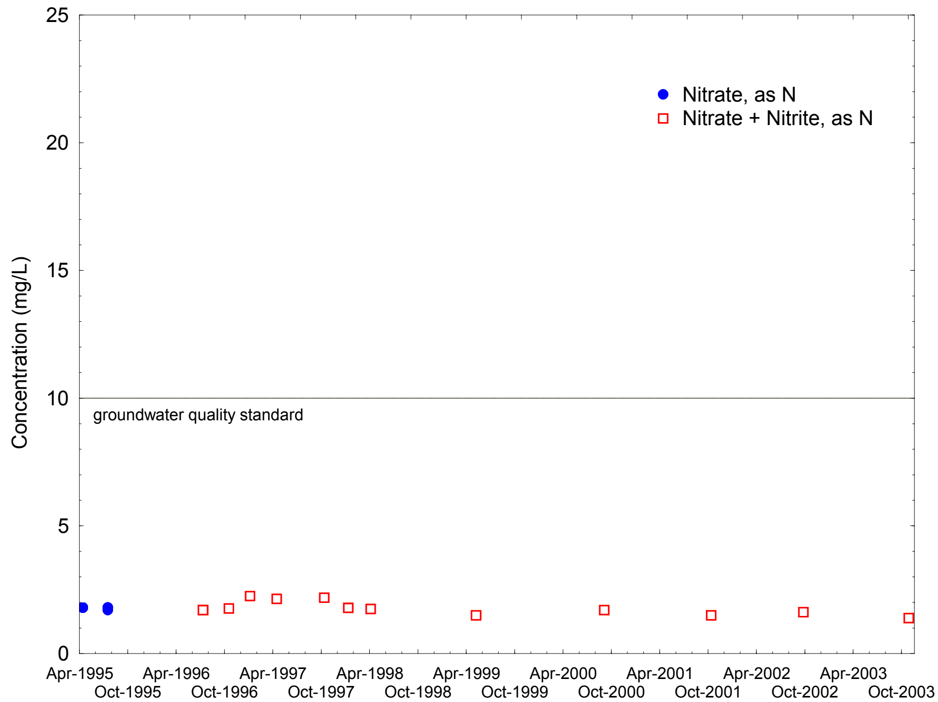


Figure 2-3. Nitrate + nitrite (as N) at CFA-MON-A-001.

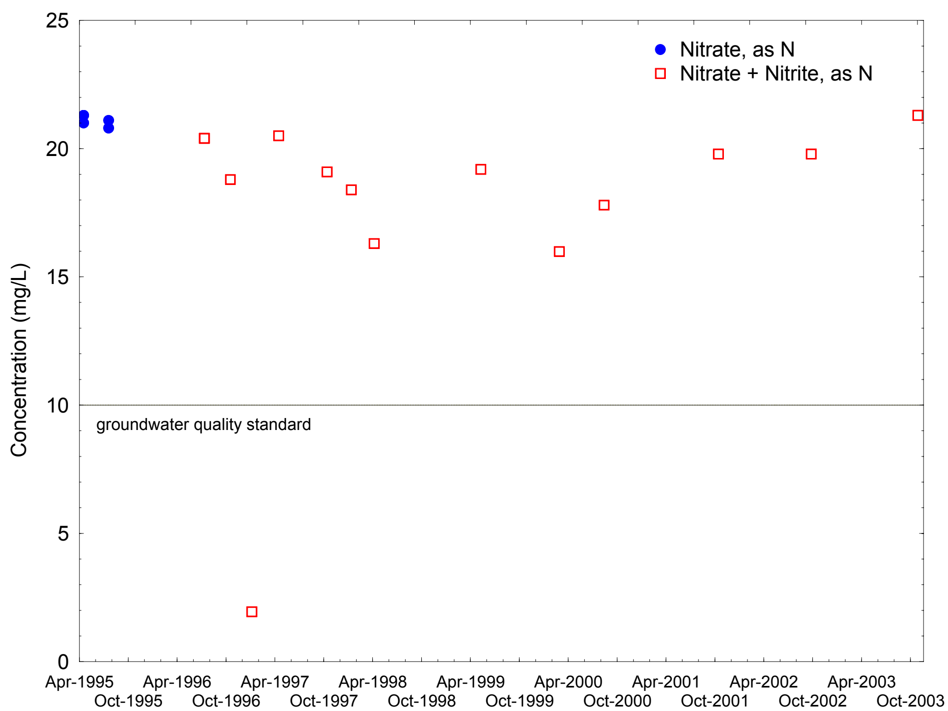


Figure 2-4. Nitrate + nitrite (as N) at CFA-MON-A-002.

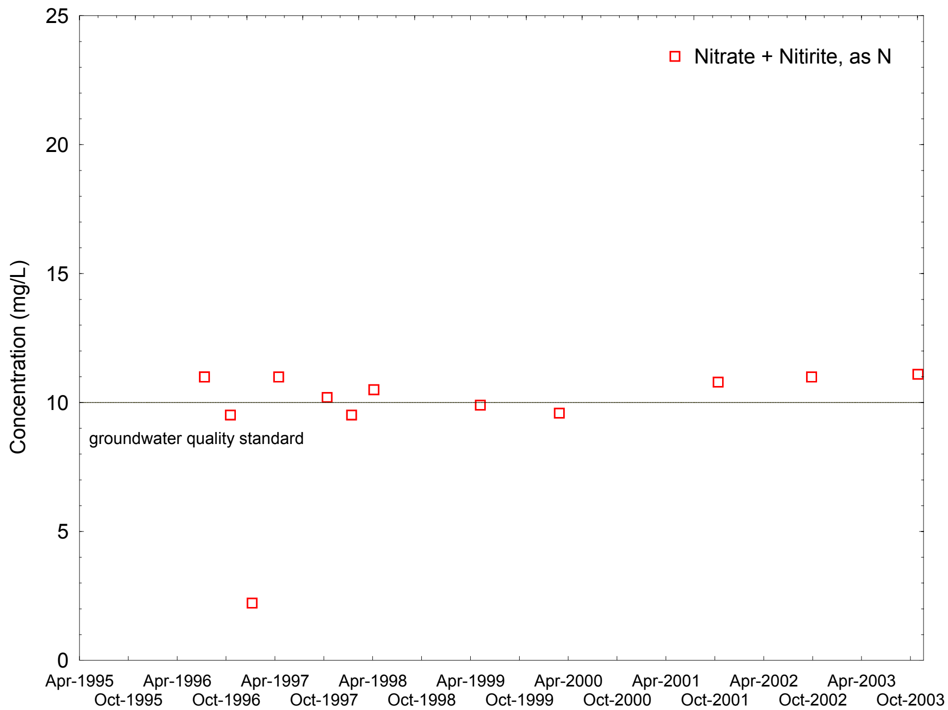


Figure 2-5. Nitrate + nitrite (as N) at CFA-MON-A-003.

Nitrogen data suggest negligible nitrogen accumulation from wastewater application. Ammonium (NH_4-N) and nitrate as nitrogen (NO_3-N) concentrations continue to be well below preapplication concentrations. The low soil-available nitrogen (NH_4-N and NO_3-N) concentrations suggest that the native sagebrush and grass vegetation utilize all of the plant-available nitrogen and that the total nitrogen application is low. Increased nutrients and water from wastewater application may be stimulating plant growth, which in turn rapidly utilizes plant-available nitrogen. The ammonium and nitrate as nitrogen concentrations are comparable to those of nonfertilized, background agricultural soils.

The original permit required total phosphorus analysis of soils; however, because the total phosphorous content includes the digestion of phosphate minerals, the results of total phosphorous analyses are not indicative of plant-available phosphorous or water-soluble phosphorous that could leach to groundwater. Phosphorous soluble in sodium bicarbonate is the common method for determining plant-available and soil-solution phosphorous, which can then be correlated to fertilizer needs or environmental concerns. Therefore, this analysis was requested since the 1996 soil monitoring. Written notification was received from DEQ that use of the sodium bicarbonate method was appropriate and did not constitute a noncompliance (Rackow 2003a). In 2003, available phosphorous concentrations remained below preapplication concentrations and at concentrations less than that considered adequate for range and pasture crop growth (EPA 1981).

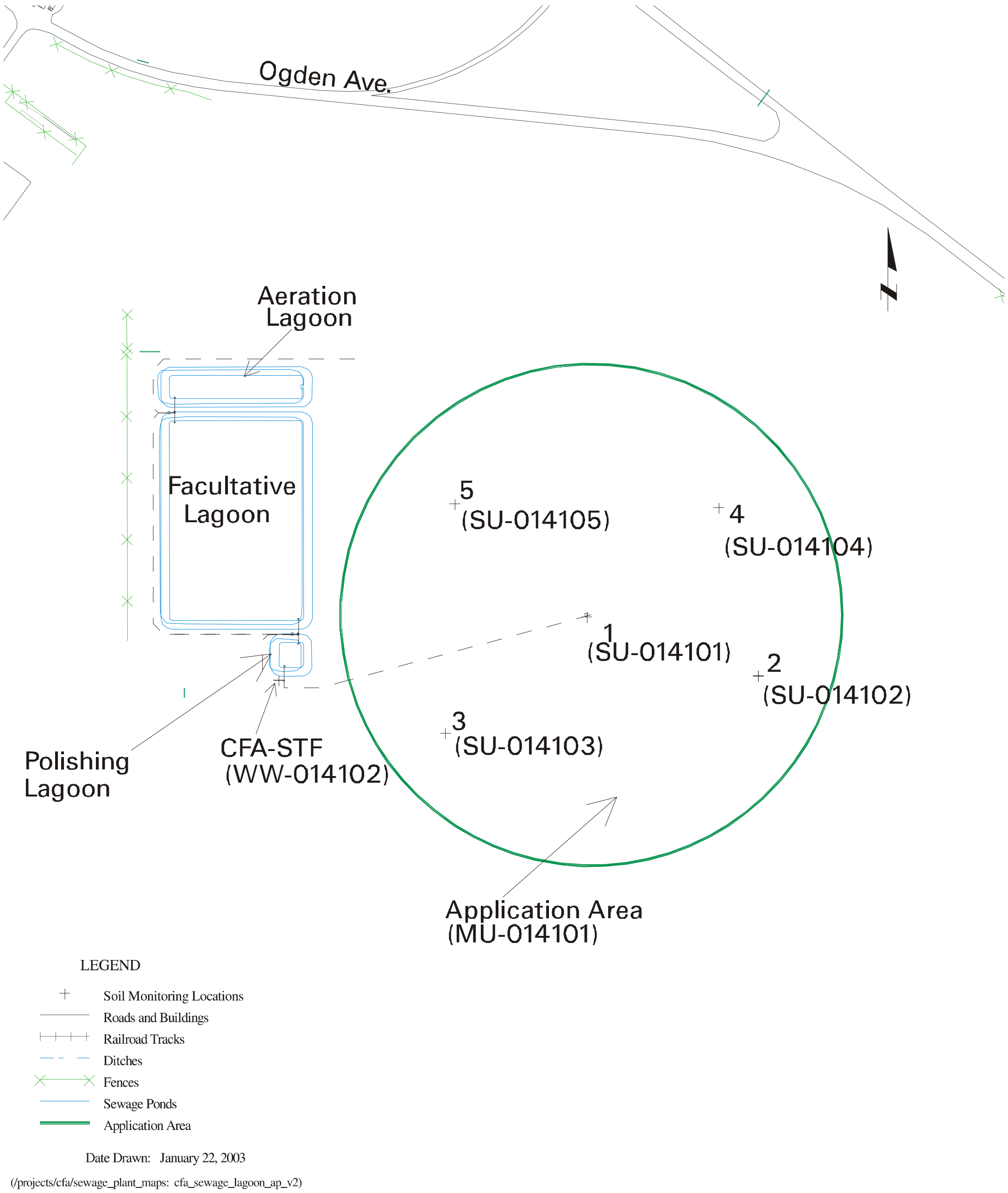


Figure 2-6. Central Facilities Area Wastewater Land Application Permit soil monitoring locations.

Table 2-7. Central Facilities Area Sewage Treatment Plant application area soil monitoring results.

Parameter	Preapplication Period[a] Depth (in.)	Preapplication Period[a] 1993	Application Period Depth (in.)	Application Period 1995 through 2002 Minimum	Application Period 1995 through 2002 Maximum	Application Period 1995 through 2002 Average	Application Period 2003
pH	0–6	7.6	0–12	7.6[b]	8.4[b]	8.1[b]	7.97
	6–16	8.0	12–24	7.6[b]	8.6[b]	8.2[b]	8.02
	16–30	8.1					
Electrical Conductivity (mmhos/cm)	0–6	0.6	0–12	0.36	1.20	0.77	1.22
	6–16	0.7	12–24	0.20	1.64	0.70	1.27
	16–30	0.6					
Organic Matter (%)	0–6	2.2	0–12	0.44[b]	3.09[b]	1.65[b]	1.15
	6–16	1.6	12–24	0.56[b]	2.29[b]	1.12[b]	0.62
	16–30	1.4					
Nitrate as Nitrogen (ppm)	0–6	16	0–12	0.68[c]	6.00	3.10[d]	4.03
	6–16	6	12–24	0.43[c]	5.20	2.10[d]	1.06
	16–30	3					
Ammonium Nitrogen (ppm)	0–6	7.9	0–12	0.81 U[e]	6.10	3.11[d]	4.07 U
	6–16	7.6	12–24	0.84 U	6.00	2.76[d]	4.00 U
	16–30	7.4					
Phosphorous (ppm)[f]	0–6	29	0–12	3.69	12.00	7.79[d]	8.85
	6–16	18	12–24	2 U	10.20	3.79[d]	4.09 U
	16–30	12					
Sodium Adsorption Ratio	0–6	1.0	0–12	0.35	6.72	2.72	6.20
	6–16	1.4	12–24	0.31	4.03	1.59	9.12
	16–30	2.6					

a. Preapplication sample results were based on a composite of three representative samples taken at each depth. Preapplication soil depths and locations differ from permit samples.

b. The summary statistics shown do not reflect a result from 1995. While samples were collected in 1995, the analytical laboratory failed to analyze them.

c. The minimum shown is the minimum of the detected results. For the 0–12 in. depth, a result of less than 25 ppm was reported in 1997. For the 12–24 in. depth, a result of less than 1 ppm was reported in 1999, a result of less than 2.25 ppm was reported in both 2000 and 2001, and a result of less than 2.5 ppm was reported in 1997.

d. Where applicable, half the reported detection limit was used to calculate the average.

e. U flag indicates that the reported value for the minimum shown is below the detection limit. In addition, for the 12–24 in. depth, a result of less than 1 ppm was reported in 1998.

f. Available phosphorus was analyzed rather than the total phosphorus analysis specified in the permit. DEQ has indicated that plant available phosphorous is the appropriate soil-monitoring constituent (Rackow 2003a). The total phosphorus reported for 1995 is not included in the summary statistics presented.

2.7 Summary of Environmental Impacts

Operations of the CFA STP continued to have little environmental impact during the 2003 permit year. The relatively weak wastewater influent, followed by treatment in the CFA STP lagoons, produced a good quality effluent for application for the 2003 permit year. When combined with an annual hydraulic loading rate that was lower than that of the design criteria, the nutrient loading rates were below projected levels. Soil and weather conditions, combined with the relatively low volume of wastewater applied during the permit year, resulted in a very low leaching loss (0.10 in.) for the year, compared to the permit limit of 3 in. per year. As a result, land application of wastewater appeared to have negligible impact on soils and groundwater. While SARs were elevated at both depths relative to preapplication SARs, they remain well below those in soils classified with sodium problems.

Evaluations conducted to date into the high nitrate + nitrite concentrations detected in the groundwater near the new STP have determined that the new STP was not the likely source. Since the source is not believed to be the STP, WAG 4 (under the INEEL FFA/CO) will continue to monitor the groundwater nitrate + nitrite concentrations.

3. IDAHO NUCLEAR TECHNOLOGY AND ENGINEERING CENTER NEW PERCOLATION PONDS DATA SUMMARY AND ASSESSMENT

3.1 Site Description

The Idaho Nuclear Technology and Engineering Center (INTEC) is an approximately 265-acre, multipurpose plant located on the INEEL (Figure 3-1). It was constructed in 1951 and presently includes approximately 280 buildings and structures. Within INTEC are all of the facilities necessary to receive and store spent nuclear fuel, process the fuel to recover uranium-235, and handle waste generated by those functions. However, due to a change in mission in 1992, uranium-235 is no longer recovered at INTEC. Currently, INTEC receives and stores spent nuclear fuel, prepares the spent nuclear fuel for shipment to an off-Site repository, and manages the waste fission products resulting from the spent fuel recovery process. In addition, research and development work is conducted to develop and improve fuel management and waste processing technologies. Environmental restoration and remediation activities are also conducted as part of the INEEL's commitment to clean up the legacy of nuclear operations.

INTEC generates 1 to 2 MG/day on average of process wastewater (commonly called service waste) during normal operations. Prior to August 26, 2002, this wastewater was discharged to Percolation Pond No. 1 or No. 2 (Figure 3-1), referred to as the existing Percolation Ponds, via the service waste system. On August 26, 2002, discharge of this wastewater ceased to the existing Percolation Ponds and was transferred to the New Percolation Ponds (Figure 3-2).

The INTEC New Percolation Ponds receive only discharge of nonhazardous wastewater. Hazardous wastewater from INTEC processes and laboratories is disposed of in accordance with applicable Resource Conservation and Recovery Act (RCRA) regulations. Sanitary wastes from restrooms and the INTEC cafeteria are either discharged to the STP or directed to on-Site septic tank systems.

3.2 System Description and Operation

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Record of Decision for Operable Unit 3-13 (DOE-ID 1999) recommended ceasing use of the existing Percolation Ponds as the preferred alternative to decrease the perched water volume in the subsurface around INTEC. In response to this action, an alternative discharge location was identified approximately 2 miles southwest of INTEC (Figures 3-1 and 3-2). Upon completion of the New Percolation Ponds, the wastewater previously discharged to the existing Percolation Ponds was routed to the New Percolation Ponds on August 26, 2002.

The service waste system serves all major facilities at INTEC. This process-related wastewater from INTEC operations consists of:

- Steam condensates
- Noncontact cooling water
- Reverse osmosis, and water softener and demineralizer regenerate
- Boiler blowdown wastewater
- Other nonhazardous liquids.

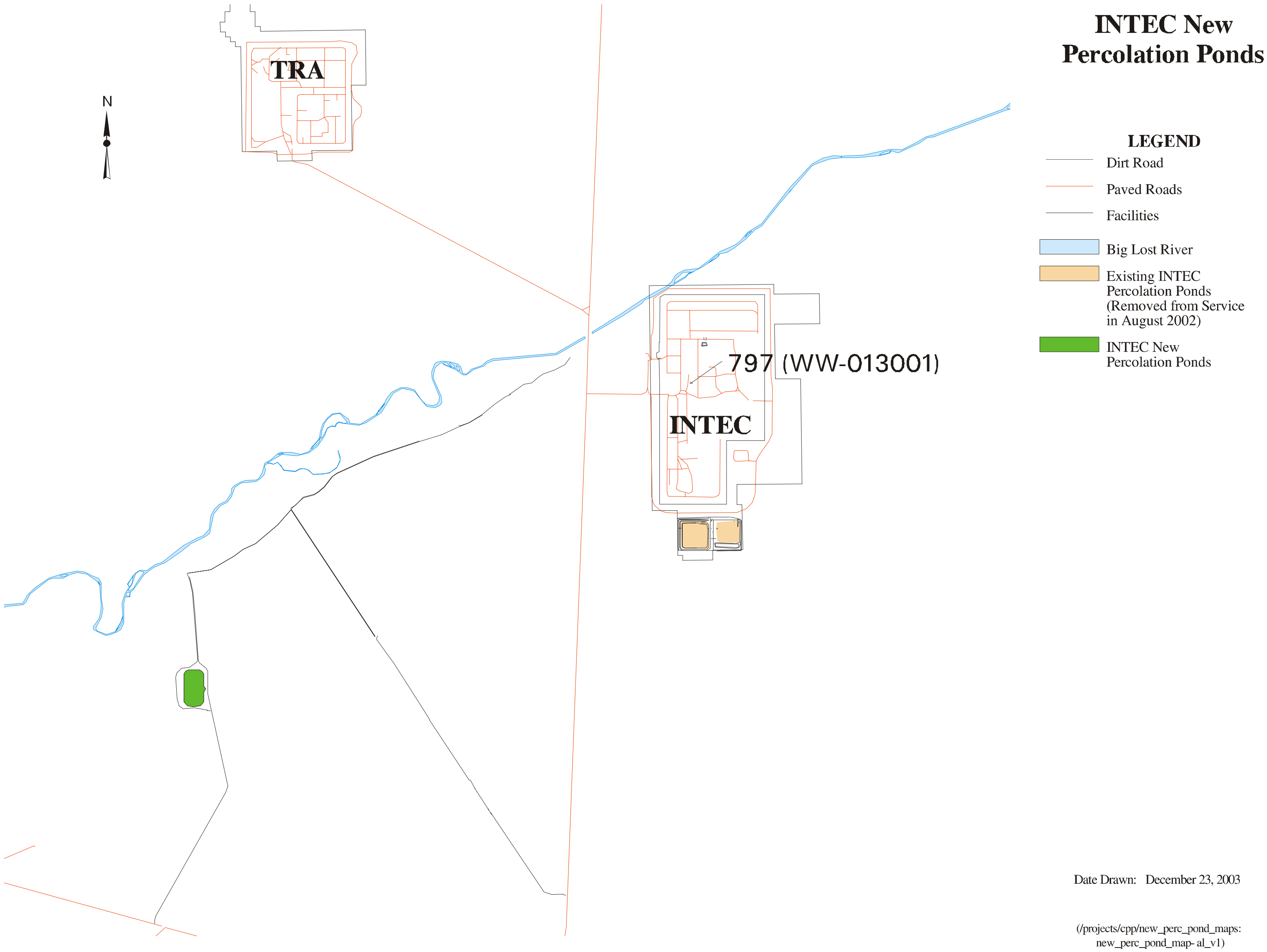


Figure 3-1. Location of Idaho Nuclear Technology and Engineering Center New Percolation Ponds.

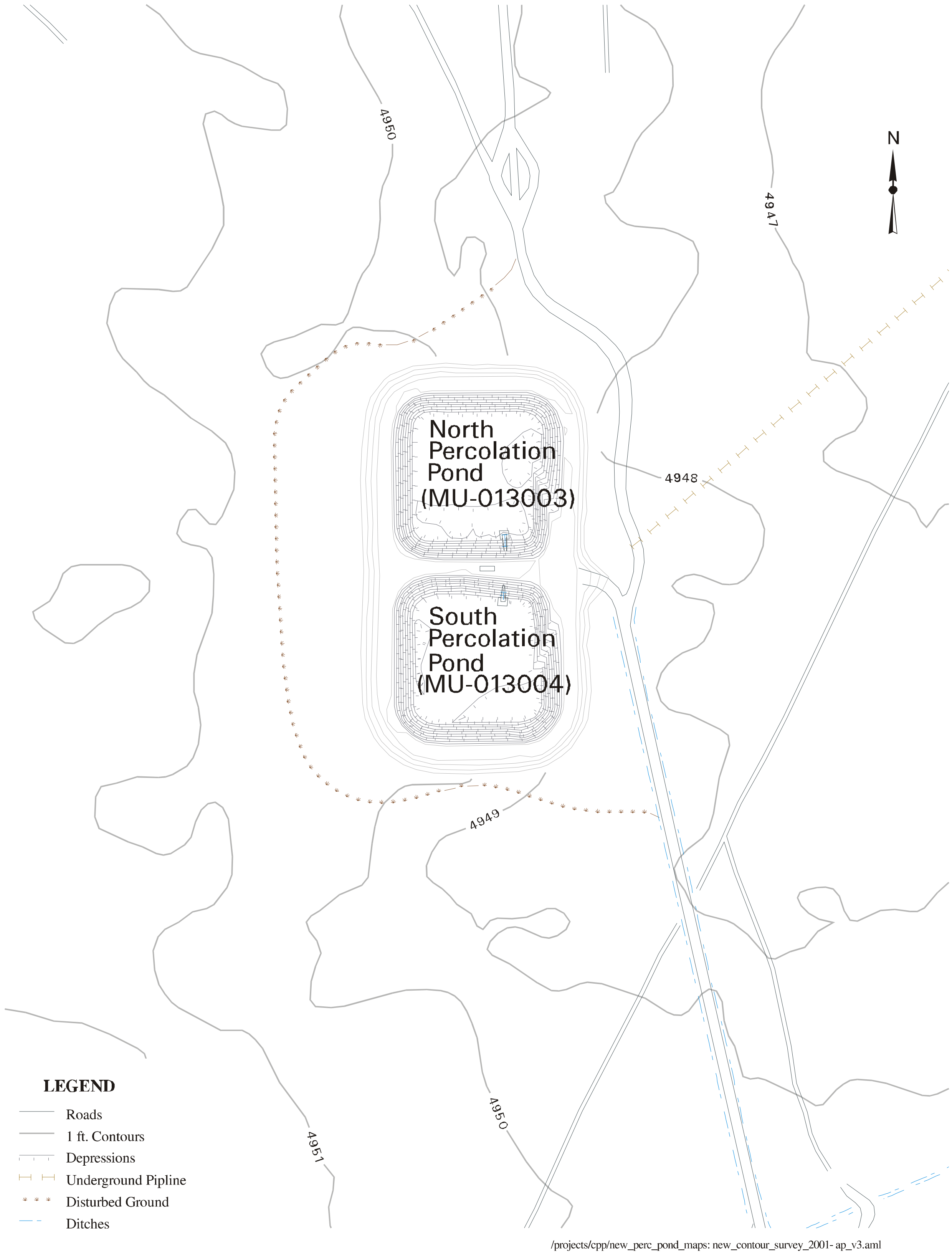


Figure 3-2. Detail of Idaho Nuclear Technology and Engineering Center New Percolation Ponds.

All service waste entering CPP-797 is discharged to the New Percolation Ponds. In CPP-797, the combined effluent is measured for flow rate, and samples are collected for analyses.

Two sets of electric pumps transfer wastewater from CPP-797 to the New Percolation Ponds. Stainless steel header piping was replaced with high-density polyethylene piping to minimize the effects of microbial corrosion. Two 16-inch lines (primary and redundant) are available to transport the wastewater from CPP-797 to the ponds. Typically, the primary line is used. The redundant line is used as a backup in case the primary line is taken out of service. Additionally, a diesel-driven pumping system is used as the backup for the electric motor systems.

The new pond complex is a rapid infiltration system and is comprised of two ponds excavated into the surficial alluvium and surrounded by bermed alluvial material. Each pond is approximately 305 × 305 feet at the top of the berm and is about 10 feet deep. Each pond is designed to accommodate a continuous wastewater discharge rate of approximately 3 million gallons/day.

During normal operation, wastewater is discharged to only one pond at a time. Periodically, the pond receiving the wastewater will be alternated to minimize algae growth and maintain good percolation rates. Ponds are routinely inspected, and the depth is recorded via permanently mounted staff gauges.

3.3 Status of Special Compliance Conditions

Section F of the amended WLAP for the New Percolation Ponds (issued March 28, 2002) identifies four special compliance conditions. Compliance activities CA-130-01 and CA-130-04 were completed during the 2002 permit year (INEEL 2003a).

Compliance activity CA-130-02 requires submittal of a final O&M Manual to the DEQ for review and approval 15 months after startup of the New Percolation Ponds. The manual must incorporate the requirements of the permit and any operational modifications made during the first year of operation, and it must reference written procedures required for operating the system. The New Percolation Ponds became operational on August 26, 2002, making the final O&M Manual due to DEQ on or before November 26, 2003. On June 26, 2003, a request for a major modification to the New Percolation Pond WLAP and an extension to the completion date for the manual was submitted to DEQ (Guymon 2003b). The major modification would expand the operations associated with the New Percolation Ponds and reroute treated sanitary wastewater from the INTEC STP to the New Percolation Ponds. Because the facility expansion to combine the two effluents would coincide with the submittal and subsequent revision of the manual, an extension on the completion date was requested. Approval for the extension, until 6 months after the new permit is issued, was received in November 2003 after the close of the 2003 permit year (Rackow 2003b).

Compliance activity CA-130-03 requires submittal of a report describing the fate of nutrients (nitrogen and phosphorous) and their potential groundwater impact at the New Percolation Ponds site to the DEQ for review within 12 months after permit issuance. The amended permit for the New Percolation Ponds was issued March 28, 2002, making this report due to DEQ on or before March 28, 2003. The fate of nutrients report was transmitted to DEQ on March 25, 2003 (Guymon 2003c).

3.4 Effluent Monitoring Results

The WLAP (LA-000130-03) issued by the DEQ for the New Percolation Ponds specifies a permit year from November 1 through October 31. Compliance samples are collected monthly from CPP-797, based on a random sampling schedule and analyzed for parameters listed in the permit. Table 3-1 presents

Table 3-1. Idaho Nuclear Technology and Engineering Center New Percolation Ponds effluent data (WW-013001).

Sample Month	November	December	January	February	March	April	May	June	July	August	September	October	Yearly
Sample Date	11/4/2002	12/2/2002	1/7/2003	2/10/2003	3/17/2003	4/8/2003	5/6/2003	6/3/2003	7/14/2003	8/25/2003	9/8/2003	10/27/2003	Average[a]
pH (grab)	8.10	7.90	7.90[b]	8.00	8.00	7.50	8.10	8.30	8.10	8.20	8.20	8.03	8.03
TKN (mg/L)	0.24 U[c]	0.24 U	0.24 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.13 U	0.13 U	0.13 U	0.13 U	0.09 U
NO_3-N (mg/L)	0.890	0.930	0.530	0.890	0.910	1.000	0.960	0.930	0.880	0.990	1.000	0.960	0.906
NO_2-N (mg/L)	0.006 U	3.000 U	1.700 U	0.020 U	0.017 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.006 U	0.199 U
Total Phosphorous (mg/L)	0.0231	0.0684	0.0276	0.0219	0.0271	0.0243	0.0242	0.0255	0.0230	0.0200	0.0282	0.0295	0.0286
TDS (mg/L)	338.0	1,265.0	1,210.0	243.0	242.0	327.0	314.0	448.0	412.0	671.0	893.0	330.0	557.8
Chloride (mg/L)	76.1	806.0	647.0	15.9	17.2	72.7	67.3	139.0	132.0	278.0	427.0	73.8	229.3
Fluoride (mg/L)	0.20	0.16	0.12	0.01 U	0.16	0.21	0.26	0.20	0.19	0.21	0.19	0.20	0.18
Aluminum (mg/L)	0.0061 U	0.0198	0.0054 U	0.0054 U	0.0093 U	0.0093 U	0.0093 U	0.0107 U	0.0121	0.0107 U	0.0073 U	0.0077 U	0.0060
Arsenic (mg/L)	0.0043 U	0.0049 U	0.0040 U	0.0040 U	0.0043 U	0.0043 U	0.0043 U	0.0043 U	0.0035 U	0.0043 U	0.0053 U	0.0047 U	0.0022 U
Cadmium (mg/L)	0.0006 U	0.0006 U	0.0004	0.0003 U	0.0004 U	0.0004 U	0.0004 U	0.0007 U	0.0004 U	0.0007 U	0.0004 U	0.0021	0.0004
Chromium (mg/L)	0.0057	0.0072	0.0057	0.0056	0.0060	0.0058	0.0063	0.0063	0.0060	0.0056	0.0058	0.0060	0.0060
Copper (mg/L)	0.0043	0.0112	0.0036	0.0022	0.0104	0.0046	0.0069	0.0019	0.0025	0.0009 U	0.0033	0.0026	0.0045
Iron (mg/L)	0.0161 U	0.2780	0.0132 U	0.0111	0.0302	0.0198	0.0107 U	0.0190	0.0141	0.0055 U	0.0096	0.0063 U	0.0340
Manganese (mg/L)	0.0008	0.0032	0.0005	0.0005	0.0009	0.0010	0.0008	0.0007	0.0009	0.0003 U	0.0005	0.0003 U	0.0008
Mercury (mg/L)	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
Selenium (mg/L)	0.0030 U	0.0046	0.0036 U	0.0036 U	0.0039 U	0.0039 U	0.0039 U	0.0037 U	0.0038 U	0.0037 U	0.0035 U	0.0049 U	0.0021
Silver (mg/L)	0.0020 U	0.0030 U	0.0015 U	0.0015 U	0.0017 U	0.0017 U	0.0017 U	0.0016 U	0.0022 U	0.0016 U	0.0032 U	0.0016 U	0.0010 U
Sodium (mg/L)	64.1	95.8	351.0	39.2	43.1	46.8	69.6	57.6	58.1	172.0	258.0	61.8	109.8

a. Yearly average is determined from the average of the monthly values. Half the detection limit was used in the yearly average calculations for those results reported as below the detection limit for those parameters with varying detection limits. For mercury, the detection limit did not vary and the yearly average reflects the detection limit.

b. The result shown is the average of duplicate samples taken during the month.

c. U flag indicates that the result was reported as below the detection limit by the analytical laboratory or that the result was impacted by laboratory quality control issues and flagged during validation.

effluent water quality data applicable to the New Percolation Ponds for the 2003 permit year. A 24-hour flow-proportional composite sample was collected from the sample point in CPP-797 for all parameters except pH, which was taken as a grab sample as required by the permit.

The permit for the New Percolation Ponds does not specify concentration limits for the effluent to the ponds. However, in order to aid in monitoring plant efficiency, effluent concentrations were compared to the groundwater quality standards. During permit year 2003, when comparing the effluent concentrations to the groundwater quality standards as an indicator of plant efficiency, only TDS and chloride fell above the standards (during 4 months of the permit year). However, because no permit limits are set for the effluent, these levels do not reflect permit noncompliances. During these same 4 months, the sodium concentrations in the effluent were also high and the TDS, chloride, and sodium concentrations were some of the highest reported to date for the CPP-797 service waste effluent. High concentrations of TDS, chloride, and sodium in the service waste effluent are usually indicative of a problem with the CPP-606 water treatment system. During the permit year, several evaluations were conducted in support of a project to upgrade the current INTEC water treatment system. These evaluations included a survey of the treated water demands, water quality requirements, and candidate conservation measures. Several design options to upgrade the water treatment system are currently being evaluated.

3.4.1 Flow Volumes

The flow volumes to the New Percolation Ponds were recorded daily from the flow meter in CPP-797. Table 3-2 presents monthly and total flow volumes for the permit year, and Appendix B presents daily flow readings and copies of the required electronic WLAP data files (DEQ 2002a). From the start of the permit year until August 1, 2003, all flow was directed to the north pond (MU-013003). From August 1, 2003, until the end of the permit year, all flow was directed to the south pond (MU-013004). During the 2003 permit year, daily flow was below 2 MG/day and total flow (approximately 500 MG/year) was well below the permit limit of 1,095 MG/year.

3.5 Evaluation of Water Quality Testing for the Weapons Range

Section G of the WLAP requires reporting of water quality testing results for the Weapons Range drinking water well as required by the DEQ Drinking Water Program. The sampling location for the Weapons Range drinking water well was clarified by DEQ to be the point of compliance at Building B21-608 (Allred 2001). The water quality of the Weapons Range B21-608 Building is monitored by the INEEL Drinking Water Program in accordance with the DEQ Drinking Water Program. The Weapons Range is considered a transient, noncommunity water system. As such, monitoring is required yearly for nitrates and quarterly for bacteria. The Weapons Range water system is a chlorinated system.

The annual nitrate sample of the Weapons Range distribution system was collected on June 24, 2003. The concentration of nitrate was 0.81 mg/L, well below the primary constituent standard of 10 mg/L.

Quarterly sampling of bacteria is required of the Weapons Range water system. As a best management practice, the INEEL Drinking Water Program samples more frequently than quarterly. During the 2003 permit year, the Weapons Range water system was sampled monthly for bacteria. No bacteria were detected in the Weapons Range water system during the 2003 permit year.

Table 3-2. Idaho Nuclear Technology and Engineering Center New Percolation Ponds flow summaries.

Sample Month	Effluent (WW-013001) (gpd[a]) Average	Minimum	Maximum	Total (MG[b]) North Pond (MU-013003)	South Pond (MU-013004)	North & South Ponds
November 2002	1,643,503	1,489,600	1,853,200	49.305	NF[c]	49.305
December 2002	1,553,445	1,478,200	1,625,200	48.157	NF	48.157
January 2003	1,558,326	1,519,300	1,662,400	48.308	NF	48.308
February 2003	1,530,764	1,400,200	1,626,200	42.861	NF	42.861
March 2003	1,412,507	1,376,700	1,451,900	43.788	NF	43.788
April 2003	1,361,177	763,200	1,485,000	40.835	NF	40.835
May 2003	1,278,319	1,017,200	1,505,400	39.628	NF	39.628
June 2003	1,428,827	1,240,900	1,552,400	42.865	NF	42.865
July 2003	1,442,555	1,287,200	1,562,400	44.719	NF	44.719
August 2003	1,083,097	663,400	1,280,500	NF	33.576	33.576
September 2003	1,019,060	863,000	1,128,900	NF	30.572	30.572
October 2003	1,153,898	766,200	1,299,100	NF	35.771	35.771
Yearly Summary	1,372,123	663,400	1,853,200	400.470	99.919	500.385

a. gpd—Gallons per day.

b. Monthly and annual totals are shown in million gallons (MG).

c. NF—No flow to this pond occurred during the month.

3.6 Evaluation of Groundwater Data

To measure potential impacts to groundwater from the New Percolation Ponds, the permit requires that groundwater samples be collected from six monitoring wells (see Figure 3-3):

- One background aquifer well (ICPP-MON-A-167) upgradient of the New Percolation Ponds.
- One background perched water well (ICPP-MON-V-191) north of the New Percolation Ponds and just south of the Big Lost River.
- Two aquifer wells (ICPP-MON-A-165 and -166) downgradient of the New Percolation Ponds.
- Two perched water wells (ICPP-MON-V-200 and ICPP-MON-V-212) adjacent to the New Percolation Ponds. Well ICPP-MON-V-200 is north of the New Percolation Ponds, and well ICPP-MON-V-212 is between the two ponds.

The permit requires that samples be collected semiannually during April and October and provides a specified list of parameters to be analyzed for in the groundwater samples. Aquifer wells ICPP-MON-A-165 and ICPP-MON-A-166 and perched water wells ICPP-MON-V-200 and ICPP-MON-V-212 are the permit compliance points. Aquifer well ICPP-MON-A-167 and perched water

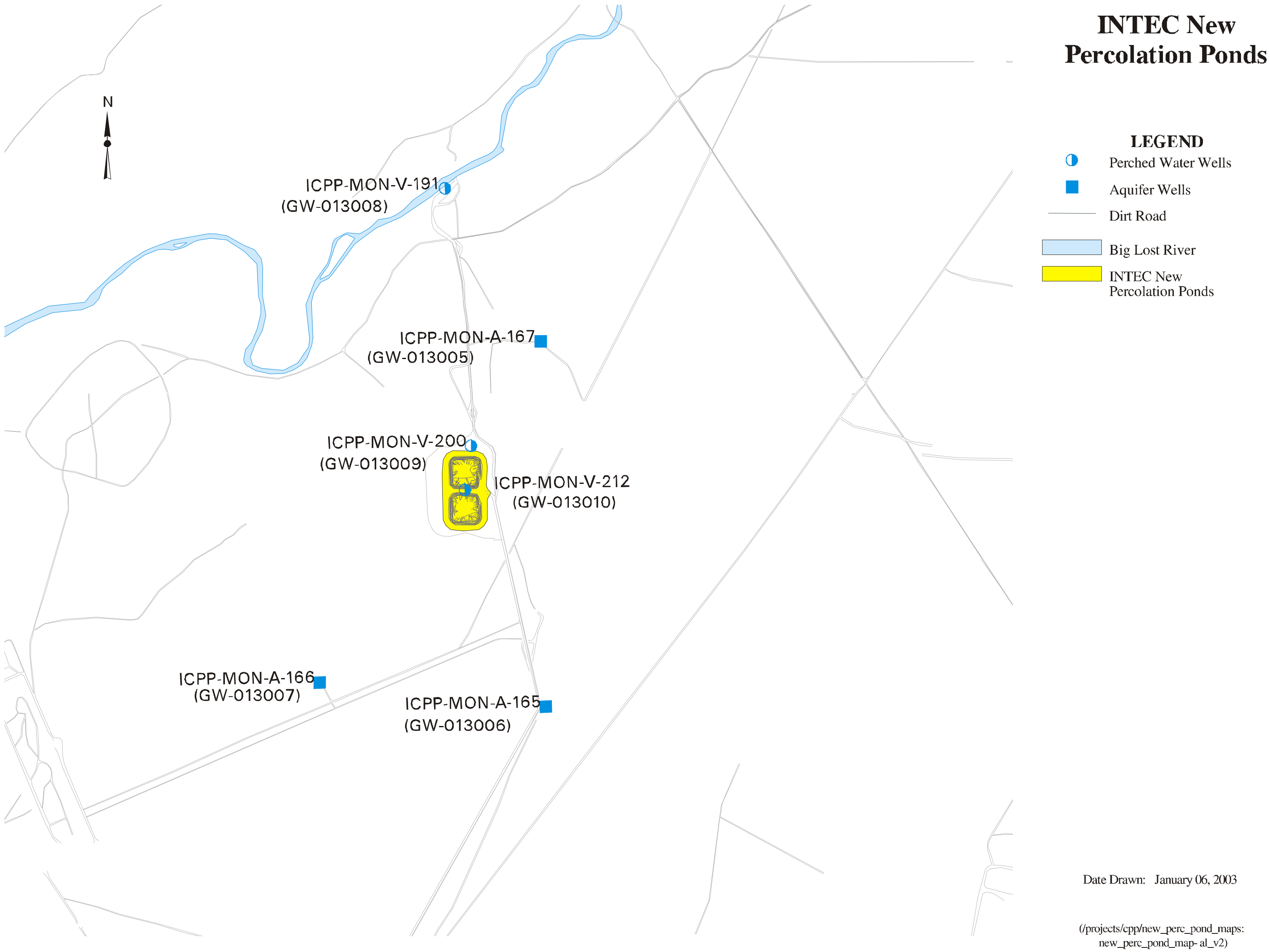


Figure 3-3. Location of Idaho Nuclear Technology and Engineering Center New Percolation Ponds WLAP monitoring wells.

well ICPP-MON-V-191 are listed in the permit as upgradient, noncompliance points. Contaminant concentrations in the compliance wells are limited by the primary constituent standards (PCSs) and secondary constituent standards (SCSs) in IDAPA 58.01.11. All permit-required samples are collected as unfiltered samples.

Tables 3-3 and 3-4 show water levels (recorded prior to purging and sampling) and analytical results for all parameters specified by the permit for aquifer and perched water wells, respectively. Samples were collected from wells ICPP-MON-A-165, ICPP-MON-A-166, ICPP-MON-A-167, ICPP-MON-V-200, and ICPP-MON-V-212. Perched water well ICPP-MON-V-191 was dry during both the April and October 2003 sampling events. Well ICPP-MON-V-191 is expected to remain dry until there is sufficient flow in the Big Lost River to recharge the perched water at this well.

Perched water wells ICPP-MON-V-200 and ICPP-MON-V-212 were dry prior to discharge of service waste wastewater into the new ponds. Discharge of wastewater began on August 26, 2002. After approximately 1½ months of wastewater disposal to the ponds, a sufficient volume of water had accumulated in well ICPP-MON-V-200 to collect samples in October 2002. The data from this sampling event indicated that no PCS or SCS levels were exceeded. Samples were collected again in April and October 2003 (Table 3-4). The sample results show that the TDS concentration has increased from 323 mg/L in October 2002, to 407 mg/L in April 2003, and to 554 mg/L in October 2003. The October 2003 TDS sample result was above the SCS of 500 mg/L. Although chloride has not exceeded its respective SCS (250 mg/L), the chloride concentration has also increased from 33.6 mg/L in October 2002 to 213 mg/L in October 2003. Sodium concentrations have also increased over time in this well. The increase in these parameters has likely been caused by the effluent concentrations in the service waste wastewater and the application of this wastewater to the New Percolation Ponds. Aluminum and iron concentrations in well ICPP-MON-V-200 were also above their respective SCSs. These parameters will be discussed in further detail later in this section.

Perched water well ICPP-MON-V-212 had insufficient volume to collect a sample in October 2002. Therefore, the first samples from this well were obtained in April 2003. Samples were also collected in October 2003. No parameters from these two sampling events were above their respective PCS or SCS. However, TDS, chloride, and sodium concentrations appear to be increasing. Both TDS and chloride were significantly higher in well ICPP-MON-V-212 (Table 3-4) than in upgradient well ICPP-MON-A-167 (Table 3-3).

The concentrations for aluminum, iron, and manganese were above the SCSs in aquifer well ICPP-MON-A-167 in both April 2003 and October 2003 (Table 3-3). Well ICPP-MON-A-166 exceeded the SCSs for aluminum and manganese in April 2003 (Guymon 2003d) and October 2003 (Gibby 2004), and for iron in October 2003 (Gibby 2004). Well ICPP-MON-A-166 is a compliance monitoring well and is regulated by the permit not to exceed the PCSs and SCSs. Well ICPP-MON-A-167 is the background aquifer monitoring well and is not regulated to these standards by the permit.

Concentrations of aluminum and iron in well ICPP-MON-A-166 in October 2003 (Table 3-3) increased from those in April 2003 and were higher than those in the preoperational baseline samples for this well (Table 3-5). The manganese concentrations in April 2003 and October 2003 were lower than preoperational baseline concentrations.

The aluminum, iron, and manganese concentrations in April 2003 and October 2003 from well ICPP-MON-A-167 were lower than preoperational baseline concentrations (Table 3-5). And while the aluminum concentrations from April 2003 and October 2003 were similar to the October 2002

Table 3-3. Idaho Nuclear Technology and Engineering Center New Percolation Ponds groundwater quality data from aquifer wells for April and October 2003.

Depth to Water Table (ft)	ICPP-MON-A-167 (GW-013005)			ICPP-MON-A-165 (GW-013006)		ICPP-MON-A-166 (GW-013007)			PCS/SCS[a]
	495.53	495.29	495.29	500.62	500.62	505.13	505.13	506.48	
Sample Date (units[b])	4/14/2003 (mg/L)	10/6/2003 (mg/L)	10/6/2003[c] (mg/L)	4/15/2003 (mg/L)	10/6/2003 (mg/L)	4/14/2003 (mg/L)	4/14/2003[c] (mg/L)	10/6/2003 (mg/L)	(mg/L)
pH	8.46	7.88	7.88	8.20	7.55	8.06	8.06	7.52	6.5–8.5
TKN	0.90 U[d]	1.0 U	1.0 U	1.8 U	1.0 U	0.90 U	0.90 U	1.0 U	NA[e]
NO_3-N	0.48	0.46	0.43	0.76	0.62	0.26	0.23	0.14	10
NO_2-N	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1
Total Phosphorous	0.20	0.31	0.27	0.074	0.10 U	0.03 U	0.062	0.10 U	NA
TDS	205	203	213	224	234	185	175	178	500
Chloride	12.5	7.1	7.2	16.2	17.5	6.8	13.6	6.8	250
Fluoride	0.19	0.11	0.13	0.21	0.12	0.26	0.24	0.14	4
Aluminum	6.61	5.82	6.74	0.025 U	0.025 U	0.199	0.231	1.06	0.2
Aluminum–filtered	NT[f]	0.0362	0.0392	NT	NT	NT	NT	0.025 U	0.2
Arsenic	0.0026	0.0033	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.05
Arsenic–filtered	NT	0.0025 U	0.0033 U	NT	NT	NT	NT	0.0025 U	0.05
Cadmium	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005
Cadmium–filtered	NT	0.001 U	0.001 U	NT	NT	NT	NT	0.001 U	0.005
Chromium	0.0136	0.0147	0.0186	0.0105	0.0084	0.0078	0.0091	0.0177	0.1
Chromium–filtered	NT	0.0053	0.0063 U	NT	NT	NT	NT	0.0052	0.1

Table 3-3. (continued).

Depth to Water Table (ft)	ICPP-MON-A-167 (GW-013005) 495.53	495.29	495.29	ICPP-MON-A-165 (GW-013006) 500.62	500.62	ICPP-MON-A-166 (GW-013007) 505.13	505.13	506.48	PCS/SCS[a]
Sample Date (units[b])	4/14/2003 (mg/L)	10/6/2003 (mg/L)	10/6/2003[c] (mg/L)	4/15/2003 (mg/L)	10/6/2003 (mg/L)	4/14/2003 (mg/L)	4/14/2003[c] (mg/L)	10/6/2003 (mg/L)	(mg/L)
Copper	0.0157	0.0174	0.0182	0.001 U	0.0014	0.001 U	0.001 U	0.004	1.3
Copper–filtered	NT	0.0013	0.0017	NT	NT	NT	NT	0.001 U	1.3
Iron	3.92	3.68	4.13	0.0613	0.0655	0.217	0.238	0.939	0.3
Iron–filtered	NT	0.077	0.0824	NT	NT	NT	NT	0.0612	0.3
Manganese	0.0696	0.0681	0.0758	0.0025 U	0.0025 U	0.0697	0.0692	0.072	0.05
Manganese–filtered	NT	0.009	0.0098	NT	NT	NT	NT	0.0376	0.05
Mercury	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.002
Mercury–filtered	NT	0.0002 U	0.0002 U	NT	NT	NT	NT	0.0002 U	0.002
Selenium	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.05
Selenium –filtered	NT	0.0025 U	0.0025 U	NT	NT	NT	NT	0.0025 U	0.05
Silver	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.1
Silver–filtered	NT	0.0025 U	0.0025 U	NT	NT	NT	NT	0.0025 U	0.1
Sodium	13.4	13.9	14.0	8.08	10.0	9.15	9.22	9.75	NA
Sodium–filtered	NT	12.7	12.9	NT	NT	NT	NT	9.66	NA

a. Primary constituent standards (PCS) and secondary constituent standards (SCS) in groundwater referenced in IDAPA 58.01.11.200.01.a and b.

b. The units for all parameters listed are as shown, except for pH which is unitless.

c. Duplicate sample.

d. U flag indicates that the result was reported as below the detection limit.

e. NA—Not applicable.

f. NT—No filtered metal sample was taken.

Table 3-4. Idaho Nuclear Technology and Engineering Center New Percolation Ponds groundwater quality data from perched water wells for April and October 2003.

Depth to Water Table (ft)	ICPP-MON-V-191 (GW-013008)		ICPP-MON-V-200 (GW-013009)		ICPP-MON-V-212 (GW-013010)		PCS/SCS[a]
	Dry[b]	Dry[b]	117.85	111.04	238.25	234.94	
Sample Date (units[c])	April 2003 Not Sampled	October 2003 Not Sampled	4/17/2003 (mg/L)	10/7/2003 (mg/L)	4/22/2003 (mg/L)	10/7/2003 (mg/L)	(mg/L)
pH	—[d]	—[d]	8.04	7.52	8.13	7.56	6.5-8.5
TKN	—	—	1.8 U[e]	1.0 U	1.8 U	1.0 U	NA[f]
NO_3-N	—	—	0.82	0.93	0.69	0.84	10
NO_2-N	—	—	0.10 U	0.10 U	0.10 U	0.10 U	1
Total Phosphorous	—	—	0.043	0.10 U	0.074	0.10 U	NA
TDS	—	—	407	554	404	412	500
Chloride	—	—	91.4	213	66.8	112	250
Fluoride	—	—	0.28	0.39	0.14	0.21	4
Aluminum	—	—	0.707	0.251	0.0321	0.0591	0.2
Aluminum–filtered	—	—	NT[g]	0.025 U	NT	NT	0.2
Arsenic	—	—	0.0029	0.0025 U	0.0025 U	0.0025 U	0.05
Arsenic–filtered	—	—	NT	0.0029	NT	NT	0.05
Cadmium	—	—	0.001 U	0.001 U	0.001 U	0.001 U	0.005
Cadmium–filtered	—	—	NT	0.001 U	NT	NT	0.005
Chromium	—	—	0.0063	0.0075	0.0061	0.0066	0.1
Chromium–filtered	—	—	NT	0.0063	NT	NT	0.1

Table 3-4. (continued).

Depth to Water Table (ft)	ICPP-MON-V-191 (GW-013008)		ICPP-MON-V-200 (GW-013009)		ICPP-MON-V-212 (GW-013010)		PCS/SCS[a]
	Dry[b]	Dry[b]	117.85	111.04	238.25	234.94	
Sample Date (units[c])	April 2003 Not Sampled	October 2003 Not Sampled	4/17/2003 (mg/L)	10/7/2003 (mg/L)	4/22/2003 (mg/L)	10/7/2003 (mg/L)	(mg/L)
Copper	—	—	0.0026	0.0029	0.001	0.001	1.3
Copper–filtered	—	—	NT	0.0024	NT	NT	1.3
Iron	—	—	1.240	0.355	0.0631	0.147	0.3
Iron–filtered	—	—	NT	0.0566	NT	NT	0.3
Manganese	—	—	0.0202	0.0054	0.0025U	0.0025 U	0.05
Manganese–filtered	—	—	NT	0.0025U	NT	NT	0.05
Mercury	—	—	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.002
Mercury–filtered	—	—	NT	0.0002 U	NT	NT	0.002
Selenium	—	—	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.05
Selenium–filtered	—	—	NT	0.0025 U	NT	NT	0.05
Silver	—	—	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.1
Silver–filtered	—	—	NT	0.0025 U	NT	NT	0.1
Sodium	—	—	47.10	134.0	11.40	21.2	NA
Sodium–filtered	—	—	NT	133.0	NT	NT	NA

a. Primary constituent standards (PCS) and secondary constituent standards (SCS) in groundwater referenced in IDAPA 58.01.11.200.01.a and b.

b. ICPP-MON-V-191 is a perched well and was dry in April 2003 and October 2003 when permit-required sampling was performed. Therefore, the well could not be sampled.

c. The units for all parameters listed are as shown, except for pH which is unitless.

d. Since the well could not be sampled, no analyte-specific results are available.

e. U flag indicates that the result was reported as below the detection limit.

f. NA—Not applicable

g. NT—No filtered metal sample was taken.

Table 3-5. Preoperational concentrations of TKN, aluminum, iron, and manganese in wells ICPP-MON-A-167 and ICPP-MON-A-166.

	ICPP-MON-A-167					ICPP-MON-A-166		
	November 2000	January 2001	February 2001	March 2001	May 2001[a]	March 2001	May 2001	SCS
TKN (mg/L)	0.1 U[b]	0.141	0.143	0.705	0.315	0.1 U	0.240	NA[c]
Aluminum (mg/L)	32.8	27.2	17.7	23.7	14.9	0.401	0.27	0.2
Iron (mg/L)	19.2	16.6	10.2	14.2	10.4	0.383	0.285	0.3
Manganese (mg/L)	0.355	0.3	0.218	0.205	0.165	0.265	0.168	0.05

a. Concentrations shown are the average of the sample and duplicate sample collected in May.

b. U flag indicates that the result was reported as below the detection limit.

c. NA—Not applicable. There is no SCS.

concentration, iron and manganese concentrations in April 2003 and October 2003 were approximately half of those in October 2002.

The April 2003 aluminum (0.707 mg/L), iron (1.24 mg/L), and manganese (0.0202 mg/L) concentrations in well ICPP-MON-V-200 showed a significant increase when compared to the October 2002 concentrations for aluminum (0.137 mg/L), iron (0.213 mg/L), and manganese (0.0047 mg/L). The concentrations for these parameters then showed a significant decrease in the October 2003 sample.

It is unlikely that the elevated levels of aluminum, iron, and manganese in the two aquifer wells and the perched well could be the result of the disposal of wastewater to the new ponds for the following reasons:

- Well ICPP-MON-A-167 was selected as the upgradient (background) monitoring well and should not be affected by discharges to the new ponds
- The concentrations of aluminum, iron, and manganese in the effluent since August 26, 2002, are considerably lower than the concentrations in the two-aquifer wells and the perched well
- Aluminum, iron, and manganese had been detected above their respective SCSs in the two aquifer wells in the preoperational samples.

One possible explanation for the elevated levels of aluminum, iron, and manganese may be that the wells were insufficiently developed during construction activities. Another possible explanation is that the annular seals were placed incorrectly, thus allowing bentonite slurry to affect the water quality. Prior to each sampling event, additional purging was performed on wells ICPP-MON-A-166, ICPP-MON-A-167, and ICPP-MON-V-200 to try to remove any residual slurry that may be in the wells as a result of the well construction activities. Even with the additional purging, the October 2003 samples from wells ICPP-MON-A-166 and ICPP-MON-A-167 were described in the sampling logbook as murky and gray in color and containing sediment. In contrast, the October samples from well ICPP-MON-V-200 were described as clear.

As discussed previously in this section, all permit-required samples are collected as unfiltered samples. However, during the October 2003 sampling event, an additional filtered (45 micron) sample was collected from wells ICPP-MON-A-166, ICPP-MON-A-167, and ICPP-MON-V-200, and was analyzed for metals. The aluminum, iron, and manganese concentrations in all three wells were significantly less in the filtered samples and were all below the applicable SCSs. Refer to Tables 3-3 and 3-4 for the filtered results. The filters were submitted for additional analysis to try to verify the source of the higher-than-expected aluminum, iron, and manganese concentrations in these three wells. Based on the filter results and further evaluation, corrective actions will be implemented as applicable.

The October 2002 total Kjeldahl nitrogen (TKN) results for wells ICPP-MON-A-166 and ICPP-MON-A-167 were higher than expected at 2.2 mg/L. The reason for the higher-than-expected TKN concentrations in the October 2002 samples from wells ICPP-MON-A-166 and ICPP-MON-A-167 is unknown. However, the TKN concentrations in these two wells were lower in both April 2003 and October 2003. The TKN sample results for wells ICPP-MON-A-166 and ICPP-MON-A-167 were reported as undetected by the laboratory.

3.7 Summary of Environmental Impacts

During the 2003 permit year, daily and annual flow volumes to the New Percolation Ponds remained within limits established by the permit. The permit for the New Percolation Ponds does not specify concentration limits for the effluent to the ponds. However, in order to aid in monitoring plant efficiency, effluent concentrations were compared to the groundwater quality standards. During permit year 2003, when comparing the effluent concentrations to the groundwater quality standards as an indicator of plant efficiency, only total dissolved solids (TDS) and chloride fell above the standards (during 4 months of the permit year). However, because no permit limits are set for the effluent, these levels do not reflect permit noncompliances. During these same 4 months, the sodium concentrations in the effluent were also high. High concentrations of TDS, chloride, and sodium in the service waste effluent are usually indicative of a problem with the CPP-606 water treatment system. During the permit year, several evaluations were conducted in support of a project to upgrade the current INTEC water treatment system. These evaluations included a survey of the treated water demands, water quality requirements, and candidate conservation measures. Several design options to upgrade the water treatment system are currently being evaluated.

The October 2003 TDS sample result of 554 mg/L from well ICPP-MON-V-200 was above the SCS of 500 mg/L. The TDS levels have increased since the first sample was collected in October 2002. Chloride and sodium concentrations have also increased in this well. The increased concentrations for these parameters can be attributed to the CPP-606 water treatment system and the application of this wastewater to the New Percolation Ponds.

The concentrations of aluminum and manganese in April 2003 and of aluminum, iron, and manganese in October 2003 in aquifer well ICPP-MON-A-166 were above the applicable permit limits. Aluminum and iron concentrations were also above the applicable permit limits in April 2003 and October 2003 in well ICPP-MON-V-200. The concentrations of aluminum, iron, and manganese in the background aquifer well (ICPP-MON-A-167) also exceeded the applicable groundwater quality standards in both April 2003 and October 2003. These elevated concentrations are not believed to be related to operational activities at the INTEC New Percolation Ponds. Concentrations of these parameters in the effluent are well below their applicable groundwater quality standards. One possible explanation may be that the wells were insufficiently developed during construction activities. Another possible explanation is that the annular seals were placed incorrectly, thus allowing bentonite slurry to affect the water quality. Prior to each sampling event, additional purging was performed on these wells to try to remove any residual slurry that may be in the wells as a result of the well construction activities. In addition, filtered samples were collected along with the permit-required unfiltered samples during the October 2003 sampling event for each of these wells. The filtered sample concentrations were below the groundwater quality standards and were significantly less than the concentrations in the unfiltered samples. The filters were submitted to the laboratory for additional analysis to try to verify the source of the aluminum, iron, and manganese in these wells.

4. IDAHO NUCLEAR TECHNOLOGY AND ENGINEERING CENTER SEWAGE TREATMENT PLANT DATA SUMMARY AND ASSESSMENT

4.1 System Description and Operation

The Sewage Treatment Plant (STP) is east of INTEC, outside the INTEC security fence. The STP treats and disposes of sanitary and other related wastes at INTEC. Approximately 43 permanent buildings associated with INTEC are connected to the STP. The sewage system consists of six lift stations, each with two pumps (except CPP-1713, which has only one). Four of the lift stations (CPP-768, CPP-1713, CPP-1772, and CPP-724) pump the waste into one of the two main lift stations (CPP-728). This main lift station and the eastside main lift station (CPP-733) both contain a sewage grinder that the wastewater passes through before being pumped to the STP. The INTEC STP (Figure 4-1) consists of:

- Three aerated lagoons (Cell Nos. 1, 2, and 3)
- One quiescent, facultative stabilization lagoon (Cell No. 4)
- Four rapid infiltration (RI) trenches
- Six control stations (weir boxes) (CPP-769, CPP-770, CPP-771, CPP-772, CPP-773, and CPP-774).

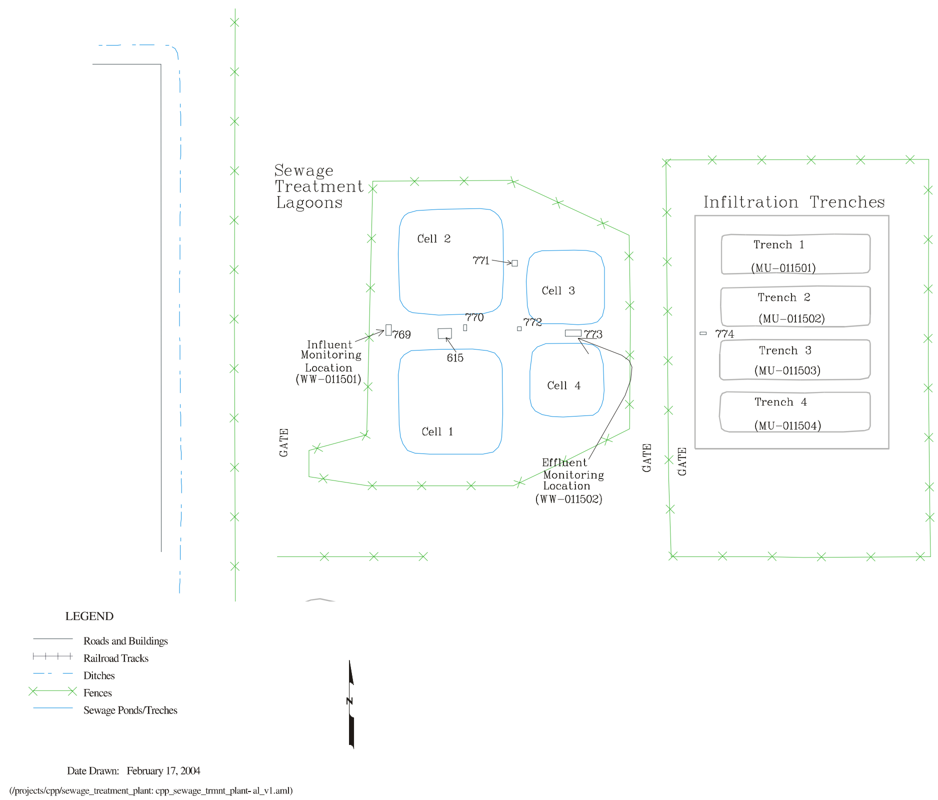


Figure 4-1. Idaho Nuclear Technology and Engineering Center Sewage Treatment Plant and rapid infiltration trenches.

The six control stations direct the wastewater flow to the proper sequence of lagoons and infiltration trenches. Automatic flow-proportional composite samplers are located at control stations CPP-769 (influent) and CPP-773 (wastewater from the STP to the RI trenches). The composite samplers are connected to flow meters, thus allowing flow-proportional samples to be taken.

The influent wastewater is normally routed to aerated lagoon Cell No. 1. The wastewater then passes from Cell No. 1 through control station CPP-770 to aerated lagoon Cell No. 2. From Cell No. 2, all flow is divided in control station CPP-771, where half goes to aerated Cell No. 3 and the other half to quiescent facultative lagoon Cell No. 4. The INTEC STP depends on natural biological and physical processes (digestion, oxidation, photosynthesis, respiration, aeration, and evaporation) to treat the wastewater.

The STP was originally designed to treat a flow of 80,000 gallons per day (gpd). However, the average daily influent flow for reporting year 2003 was approximately 45,000 gpd. Lagoon Cell Nos. 1 and 2 each have a retention time of 11 days at the designed flow of 80,000 gpd and 22 days at 40,000 gpd. Lagoon Cell Nos. 3 and 4 each has a designed retention time of 4.5 days at the maximum flow of 80,000 gpd to each cell. Because the flow splits, with half the flow going to each cell, the calculated retention time for each cell based on a flow of 40,000 gpd is approximately 18 days.

As discussed in more detail in Section 4.2, the additional aeration from operating both blowers in Cell Nos. 1 and 2 and the surface aerators in Cell No. 3 was expected to increase the removal of ammonia from the wastewater. Ammonia is removed primarily through the process of air stripping and thereby, reduces the concentration of total nitrogen in the effluent.

The liner in Cell No. 1 had inflated around the edges of the cell above the water level. To determine whether the liner was leaking, a seepage test was performed on Cell No. 1. The seepage test was performed in accordance with the "State of Idaho Procedure for Evaluating Wastewater Treatment Lagoon Seepage Rates" (DEQ 2002b). The test began on September 2, 2003, and was completed on September 18, 2003. It was concluded that there was no seepage loss during the testing period.

It is suspected that air is escaping from a hole in an aeration pipe under the liner, thus causing the liner to inflate around the edges. When the blowers are turned off, the liner deflates. The cause of the inflated liner is being evaluated and corrective actions are expected to be implemented in 2004.

4.2 Status of Special Compliance Conditions

In accordance with the permit, the INTEC STP was required to meet the total nitrogen limit of 20 mg/L measured at the influent to the RI trenches (CPP-773, effluent) within 2 years of permit issuance or submit a preliminary engineering report outlining modifications that would bring the STP into compliance. Because the total nitrogen had not exceeded 20 mg/L since permit issuance (September 20, 1995), it was agreed during a conference call on April 1, 1997, between DEQ and the INEEL that an approved engineering plan was not required. However, in December of 1997, the total nitrogen limit was exceeded for the first time. Due to this and several subsequent exceedences, an engineering study and a corrective action plan were submitted to DEQ on November 11, 1998 (Graham 1998).

The majority of corrective actions identified in the corrective action plan were completed prior to the start of the 2002 permit year. The Shear Gate Replacement Project, a corrective action identified in the 1998 corrective action plan, was completed in 2002. The as-built drawings were submitted to DEQ on December 17, 2002, (Guymon 2002b) and approved by DEQ on December 23, 2002 (Teuscher 2002). The intent of the Shear Gate Replacement Project was to bring the existing STP up to maximum treatment capability by preventing water from bypassing the treatment system and increasing retention time.

In addition to the corrective actions identified in the corrective action plan, the effects of additional aeration to strip ammonia from the wastewater were evaluated. The simultaneous operation of two blowers, providing increased aeration to lagoon Cell Nos. 1 and 2, and the installation and operation of two surface aerators in lagoon Cell No. 3 were tested. Section 4.3.1 discusses the removal of nitrogen in the STP lagoons.

The effects of the corrective actions and the additional aeration were evaluated. As discussed in last year's report, it was determined that the implementation of the corrective actions and increased aeration would not ensure that the effluent would remain below the permit limit of 20 mg/L for total nitrogen. Subsequently, the engineering evaluations conducted over the past several years were comprehensively reviewed. A preferred alternative for maintaining the total nitrogen in the effluent below 20 mg/L was selected in this review. The preferred alternative is to combine the INTEC STP and the INTEC Service Waste System effluent streams into a single effluent stream. This combined effluent stream would then be discharged to the INTEC New Percolation Ponds.

The following activities in support of the preferred alternative have occurred:

- January 28, 2003—Proposal to combine the INTEC STP effluent with the INTEC Service Waste System effluent was submitted to DEQ. The proposal contained a discussion of potential impacts the proposed alternative would have on nutrient and chemical constituent concentrations (Guymon 2003e).

- March 6, 2003—Meeting with DEQ, NE-ID, and BBWI personnel to discuss combining the INTEC STP effluent and the INTEC Service Waste System effluent.

- April 14, 2003—Letter from DEQ stating that "combining the waste streams is acceptable through a major modification of WLAP LA-000130-03" (Rackow 2003c). The DEQ requested the INEEL to submit a request for a major modification and submit preliminary plans and specifications for review and approval prior to issuance of the permit modification.

- June 26, 2003—The request for a major modification to WLAP LA-000130-03 was submitted to DEQ (Guymon 2003b).

- September 25, 2003—A meeting was held between DEQ and BBWI personnel to discuss DEQ's comments concerning the plans and specifications (previously submitted) for the proposed project to combine the two effluent streams. BBWI personnel committed to revise and resubmit the plans and specifications based on DEQ's comments.

4.3 Influent and Effluent Monitoring Results

The permit sets effluent (CPP-773, wastewater from the STP to the RI trenches) limits for total nitrogen (TKN + NNN) and total suspended solids (TSS) and requires that the influent and effluent be sampled and analyzed monthly for several parameters. Influent samples were collected from control station CPP-769, and effluent samples were collected from control station CPP-773. The samples were analyzed for the parameters required by Schedule B of the permit. The permit-required data are summarized in Tables 4-1 and 4-2. Except for the monthly total coliform grab sample, all samples are to be collected as 24-hour flow-proportional composites. All permit-required samples were collected as scheduled.

Table 4-1. Idaho Nuclear Technology and Engineering Center Sewage Treatment Plant influent data (WW-011501).

Sample Month	Sample Date	TKN (mg/L)	NNN[a] (mg/L)	Total Phosphorus (mg/L)	TSS (mg/L)	BOD (mg/L)
November	11/20/2002	27.2	0.096	3.75	228.0	81.0
December	12/3/2002	36.2	0.209	5.05	260.0	137.0
January	1/29/2003	29.2	0.302	5.87	236.0	169.0
February	2/19/2003	48.5	0.365	5.12	132.0	137.0
March	3/25/2003	36.4	0.309	5.79	133.0	135.0
April	4/16/2003	36.8	0.245	5.35	195.0	180.0
May	5/15/2003	68.0	0.144	8.79	280.0	365.0
June	6/11/2003	46.5	0.210	6.92	163.0	879.0
July	7/8/2003	65.2[b]	0.072[b]	6.37[b]	73.7[b]	121.5[b]
August	8/14/2003	52.9	0.133	5.83	175.0	255.0
September	9/3/2003	41.9	0.073	6.32	164.0	162.0
October	10/1/2003	73.4	0.156	10.40	388.0	534.0
Yearly Average[c]		46.9	0.193	6.30	202.3	263.0

a. NNN—Nitrate + nitrite as nitrogen.

b. The result shown is a monthly average of duplicate samples taken for the month.

c. Yearly average is determined from the average of the monthly values.

With the exception of the December 2002 TSS sample result of 107 mg/L (Guymon 2003f), monthly average effluent TSS concentrations remained below the limit of 100 mg/L, with an annual average of 37.5 mg/L. During the 2003 permit year, the average monthly total nitrogen exceeded the monthly average limit of 20 mg/L during March (Guymon 2003g). Typically, the highest nitrogen concentrations occur during the colder months. The nitrogen results are discussed further in Section 4.3.1.

Yearly average concentrations were above the 2002 reported yearly averages for all influent permit-required parameters, except for nitrate + nitrite as nitrogen. The June 2003 concentration (879 mg/L) represents the historical high for 5-day biological oxygen demand (BOD). For the effluent, yearly average concentrations were above the 2002 reported yearly averages for all permit-required parameters, except for nitrate + nitrite as nitrogen, electrical conductivity, and total coliform. With the exception of BOD and TDS, all permit-required parameters were within the range of concentrations reported in past years. The June 2003 BOD concentration (387 mg/L) and the October 2003 TDS concentration (873 mg/L) represented historical high concentrations for the effluent.

Table 4-3 summarizes calculated removal efficiencies (REs) for total nitrogen, BOD, and TSS. As in previous years, in general, BOD and TSS continue to be treated more efficiently than total nitrogen by the INTEC STP, with yearly average REs of 85% for BOD, 76% for TSS, and 64% for total nitrogen.

Table 4-2. Idaho Nuclear Technology and Engineering Center Sewage Treatment Plant effluent data (WW-011502).

Sample Month	Sample Date	TKN (mg/L)	NNN[a] (mg/L)	BOD (mg/L)	TSS (mg/L)	Total Phosphorus (mg/L)	EC (umhos/ cm)	TDS (mg/L)	Cl (mg/L)	Total Coliform[b] (col/100 mL)
November	11/20/2002	12.50	3.20	10.90	18.60	3.64	918.2	483	136.0	1.580
December	12/3/2002	14.00	3.61	9.23	107.0	3.14	874.5	663	154.0	940
January	1/29/2003	13.30	3.00	8.74	7.50	3.21	736.0	359	86.10	2,700
February	2/19/2003	15.50	2.24	17.90	12.80	2.98	651.0	296	70.00	4,300
March	3/25/2003	27.80	1.16	19.30	47.50	3.09	592.8	349	69.00	8,000
April	4/16/2003	7.70	1.09	35.60	27.70	3.02	632.7	450	78.20	3,000
May	5/15/2003	13.30	1.12	19.20	25.20	3.91	686.9	451	97.60	50
June	6/11/2003	9.75	0.099	387.0	69.10	3.72	356.3	518	115.0	700
July	7/8/2003	13.90[c]	0.265[c]	26.40[c]	67.40[c]	2.98[c]	877.4	574[c]	151.5[c]	100
August	8/14/2003	12.00	0.433	29.00	10.60	4.19	1,045	681	181.0	143
September	9/3/2003	12.10	2.00	27.10	22.60	3.97	997.6	640	173.0	7,900
October	10/1/2003	9.97	0.484	18.30	33.50	4.29	960.2	873	162.0	840
Yearly Average[d]		13.49	1.56	50.72	37.46	3.51	777.4	528	122.8	2,613

a. NNN—Nitrate + nitrite as nitrogen.

b. Coliform samples were collected independent of the other effluent samples on 11/21/2002, 12/4/2002, 1/29/2003, 2/19/2003, 3/26/2003, 4/16/2003, 5/13/2003, 6/12/2003, 7/10/2003, 8/14/2003, 9/4/2003, and 10/2/2003.

c. The result shown is a monthly average of duplicate samples taken for the month.

d. Yearly average is determined from the average of the monthly values.

4.3.1 Wastewater Nitrogen Concentrations

As discussed in the 2002 WLAP report (INEEL 2003a), it had been determined through sampling and analysis that the majority of total nitrogen in the wastewater entering the STP (CPP-769) is in the form of ammonia. It had also been determined that the majority of ammonia is being removed in lagoon Cell Nos. 1 and 2 through the process of air stripping.

Two blowers are available to aerate lagoon Cell Nos. 1 and 2. Normal operation had been to operate one blower at a time. However, in an effort to remove additional ammonia, both blowers were put into operation in mid-June of 2000. Operating both blowers approximately doubles the airflow rate to Cell Nos. 1 and 2. Winter conditions (i.e., ice formation on pond Cell No. 2) can prevent the operation of the two blowers. For the 2003 permit year, blower operation was as follows:

- November 1, 2002, through December 1, 2002, both blowers were in operation.
- December 2, 2002, through February 18, 2003, only one blower was in operation.
- February 19, 2003, through August 25, 2003, both blowers were in operation.
- August 26, 2003, through September 18, 2003, only one blower was in operation. During this period, a seepage test was being performed on Cell No. 1 and aeration was shut off to this cell.
- September 19, 2003, through October 31, 2003, both blowers were in operation.

Table 4-3. Removal efficiency[a] for permit monitoring parameters at the Idaho Nuclear Technology and Engineering Center Sewage Treatment Plant.

Sample Month	Total Nitrogen[b] (%)	BOD (%)	TSS (%)
November 2002	42	87	92
December 2002	52	93	59
January 2003	45	95	97
February 2003	64	87	90
March 2003	21	86	64
April 2003	76	80	86
May 2003	79	95	91
June 2003	79	56	58
July 2003	78	78	9
August 2003	77	89	94
September 2003	66	83	86
October 2003	86	97	91
Yearly Average RE	64	85	76

a. Removal efficiency (RE) = [(average monthly influent concentration – average monthly effluent concentration) ÷ average monthly influent concentration)] × 100.

b. Total nitrogen includes NNN and TKN.

In addition to operating the two blowers, two 5-horsepower surface aerators were installed in lagoon Cell No. 3 on April 26, 2001, and placed into operation on June 4, 2001. No aerators were installed in lagoon Cell No. 4. For the 2003 permit year, only one surface aerator in lagoon Cell No. 3 operated from November 1, 2002, through March 17, 2003. From March 18, 2003, through the end of the permit year, both aerators operated.

A study was performed to determine whether increasing aeration would be an effective method for maintaining effluent total nitrogen levels below the permit limit of 20 mg/L (INEEL 2002). The aeration study found that surface aeration in lagoon Cell No. 3 worked well during the summer but not the winter. Total nitrogen in the effluent typically increases during the winter months when the cold temperatures decrease removal efficiencies. The study concluded that using aeration to remove ammonia nitrogen from the wastewater would not guarantee the total nitrogen concentration in the effluent would remain below the permit limit of 20 mg/L.

As shown in Figure 4-2, the total nitrogen concentration in the effluent (CPP-773) exceeded the permit limit in March 2003.

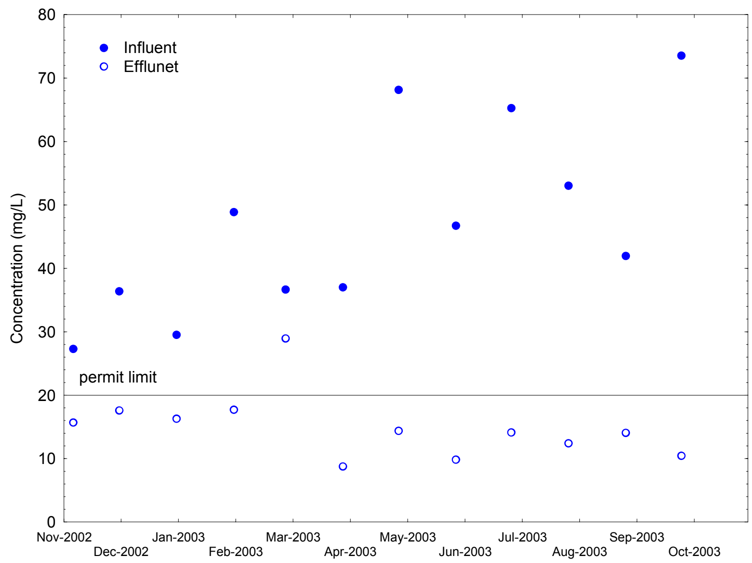


Figure 4-2. Idaho Nuclear Technology and Engineering Center Sewage Treatment Plant influent (CPP-769) and effluent (CPP-773) total nitrogen concentrations.

4.3.2 Flow Volumes

Influent flow is measured by two ultrasonic, dual transducer, clamp-on-design flow meters attached to the force main lines coming from final lift stations CPP-728 and CPP-733. These flow meters are located just prior to the CPP-769 (influent to the STP) control structure. The effluent (CPP-773, wastewater from the STP to the RI trenches) flow meter consists of an ultrasonic level sensor and a V-notch weir plate. The two influent flow meters and the effluent flow meter provide continuous flow data. However, the point of compliance is the effluent flow measurement. Daily flow readings are taken and recorded in gpd. Table 4-4 summarizes monthly and total flow volume, and Appendix C presents daily flow readings and copies of the required electronic WLAP data files (DEQ 2002a).

Beginning March 17, 1997, the rotation frequency of the infiltration trenches was changed from 2 weeks to 1 week. This increased rotation frequency allowed greater soil wetting and drying in an effort to maximize nitrogen removal. Table 4-5 summarizes the monthly flow to each trench. The 1-week rotation frequency was maintained during the 2003 permit year, even during periods of no flow.

Total annual effluent flow to the trenches (measured by the flow meters) was 7.53 MG during the 2003 permit year, which is well below the permit limit of 30 MG/year. During 1997, a disparity between the measured influent and effluent values was identified. Since 1997 (as documented in past annual reports), engineering studies, corrective actions, and flow studies have been performed to address the disparity. During the 2003 permit year, several discrepancies were identified with both influent and effluent flow measurements:

- The accuracy of the influent flow reading is suspect from November 1, 2002, through February 12, 2003, due to the south influent flow meter being out of service (OOS) during this period
- No influent reading was taken on December 13, 2002
- Effluent meter readings from March 29, 2003, through May 21, 2003, are suspect due to a leaking weir plate discharge valve

Table 4-4. Idaho Nuclear Technology and Engineering Center Sewage Treatment Plant flow summaries.

Sample Month	Influent (WW-011501)[a] Average[b] (gpd[c])	Minimum[b] (gpd)	Maximum[b] (gpd)	Total (MG[d])	Effluent (WW-011502)[a] Average[b] (gpd)	Minimum[b] (gpd)	Maximum[b] (gpd)	Total (MG[d])
November 2002	43,849	3,430	57,647	1.32	33,110	11,810	48,583	0.99
December 2002	42,267	20,688	77,914	1.27	33,294	20,800	48,182	1.03
January 2003	37,257	18,106	53,140	1.16	26,260	13,955	39,893	0.81
February 2003	45,132	24,058	62,144	1.26	23,834	10,949	36,633	0.67
March 2003	47,279	27,114	62,927	1.47	13,493	328	23,362	0.42
April 2003	40,012	14,239	58,945	1.00	6,289	18	18,951	0.18
May 2003	35,375	14,074	61,415	0.99	5,324	31	22,350	0.15
June 2003	47,211	28,499	79,739	1.42	16,009	2,553	32,204	0.48
July 2003	48,778	26,900	69,611	1.51	17,930	1,010	36,658	0.56
August 2003	51,770	38,297	67,747	1.35	27,284	10,012	43,815	0.74
September 2003	42,417	18,368	62,980	1.27	21,777	4,829	46,954	0.65
October 2003	54,973	35,662	83,072	1.32	27,083	5,462	41,881	0.84
Yearly Summary	44,693	3,430	83,072	15.34	20,974	18	48,583	7.52

a. The accuracy of the influent flow reading is suspect from November 1, 2002, through February 12, 2003, due to the south influent flow meter being out of service (OOS) during this period. No influent reading was taken on December 13, 2002. Effluent meter readings from March 29, 2003, through May 21, 2003 are suspect due to a leaking weir plate discharge valve. No influent reading was taken on April 23, 2003, due to work being performed on the new power supply. No influent readings were available from May 24, 2003, through May 26, 2003, due to the readings being taken incorrectly. Due to power outages, the influent flow meters were OOS from April 11, 2003, through April 14, 2003, from August 2, 2003, through August 6, 2003, and from October 3, 2003, through October 9, 2003; and the effluent flow meters were OOS from August 2, 2003, through August 5, 2003, and from October 3, 2003, through October 8, 2003.

b. Values shown for the month are based on days when the flow meters were operational.

c. gpd—Gallons per day.

d. Monthly and annual permit totals are shown in million gallons (MG).

- No influent reading was taken on April 23, 2003, due to work being performed on the new power supply
- No influent readings were available from May 24, 2003, through May 26, 2003, due to the readings being taken incorrectly
- Due to power outages, the influent flow meters were OOS from April 11, 2003, through April 14, 2003; from August 2, 2003, through August 6, 2003; and from October 3, 2003, through October 9, 2003; and the effluent flow meters were OOS from August 2, 2003, through August 5, 2003; and from October 3, 2003, through October 8, 2003.

For each of these discrepancies, average daily flows were estimated based on historical flow data and assumed worst-case scenarios. Using these estimated average daily flows, the total annual effluent flow is estimated to be 8.95 MG. While this is above the total annual flow reported by the flow meters (7.53 MG), it is well below the permit limit (30 MG).

Table 4-5. Monthly flow to each trench.

Sample Month	Trench 1 (MU-011501) (MG)[a]	Trench 2 (MU-011502) (MG)	Trench 3 (MU-011503) (MG)	Trench 4 (MU-011504) (MG)
November 2002	0.210	0.223	0.285	0.276
December 2002	0.261	0.277	0.238	0.257
January 2003	0.219	0.165	0.165	0.266
February 2003	0.160	0.191	0.171	0.145
March 2003	0.127	0.135	0.071	0.085
April 2003	0.069	0.032	0.061	0.021
May 2003	0.081	0.010	0.031	0.033
June 2003	0.152	0.105	0.112	0.110
July 2003	0.142	0.213	0.109	0.091
August 2003	0.189	0.248	0.117	0.182
September 2003	0.133	0.123	0.228	0.169
October 2003	0.175	0.201	0.289	0.175
Yearly Total	1.918	1.923	1.877	1.810

a. Trench totals are in million gallons (MG).

4.4 Evaluation of Groundwater Data

To measure potential STP impacts to groundwater, the permit requires that groundwater samples be collected from three monitoring wells (see Figure 4-3):

- One background aquifer well (USGS-121) upgradient of INTEC
- One perched water well (ICPP-MON-PW-024) immediately adjacent to the STP
- One aquifer well (USGS-052) downgradient of the STP, which serves as the point of compliance.

Sampling must be conducted semiannually (April and October) and must include a list of specified parameters for analysis. Contaminant concentrations in USGS-052 are limited by primary constituent standards (PCS) and secondary constituent standards (SCS) specified in IDAPA 58.01.11, “Ground Water Quality Rule.” All permit-required samples are collected as unfiltered samples.

During the 2003 permit year, groundwater samples were collected in April and October. Duplicate samples were collected from USGS-052 in April and October. Table 4-6 shows the water levels (collected prior to purging and sampling) and analytical results for all parameters required by the permit. Groundwater samples collected from USGS-052 were in compliance with all permit limits during 2003. Chloride and nitrate concentrations in USGS-052 were elevated compared to USGS-121, as in previous years.

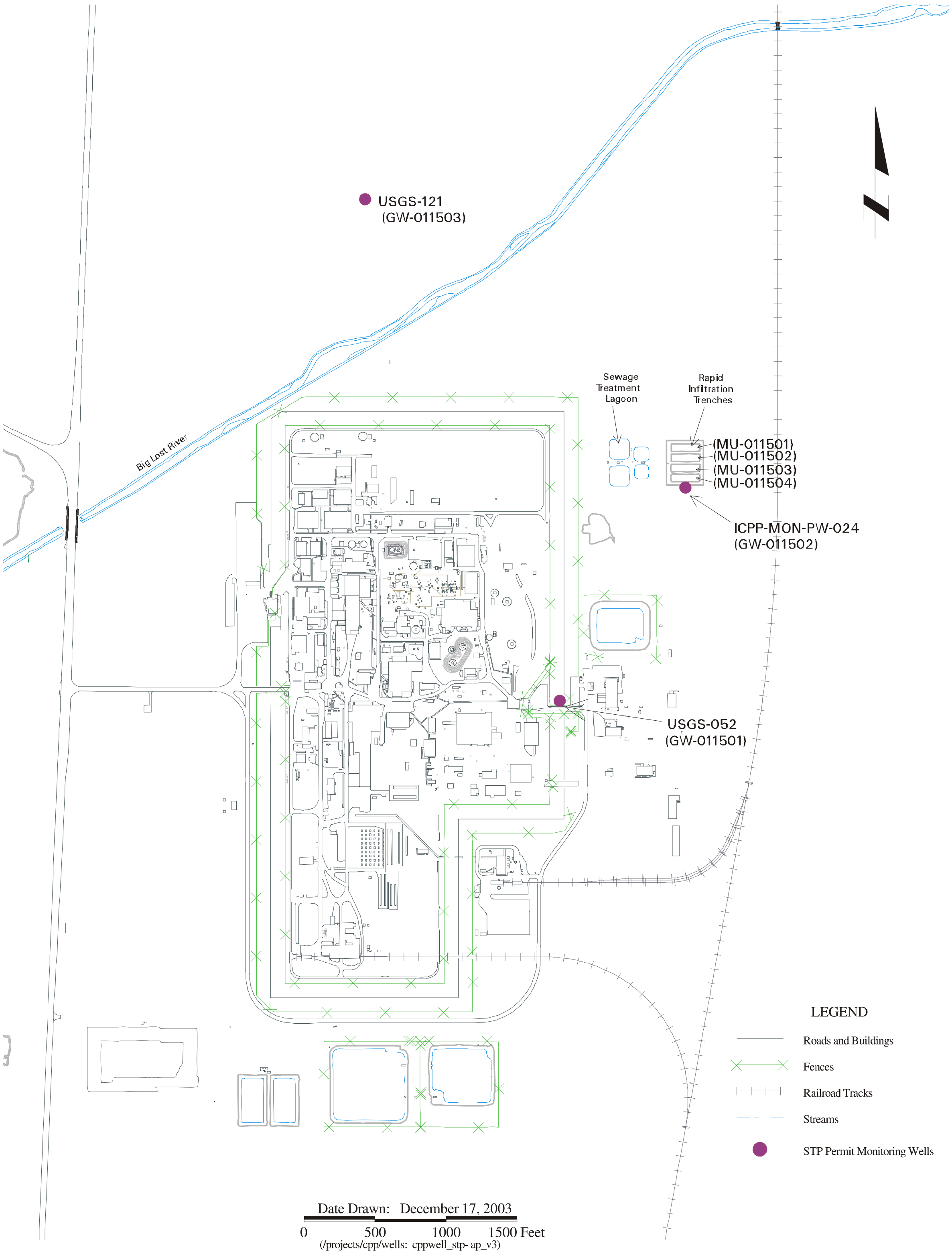


Figure 4-3. Locations of Idaho Nuclear Technology and Engineering Center Sewage Treatment Plant WLAP monitoring wells.

Table 4-6. Idaho Nuclear Technology and Engineering Center Sewage Treatment Plant groundwater data for April and October 2003.

Depth to Water Table (ft)	ICPP-MON-PW-024 (GW-011502)		USGS-52 (GW-011501)				USGS-121 (GW-011503)		PCS/SCS[a]
	61.55	63.8	457.26	457.26	459.32	459.32	460.92	460.94	
Sample Date (units)	4/15/2003 (mg/L)	10/8/2003 (mg/L)	4/14/2003 (mg/L)	4/14/2003[b] (mg/L)	10/21/2003 (mg/L)	10/21/2003[b] (mg/L)	4/15/2003 (mg/L)	10/8/2003 (mg/L)	(mg/L)
TKN	0.90 U[c]	1.0 U	0.90 U	0.90 U	1.0 U	1.0 U	0.90 U	1.0 U	NA[d]
Chloride	91.0	139	31.3	31.5	25.8	25.8	12.2	12.0	250
TDS	422	569	261	214	254	257	178	219	500
NO_3-N	10.8	5.8	3.7	3.7	2.7	2.6	0.70	0.70	10
NO_2-N	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1
NH_4-N	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA
BOD	3.8	2.0 U	2.5	2.8	2.0 U	2.0 U	3.0	2.0 U	NA
Total Phosphorous	2.1	2.4	0.068	0.085	0.10 U	0.10 U	0.077	0.10 U	NA
Total Coliform	Absent	500[e]	Absent	Absent	Absent	Absent	Absent	Absent	1 col/100 mL
Fecal Coliform	Absent	2[f]	Absent	Absent	Absent	Absent	Absent	Absent	NA

a. Primary constituent standards (PCS) and secondary constituent standards (SCS) in groundwater referenced in IDAPA 58.01.11.200.01.a and b.

b. Duplicate sample.

c. U flag indicates that the result was reported as below the detection limit.

d. NA— not applicable.

e. *Klebsiella ozanae* was speciated in this sample.

f. *Klebsiella ozanae* and *Escherichia coli* were speciated in this sample.

Monitoring well ICPP-MON-PW-024 was constructed in the perched water zone approximately 70 ft below the surface of the infiltration trenches. It is used as an indicator of treatment efficiency of the soil rather than serving as a point of compliance. As in previous years, TDS and chloride concentrations in ICPP-MON-PW-024 approximated those of the effluent. For permit year 2003, the TDS concentration in well ICPP-MON-A-024 increased from 422 mg/L in the April sample to 569 mg/L in the October sample. The October result was above the SCS of 500 mg/L.

Total coliform was not detected in the April sample from ICPP-MON-PW-024. However, total coliform was identified in the October sample at a concentration of 500 colonies/100 mL. The laboratory performing the analysis identified the species of bacteria detected in ICPP-MON-PW-024 as *Klebsiella ozanae*.

Similar to the total coliform results, fecal coliform was absent in the April sample but was detected in the October sample at 2 col/100 ml. The fecal coliform species identified were *Klebsiella ozanae* and *Escherichia coli*.

Fecal coliform consists of various genera and species of coliform that are specifically associated with human and animal wastes. The treatment processes at the INTEC STP do not include disinfection of the wastewater. Therefore, the source of coliform bacteria found in well ICPP-MON-PW-024 is probably the INTEC STP effluent.

Total nitrogen concentrations (comprised of NO_2-N, NO_3-N and TKN) in the perched water closely followed those of the effluent prior to 1997 (Figure 4-4), the difference being that nearly all the total nitrogen in the perched water was comprised of NO_3-N, while the effluent was primarily comprised of NH_3-N. This suggests significant nitrification (a process whereby NH_3-N is converted to NO_3-N) by the soil, but little denitrification to a gas. This can be seen in the April 2003 sample from well ICPP-MON-PW-024 where the NO_3-N concentration was above the PCS of 10 mg/L.

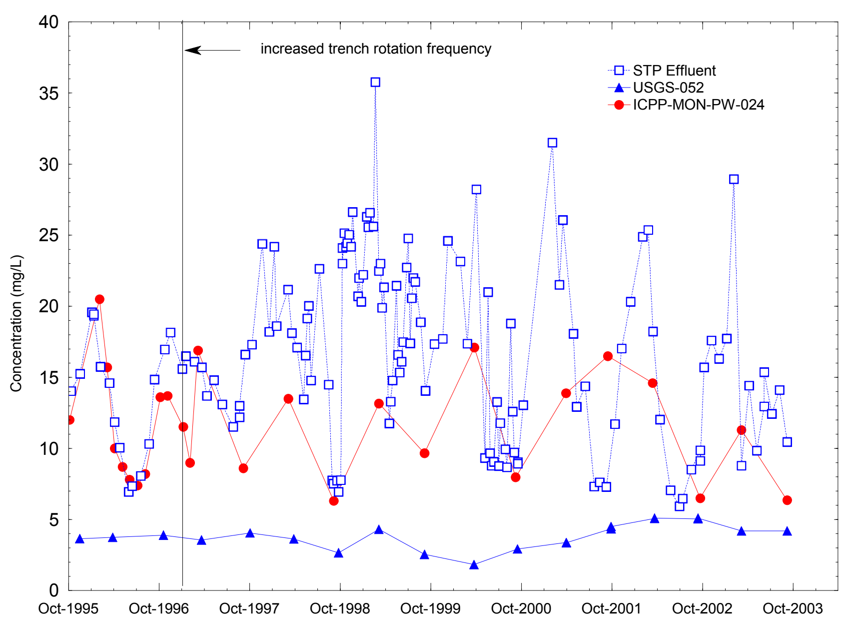


Figure 4-4. Total nitrogen concentrations in Sewage Treatment Plant effluent, ICPP-MON-PW-024, and USGS-052.

In March 1997, the trench rotation frequency was increased from biweekly to weekly to increase denitrification in the soil column. As shown in Figure 4-4, total nitrogen concentrations in the perched water appear to be reduced compared to that of the effluent, with concentrations generally falling between that of the effluent and that measured at USGS-052. Weekly trench rotation will continue, and concentrations of these parameters will continue to be observed and tracked.

4.5 Summary of Environmental Impacts

INTEC STP effluent flow volumes and groundwater concentrations were all within permit limits. The total nitrogen concentration in the effluent exceeded the permit limit (20 mg/L) in March 2003, and the TSS concentration in the effluent exceeded the permit limit in December 2002 (107 mg/L), but the yearly averages for both remained below the applicable permit limit. Numerous maintenance and operational corrective actions have been implemented in the past to manage the total nitrogen concentration in the effluent. In 2003, a proposal to expand the operations associated with the New Percolation Ponds and reroute treated sanitary wastewater from the STP to the New Percolation Ponds was submitted to DEQ. As a result of this operation, the infiltration trenches associated with the STP would be closed and the WLAP for the STP would be terminated.

Concentrations of permit-required parameters in groundwater samples collected from the aquifer compliance well (USGS-052) near the INTEC STP were all within permit limits during 2003. Monitoring well ICPP-MON-PW-024 was constructed in the perched water zone approximately 70 ft below the surface of the infiltration trenches. It is used as an indicator of treatment efficiency of the soil rather than serving as a point of compliance. As in previous years, TDS and chloride concentrations in ICPP-MON-PW-024 approximated those of the effluent. For permit year 2003, the TDS concentration in the October sample was above the SCS of 500 mg/L. Total and fecal coliform were also detected in ICPP-MON-PW-024 in October 2003. Fecal coliform consists of various genera and species of coliform that are specifically associated with human and animal wastes. The treatment processes at the INTEC STP do not include disinfection of the wastewater. Therefore, the source of coliform bacteria found in well ICPP-MON-PW-024 is probably the INTEC STP effluent.

5. TEST AREA NORTH/TECHNICAL SUPPORT FACILITY SEWAGE TREATMENT PLANT DATA SUMMARY AND ASSESSMENT

5.1 Site Description

The Test Area North (TAN) is located at the north end of the INEEL. Major facilities at TAN include:

- Technical Support Facility (TSF)
- Containment Test Facility (formerly the Loss-of-Fluid-Test Facility)
- Specific Manufacturing Capability Facilities.

Test Area North was initially built between 1954 and 1961 to support the Aircraft Nuclear Propulsion Program sponsored by the U.S. Air Force and the Atomic Energy Commission.

The TSF area currently has approximately 33 buildings and a work force of about 120 people. The TAN/TSF STP only serves the buildings in the TSF area. The TAN/TSF STP and Disposal Pond are southwest of the TSF area and over 1,500 ft away from the nearest drinking water well. A public road passes approximately ¼ mi southeast of the area, and the nearest inhabited building is approximately 1,000 ft from the wastewater application area (Figure 5-1). Groundwater generally flows to the southeast.

5.2 System Description and Operation

The TAN/TSF STP was constructed in 1956. It was designed to treat raw wastewater by biologically digesting the majority of the organic waste and other major contaminants, then applying it to land for infiltration and evaporation. The STP consists of:

- Wastewater-collection manhole
- Imhoff tank
- Sludge drying beds
- Trickle filter and settling tank
- Contact basin
- Infiltration disposal pond.

The TAN/TSF Disposal Pond was constructed in 1971; prior to that, treated wastewater was disposed of through an injection well.

The Disposal Pond consists of a primary disposal area and an overflow section, both of which are located within an unlined, fenced 35-acre area. The overflow pond is rarely used; it is used only when the water is diverted to it for brief periods of cleanup and maintenance. The Disposal Pond and overflow pond areas are approximately 39,000 ft^2 (0.9 acres) and 14,400 ft^2 (0.330 acres), respectively, for a combined area of approximately 53,400 ft^2 (1.23 acres). In addition to receiving treated sewage wastewater, the Disposal Pond also receives process wastewater, which enters the facility at the TAN-655 lift station.

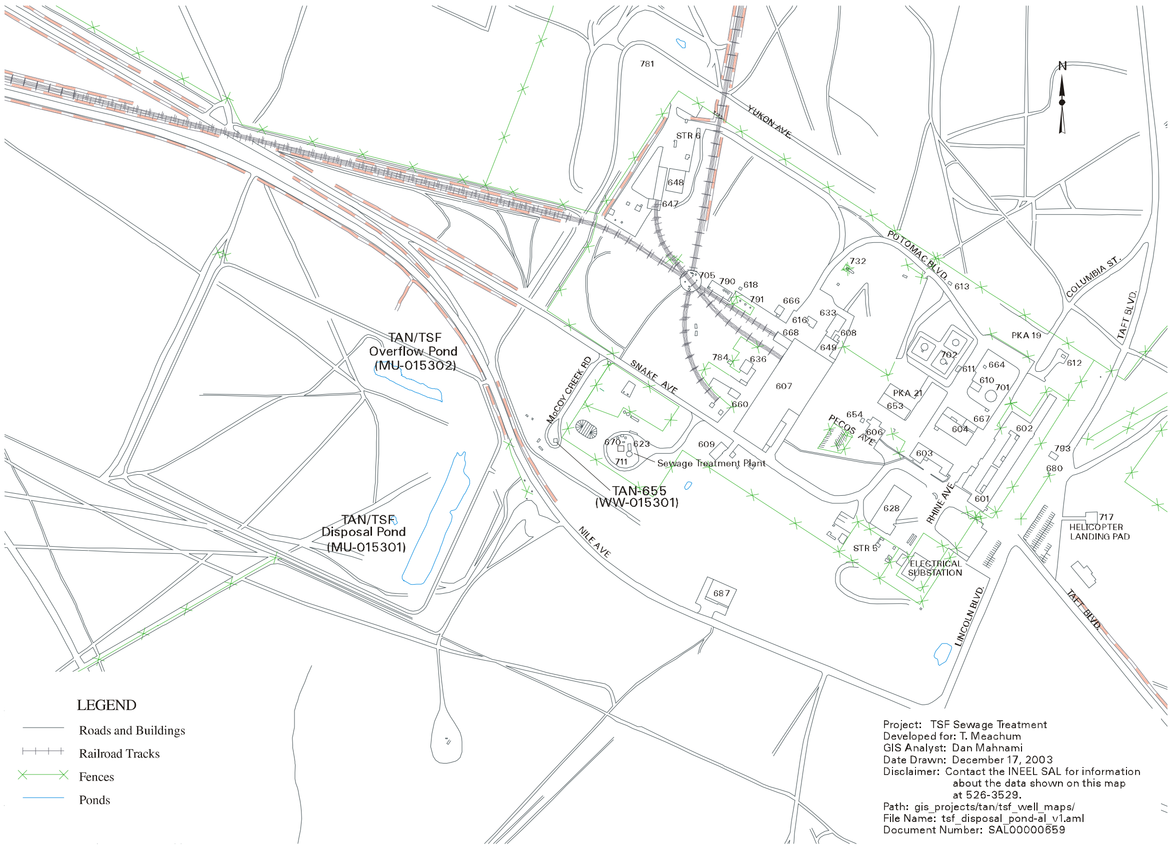


Figure 5-1. Test Area North/Technical Support Facility Sewage Treatment Plant and Wastewater Disposal Pond.

The TSF sewage primarily consists of spent water containing wastes from rest rooms, sinks, and showers. The wastewater goes to the TAN-623 STP, and then to the TAN-655 lift station, which pumps to the Disposal Pond.

The process drain system collects wastewater from process drains and building sources originating from various TAN facilities. The process wastewater consists of effluent, such as steam condensate; water softener and demineralizer discharges; and cooling water, heating, ventilating, air conditioning, and air scrubber discharges. The process wastewater is transported directly to the TAN-655 lift station, where it is mixed with treated sanitary wastewater before being pumped to the Disposal Pond.

Designed output of the STP is 28,800 gpd, but can go up to 36,000 gpd, if necessary. The TAN-655 lift station has a capacity of about 800 gallons per minute (well over 1 million gpd). The pond's capacity, taking into consideration volume losses from evaporation and infiltration, is estimated at 33 MG/yr (Kaminsky et al. 1993).

5.3 Status of Special Compliance Conditions

No special compliance conditions were in effect during the 2003 permit year.

5.4 Effluent Monitoring Results

The permit for the TAN/TSF STP sets concentration limits for TSS and total nitrogen (measured at the effluent to the Disposal Pond) and requires that the effluent be sampled and analyzed monthly for several parameters. During the 2003 permit year, 24-hour composite samples (except fecal and total coliform, which were grab samples) were collected at the TAN-655 lift station effluent monthly. The permit requires that monthly samples be collected as 24-hour, flow-proportional composites. However, due to the configuration of the piping and location of the flow meter, a compositor that collects flow-proportional samples based on real-time measurement of the two incoming waste streams could not be installed. As a result, an annual flow study was started in 1997 to determine the average fluctuations in flow over a 24-hour period. The flow study is repeated every year, and the compositor is reprogrammed based on the average flows measured during different periods of the day to simulate a flow-proportional sample for the year. This method has been used to collect time-weighted, flow-proportional samples since August 1997. The DEQ verbally authorized this method of flow-proportional sampling, and written approval was received in March 2003 (Guymon 2003c).

Table 5-1 shows the effluent monitoring results for the 2003 permit year. Monthly concentrations of TSS were well below the permit limits (100 mg/L) throughout the entire permit year, with a maximum monthly concentration of 13.6 mg/L in December 2002. All monthly total nitrogen (TKN + NNN) concentrations were well below the permit limit of 20 mg/L, with the maximum monthly concentration of 11.11 mg/L in June 2003. Compared to permit year 2002, yearly average concentrations for some of the permit-required parameters were higher. However, all yearly average concentrations were within historic ranges.

5.4.1 Flow Volumes

In addition to effluent concentration limits, the permit also specifies a limit for annual effluent flow volume to the Disposal Pond. The flow meter at TAN-655 measures the combined STP and the process wastewater flows, which are joined at the TAN-655 sump before being pumped to the TAN/TSF Disposal Pond. The Disposal Pond consists of a primary disposal area (MU-015301) and an overflow section (MU-015302), which is rarely used. All of the flow during 2003 went to the primary disposal area. Table 5-2 summarizes monthly and total flow volumes, and Appendix D presents daily flow readings and copies of the required electronic WLAP data files (DEQ 2002a).

The permit flow limit is 34 MG per year discharged to the pond. Total effluent to the pond for the 2003 permit year was 8.98 MG based on actual flow meter readings. However, during the permit year, the effluent flow meter failed on March 19, 2003, and was not repaired until June 20, 2003. During this time, the majority of the flows were recorded as zero. Average daily flows for this period are estimated to have been 30,400 gpd based on historical flow data and assumed worst-case scenarios. Using these worst-case estimates, the total effluent to the pond for the permit year is estimated to be approximately 11.78 MG, which while higher than that recorded by the flow meters, is still well within the permitted limit.

5.5 Groundwater Monitoring Results

To measure potential Disposal Pond impacts to groundwater, the permit requires that groundwater samples be collected from four monitoring wells (see Figure 5-2):

- One background aquifer well (TANT-MON-A-001) upgradient of the Disposal Pond
- Three aquifer wells (TAN-10A, TAN-13A, and TANT-MON-A-002) that serve as points of compliance.

Table 5-1. Test Area North/Technical Support Facility water data for effluent to the TAN/TSF Disposal Pond (WW-015301).

	November	December	January	February	March	April	May	June	July	August	September	October	Yearly
Sample Date	11/14/2002	12/17/2002[a]	01/15/2003[a]	02/26/2003	03/11/2003	04/02/2003	05/20/2003	06/26/2003	07/24/2003	08/05/2003	09/18/2003+	10/22/2003	Average[b]
Parameter (units)													
TKN (mg/L)	3.49	1.15	2.28	3.53	2.00	2.49	3.54	8.02	2.73	2.05	4.99	3.00	3.27
NH_4-N (mg/L)	2.55	0.055	0.712	0.405	0.760	0.544	1.07	0.942	1.000	0.698	1.78	1.06	0.965
NNN (mg/L)	3.87	1.31	4.01	4.09	3.84	2.65	3.24	3.09	4.07	2.71	5.07	4.35	3.52
BOD (mg/L)	15.20	7.30	14.65	8.42	12.10	7.21	10.90	10.60	7.19	11.70	7.75	12.60	10.47
Total Phosphorus (mg/L)	0.722	2.20	0.562	0.207	0.545	0.536	0.573	0.507	0.644	0.555	0.731	0.755	0.711
Total Coliform (col/100 mL)[c]	80,000	90,000	80,000	79,000	80,000	80,000	80,000	60,000	53,000	80,000	80,000	160,000	83,500
Fecal Coliform (col/100 mL)[c]	45,000	23,000	5,000	5,600	79,000	34,000	42,000	25,000	14,000	46,000	60,000	76,000	37,883
Chloride (mg/L)	323.0	137.0	197.0	108.0	245.0	19.30	31.60	19.50	19.30	19.60	24.80	47.10	99.27
Arsenic (mg/L)	0.0025 U[d]	0.0025 U	0.0025 U	0.0025 U	0.0028	0.0025	0.0037	0.0025 U	0.0025 U	0.0025 U	0.0054	0.0025 U	0.0020
Barium (mg/L)	0.122	0.095	0.097	0.092	0.114	0.092	0.097	0.091	0.097	0.096	0.103	0.100	0.100
Chromium (mg/L)	0.0030	0.0027	0.0032	0.0030	0.0025 U	0.0026	0.0037	0.0032	0.0025 U	0.0025 U	0.0028	0.0039	0.0026
Fluoride (mg/L)	0.227	0.15 U[e]	0.250	0.276	0.230	0.236	0.200 U	0.228	0.239	0.237	0.233	0.242	0.225
Lead (mg/L)	0.0026	0.0015 U	0.0015 U	0.0009	0.0004 U	0.0004	0.0007	0.0010	0.0004 U	0.0008 U	0.0008 U	0.0011	0.0008
Iron (mg/L)	0.160	0.061	0.154	0.137	0.184	0.101	0.175	0.125	0.091	0.112	0.131	0.178	0.134
Manganese (mg/L)	0.010	0.0027	0.0042	0.0047	0.0048	0.0040	0.0061	0.0039	0.0025	0.0027	0.0042	0.0039	0.0045
Mercury (mg/L)	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Selenium (mg/L)	0.0010	0.0023	0.0017	0.0016 U	0.0016 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0011
Sodium (mg/L)	177.0	83.30	121.0	93.40	137.0	19.10	22.90	8.69	10.60	9.67	10.50	26.10	59.94
Sulfate (mg/L)	43.50	37.80	43.55	43.90	42.40	36.60	37.70	36.30	35.60	36.30	35.60	38.40	38.97
TDS (mg/L)	798.0	492.5	425.0	485.0	962.0	260.0	333.0	264.0	262.0	284.0	306.0	285.0	429.7
Zinc (mg/L)	0.060	0.018	0.039	0.025	0.030	0.029	0.033	0.028	0.023	0.022	0.024	0.034	0.030
TSS (mg/L)	13.60	4.00 U	5.65	4.00 U	5.30	5.10	8.80	8.60	4.00 U	10.10	9.20	7.70	6.67

a. Duplicate samples were taken for all parameters except total and fecal coliform. For these parameters, the result shown is the average of the duplicate results using half the detection limit for individual results reported as below the detection limit. For those parameters with all results for the month reported as below the detection limit, the result shown is the reported detection limit with a U flag.

b. Half the detection limit was used in the yearly average calculations for those results reported as below the detection limit. However, for those parameters with all results for the year reported as below the detection limit, the result shown is the reported detection limit with a U flag.

c. Coliform samples were collected independent of the composite samples on 11/14/2002, 12/19/2002, 1/16/2003, 2/27/2003, 3/13/2003, 4/3/2003, 5/22/2003, 6/26/2003, 7/24/2003, 8/7/2003, 9/17/2003, and 10/22/2003.

d. U flag indicates that the result was reported as below the detection limit.

e. The monthly average shown is the average of one detected results (0.201 mg/L) and one non-detected results (0.20 U), using half the detection limit in the calculation.

Table 5-2. Test Area North/Technical Support Facility flow summaries.

Sample Month	Effluent to Disposal Pond (WW-015301) Average (gpd)[a]	Minimum (gpd)	Maximum (gpd)	Total to Primary Disposal Pond (MU-015301) (MG)[b]
November 2002	23,700	5,000	41,000	0.71
December 2002	32,161	25,000	42,000	1.00
January 2003	32,903	28,000	37,000	1.02
February 2003	32,786	26,000	43,000	0.92
March 2003[c]	19,387	1,000	35,000	0.60
April 2003[c]	267	1,000	2,000	0.01
May 2003[c]	32	1,000	1,000	0.00
June 2003[c]	12,233	30,000	67,000[d]	0.37
July 2003	36,968	25,000	46,000	1.15
August 2003	40,581	30,000	50,000	1.26
September 2003	33,933	26,000	43,000	1.02
October 2003	30,226	26,000	35,000	0.94
Yearly Summary	24,608	1,000	67,000	8.98

a. gpd—Gallons per day.

b. Annual flow totals are shown in million gallons (MG).

c. The effluent flow meter failed on March 19, 2003, and was repaired on June 20, 2003. During this time, the majority of the flows were recorded as zero. However, a few flows were recorded as either 1,000 gpd or 2,000 gpd. The average and minimum monthly flows shown during this period are based on the non-zero flow readings.

d. The high flow on June 25, 2003, was the result of a complete water outage occurring on that day, in which all water hydrants were opened to allow for the lines to drain.

Sampling must be conducted semiannually and must include several specified parameters for analysis. Contaminant concentrations in TAN-10A, TAN-13A, and TANT-MON-A-002 are limited by the permit to the PCS and SCS levels in IDAPA 58.01.11, “Ground Water Quality Rule.” All permit-required samples are collected as unfiltered samples.

During the 2003 permit year, groundwater samples were collected in April and October. Table 5-3 shows water levels (recorded prior to purging and sampling) and analytical results for all parameters specified by the permit. Iron concentrations exceeded the SCS of 0.3 mg/L in TAN-10A in April (Guymon 2003d) and October (Gibby 2004). Iron concentrations in additional filtered samples collected in April and October 2003 from TAN-10A also exceeded the SCS. Elevated iron concentrations historically have been detected in the TAN WLAP monitoring wells. Due to increased iron concentrations in all four of the TAN WLAP wells in 1999, a corrosion evaluation (CORRPRO 2000) was performed at TAN wells that exhibited similar increases. This evaluation confirmed that the riser pipes at several TAN wells were significantly corroded and attributed the increased iron concentrations to the corrosion. The riser pipes attached to the dedicated submersible pumps were replaced with stainless steel riser pipes in all four TAN WLAP monitoring wells during August 2001. Video log information gathered during the well maintenance showed that the stainless steel well casings in wells TAN-13A, TANT-MON-A-001, and TANT-MON-A-002 appeared relatively free of rust to the water table. Iron concentrations have decreased

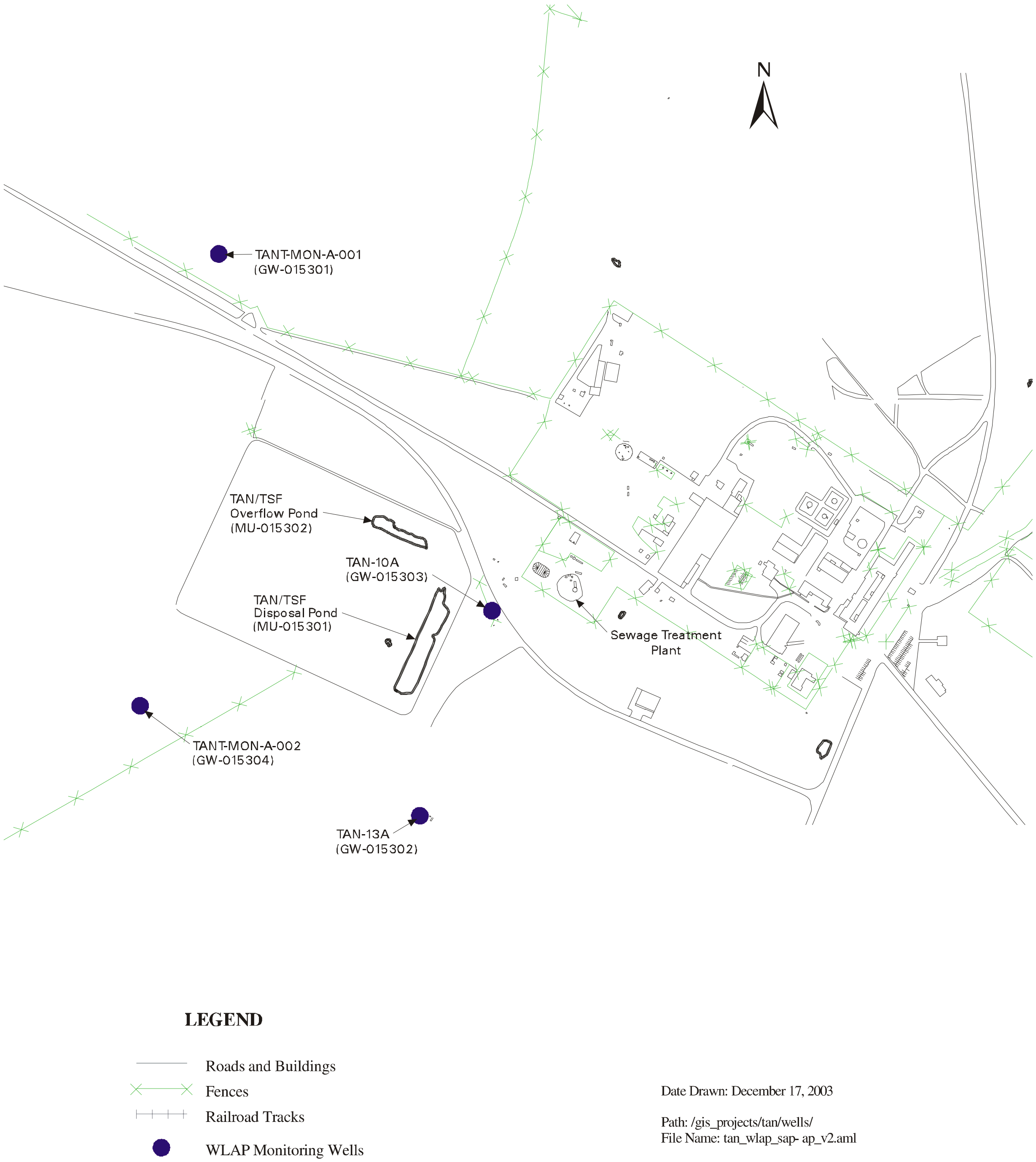


Figure 5-2. Locations of Test Area North/Technical Support Facility WLAP monitoring wells.

Table 5-3. Test Area North/Technical Support Facility Sewage Treatment Plant groundwater data for April and October 2003.

	TANT-MON-A-001 (GW-015301)		TANT-MON-A-002 (GW-015304)				TAN-10A (GW-015303)		TAN-13A (GW-15302)		PCS/SCS[a]
Depth to Water Table (ft)	206.31	207.96	210.73	210.73	211.41	211.41	206.93	209.79	209.35	209.05	
Sample Date (units[c])	4/21/2003 (mg/L)	10/14/2003 (mg/L)	4/21/2003 (mg/L)	4/21/2003[b] (mg/L)	10/14/2003 (mg/L)	10/14/2003[b] (mg/L)	4/16/2003 (mg/L)	10/1/2003 (mg/L)	4/16/2003 (mg/L)	10/1/2003 (mg/L)	(mg/L)
TKN	0.90 U[d]	2.2	1.8 U	1.8 U	2.0	1.7	1.8 U	1.0 U	0.90 U	1.0 U	NA[e]
BOD	2.9	2.0 U	2.6	2.8	2.0 U	2.0 U	3.1	2.0 U	2.0 U	2.0 U	NA
Chloride	121	10.9	3.6	3.1	3.3	3.2	101	99.6	7.2	3.2	250
TDS	248	225	225	216	196	188	424	479	147	95	500
Total Phosphorous	0.084	0.12	0.030 U	0.084	0.10 U	0.10 U	0.21	0.10 U	0.030 U	0.50 U	NA
Sodium	7.56	7.14	5.49	5.56	5.87	5.83	51.9	48.6	5.63	5.54	NA
NO_3-N	0.83	0.79	0.48	0.51	0.50	0.52	1.1	0.83	0.40	0.40	10
NO_2-N	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1
NH_4-N	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA
Arsenic	0.0025 U	0.0027	0.0027	0.0025 U	0.0027	0.0038	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.05
Barium	0.0806	0.078	0.0800	0.0796	0.0773	0.0769	0.241	0.242	0.0752	0.0748	2
Chromium	0.0043	0.0042	0.0089	0.0057	0.0079	0.0064	0.0025 U	0.0025 U	0.0044	0.0058	0.1
Mercury	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.002
Selenium	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.05
Fluoride	0.16	0.17	0.18	0.19	0.16	0.12	0.11	0.17	0.18	0.21	4
Iron	0.0356	0.0538	0.172	0.158	0.0935	0.0777	0.433	1.07	0.0387	0.0932	0.3
Iron (filtered)	—	—	—	—	—	—	0.347	0.918	0.025 U	0.0427	—
Lead	0.0015 U	0.0015 U	0.0015 U	0.0015 U	0.0015 U	0.0015 U	0.0015 U	0.0015 U	0.0015 U	0.0015 U	0.015
Manganese	0.0025 U	0.0025 U	0.0039	0.0034	0.0025 U	0.0025 U	0.0082	0.0111	0.0025 U	0.0025 U	0.05
Sulfate	32.8	30.8	13.3	13.4	14.0	13.6	39.6	39.5	14.2	13.8	250
Zinc	0.0506	0.0398	0.201	0.188	0.107	0.103	0.0291	0.0226	0.171	0.174	5
Total Coliform	Absent	4[f]	Absent	Absent	17[f]	26[f]	Absent	Absent	Absent	72[g]	1 col/100 mL

Table 5-3. (continued).

Depth to Water Table (ft)	TANT-MON-A-001 (GW-015301)		TANT-MON-A-002 (GW-015304)				TAN-10A (GW-015303)		TAN-13A (GW-15302)		PCS/SCS[a]
	206.31	207.96	210.73	210.73	211.41	211.41	206.93	209.79	209.35	209.05	
Sample Date (units[c])	4/21/2003 (mg/L)	10/14/2003 (mg/L)	4/21/2003 (mg/L)	4/21/2003[b] (mg/L)	10/14/2003 (mg/L)	10/14/2003[b] (mg/L)	4/16/2003 (mg/L)	10/1/2003 (mg/L)	4/16/2003 (mg/L)	10/1/2003 (mg/L)	(mg/L)
Fecal Coliform	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	NA

a. Primary constituent standards (PCS) and secondary constituent standards (SCS) in groundwater referenced in IDAPA 58.01.11.200.01.a and b.

b. Duplicate sample.

c. The units for all parameters listed are in mg/L, except for total and fecal coliform, which are listed as colonies/100 ml.

d. U flag indicates that the result was reported as below the detection limit.

e. NA—Not applicable

f. *Hafnia alvei* was speciated in this sample.

g. *Hafnia alvei* and *Serratia marcescens* were speciated in this sample.

in all three of these wells based on samples collected prior to the maintenance (April 2001) and those collected after the maintenance. The iron concentrations in these three wells were below the SCS in both the April and October 2003 sampling events (Table 5-3).

The April 2001 video log information gathered on TAN-10A showed that the carbon steel well casing appeared to be corroded most of the way to the water table. The iron concentrations in TAN-10A increased after the maintenance as reported in the 2002 annual report. In 2003, the iron concentrations in well TAN-10A were again above the SCS in both the April (0.433 mg/L) and October (1.07 mg/L) samples. However, the 2003 iron concentrations were lower then those in the October (3.02 mg/L and 3.22 mg/L, duplicate) 2002 samples. The condition of the well casing, coupled with the residual effects relating to the replacement of the galvanized riser pipe, may have resulted in the iron concentrations exceeding the SCS in TAN-10A.

All WLAP-required samples and duplicate samples collected from well TAN-10A in 2002 exceeded the SCS for TDS of 500 mg/L. The TDS increased from 509 mg/L and 540 mg/L in the April 2002 samples to 568 mg/L and 627 mg/L in the October 2002 samples. However, the April 2003 and October 2003 TDS results in TAN-10A were below the SCS at 424 mg/L and 479 mg/L (Table 5-3), respectively. The condition of the well casing and the residual effects from replacing the riser pipe (August 2001) may have contributed to well TAN-10A exceeding the TDS SCS in 2002.

In addition to the condition of the well casing and the maintenance activities, TDS in the effluent may also be impacting well TAN-10A. The TDS concentrations in the effluent began to show a significant increase beginning in late 1998 (Figure 5-3). The annual average (permit year) TDS concentration increased from 422 mg/L in 1998 to 677 mg/L in 2000. After installation and subsequent startup of the new water softener system in late 2000, the annual average effluent TDS concentrations began to decrease, until 2003. The annual permit year average TDS concentration in the effluent was 438 mg/L in 2001, 347 mg/L in 2002, and 430 mg/L in 2003.

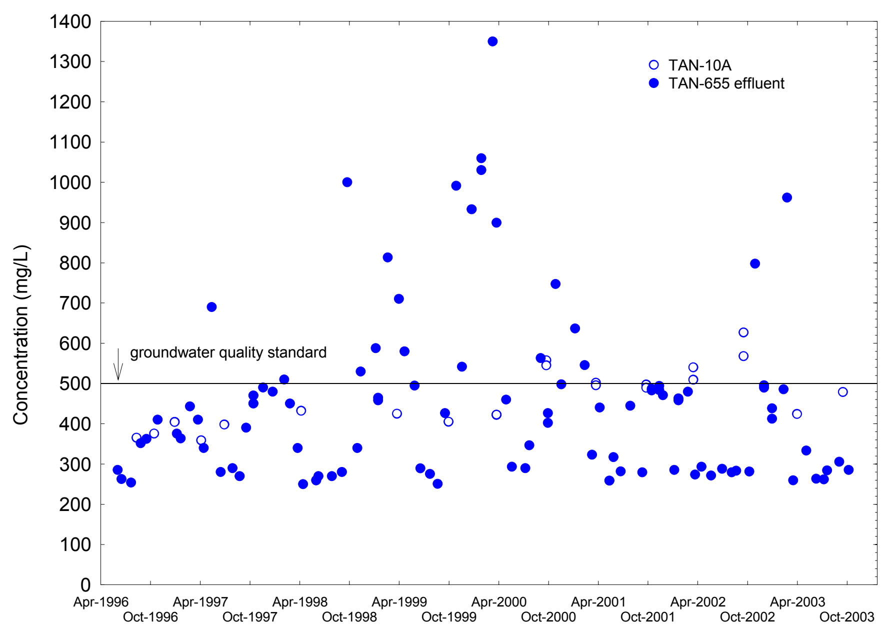


Figure 5-3. Total dissolved solids concentration from Test Area North/Technical Support Facility Well TAN-10A and the effluent (TAN-655).

Fecal coliform was absent in all samples and wells during the 2003 permit year. In addition, total coliform was absent in all wells for samples collected in April 2003. However, total coliform was identified in TANT-MON-A-001 (background well), TANT-MON-A-002 (compliance well), and TAN-13A (compliance well) in the October samples. The PCS for total coliform is 1 colony/100 mL. The total coliform in wells TANT-MON-A-001, TANT-MON-A-002, and TAN-13A were 4 colonies/100 mL, 17 colonies/100 mL (26 colonies/100 ml, duplicate), and 72 colonies/100 ml, respectively. The coliform species identified by the laboratory was *Hafnia alvei* in wells TANT-MON-A-001 and TANT-MON-A-002. Two coliform species, *Hafnia alvei* and *Serratia marcescens* were identified in well TAN-13A.

The TAN/TSF Disposal Pond effluent contains total coliform bacteria; however, it is unlikely the coliform detected in wells TANT-MON-A-001 and TANT-MON-A-002 was the result of the Disposal Pond effluent. TANT-MON-A-001 is the background well and is not influenced by the Disposal Pond. TANT-MON-A-002 is west/southwest of the Disposal Pond (Figure 5-2), and groundwater flows at TAN are primarily to the south or southeast (DOE-ID 2002, Roback et al. 2001, Johnson et al. 2000); therefore, it is unlikely that bacteria could be transported into the well without significant transverse dispersivity in the vadose zone.

For well TAN-13A, the October 2003 detection is the first time that coliform has been detected in this well since 1996. Because well TAN-13A is located southeast of the Disposal Pond, it is possible that the coliform in the effluent discharged to the pond has affected this well. However, fecal coliform is also present in the effluent but was not detected in TAN-13A.

There are many possible sources for the total coliform detected in the samples from these three wells. Further evaluation will be required to try to identify the specific source of the coliform contamination. If the source can be identified, then appropriate corrective actions can be taken.

Of the three compliance monitoring wells, well TAN-10A exhibited the highest contaminant concentrations (with the exception of total coliform) compared to the background monitoring well. It is difficult, however, to establish a strong relationship between the water quality in TAN-10A and the Disposal Pond due to two factors. First, contaminants in the injectate from a former injection well (located close to TAN-10A and previously used for disposal of numerous waste streams, including those now discharged to the Disposal Pond) are still present in the groundwater and continue to substantially impact groundwater quality. Second, groundwater remediation studies now underway near the former injection well significantly influence local hydraulic gradients and contaminant concentrations near TAN-10A. Groundwater monitoring will continue in TAN-10A (as well as the other three wells) as a part of normal WLAP activities.

No other parameters exceeded permit limits during the 2003 permit year. Monitoring results will continue to be reviewed to specifically monitor parameter concentration changes and the impact of the riser replacements completed during the 2001 permit year.

Four monitoring wells associated with TAN/TSF have been approved for a “no-longer-contained-in” (NLCI) determination from DEQ (Monson 1999). The DEQ requires that the volume of purge water placed into the TAN/TSF Disposal Pond as a result of the NLCI determination be reported in the annual WLAP report. These wells include two of the monitoring wells associated with the WLAP (TAN-10A and TAN-13A) and wells TAN-27 and TSFAG-05. During the 2003 permit year, no purge water was discharged to the TAN/TSF Disposal Pond as a result of sampling these wells.

The purge water associated with the April 2003 and October 2003 WLAP sampling of wells TAN-10A and TAN-13A was collected at the time of sampling and turned over to the INEEL Waste

Generator Services (WGS). The containerized purge water is held in a Resource Conservation and Recovery Act (RCRA) 90-day storage area until characterization of the water is completed by WGS. Based on this characterization, a determination is made on the appropriate disposal path. Currently, if the results of the characterization show that the purge water is not an "F" listed waste in accordance with the NLCI determination, the water is either placed into the TAN-607 Pool or shipped to an off-Site disposal facility. If the water is determined to be an "F" listed waste, the water is shipped to an approved RCRA disposal facility.

During the 2003 permit year, two of these wells (TAN-10A and TAN-27) were sampled in support of the TAN groundwater remediation project, Operable Unit (OU) 1-07B. These sampling efforts are not a requirement of the TAN/TSF WLAP. The purge water generated during the OU 1-07B sampling of wells TAN-10A and TAN-27 was managed in accordance with the OU 1-07B Record of Decision (ROD) (DOE-ID 1995), the OU 1-07B ROD Amendment (DOE-ID 2001), and associated CERCLA documentation, which records agreements reached between the EPA, DEQ, and NE-ID.

Well TSFAG-05 was not sampled during the 2002 permit year.

5.6 Summary of Environmental Impacts

The TAN/TSF effluent flow volumes and concentrations were within permit limits. With the exception of total coliform, wells TANT-MON-A-001 (background well), TANT-MON-A-002, and TAN-13A were below their respective PCS and SCS limits for all permit-required constituents monitored in 2003. As in 2002, iron concentrations exceeded the permit limit in well TAN-10A in both April 2003 and October 2003. Elevated iron concentrations historically have been detected in the TAN WLAP monitoring wells. The riser pipes attached to the dedicated submersible pumps were replaced with stainless steel riser pipes in all four TAN WLAP monitoring wells during August 2001. Since the riser pipes were replaced, iron concentrations have decreased in TAN-13A, TANT-MON-A-001, and TANT-MON-A-002. Of the four TAN WLAP wells, TAN-10A is cased with a carbon steel well casing that is corroded most of the way to the water table, and iron concentrations have increased after the maintenance. In 2003, the iron concentrations in well TAN-10A were again above the SCS in both April (0.433 mg/L) and October (1.07 mg/L). However, the 2003 iron concentrations were lower then those in October 2002 (3.02 mg/L and 3.22 mg/L, duplicate). The condition of the well casing, coupled with the residual effects of replacing the galvanized riser pipe, may have resulted in the increased iron concentrations in TAN-10A.

Fecal coliform was absent in all of the TAN WLAP wells during the 2003 permit year. In addition, total coliform was absent in all wells in April 2003. However, total coliform was identified in TANT-MON-A-001 (background well), TANT-MON-A-002 (compliance well), and TAN-13A (compliance well) in October 2003. The TAN/TSF Disposal Pond effluent contains total coliform bacteria; however, it is unlikely that the coliform detected in wells TANT-MON-A-001 and TANT-MON-A-002 was the result of the Disposal Pond effluent. For well TAN-13A, the October 2003 detection is the first time that coliform has been detected in this well since 1996. There are many possible sources for the total coliform detected in the samples from these three wells. Further evaluation will be required to try to identify the specific source of the coliform contamination. If the source can be identified, then appropriate corrective actions can be taken. Overall, environmental impacts from TAN/TSF STP operations are considered negligible.

Four monitoring wells associated with the TAN/TSF facility have been approved for a "no-longer-contained-in" determination from DEQ. During the 2002 permit year, no purge water was discharged to the TAN/TSF Disposal Pond as a result of sampling these wells.

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Appendix A

Central Facilities Area Sewage Treatment Plant Daily Influent and Effluent Flow Readings, Sewage Treatment Plant Photographs, and Electronic Data Files

Appendix A

Central Facilities Area Sewage Treatment Plant Daily Influent and Effluent Flow Readings, Sewage Treatment Plant Photographs, and Electronic Data Files

Table A-1. Central Facilities Area Sewage Treatment Plant daily influent and effluent flows.

Date	Influent to Lagoon (WW-014101) (gpd[a])	Effluent to Pivot (WW-014102) (gpd[a])	Date	Influent to Lagoon (WW-014101) (gpd[a])	Effluent to Pivot (WW-014102) (gpd[a])
12/1/2002	70,433	NF[b]	12/26/2002	67,383	NF
12/2/2002	75,736	NF	12/27/2002	49,298	NF
12/3/2002	93,830	NF	12/28/2002	67,087	NF
12/4/2002	97,229	NF	12/29/2002	69,532	NF
12/5/2002	104,673	NF	12/30/2002	53,333	NF
12/6/2002	88,366	NF	12/31/2002	61,289	NF
12/7/2002	71,479	NF	1/1/2003	60,809	NF
12/8/2002	70,817	NF	1/2/2003	71,170	NF
12/9/2002	78,516	NF	1/3/2003	63,378	NF
12/10/2002	92,282	NF	1/4/2003	58,886	NF
12/11/2002	97,484	NF	1/5/2003	61,675	NF
12/12/2002	95,307	NF	1/6/2003	82,110	NF
12/13/2002	92,071	NF	1/7/2003	86,087	NF
12/14/2002	64,002	NF	1/8/2003	91,562	NF
12/15/2002	73,035	NF	1/9/2003	96,947	NF
12/16/2002	70,170	NF	1/10/2003	80,133	NF
12/17/2002	91,022	NF	1/11/2003	74,807	NF
12/18/2002	90,661	NF	1/12/2003	65,954	NF
12/19/2002	86,062	NF	1/13/2003	78,850	NF
12/20/2002	78,035	NF	1/14/2003	106,169	NF
12/21/2002	65,606	NF	1/15/2003	98,337	NF
12/22/2002	63,238	NF	1/16/2003	100,361	NF
12/23/2002	62,886	NF	1/17/2003	81,596	NF
12/24/2002	72,054	NF	1/18/2003	66,548	NF
12/25/2002	66,939	NF	1/19/2003	72,059	NF

Table A-1. (continued).

Date	Influent to Lagoon (WW-014101) (gpd[a])	Effluent to Pivot (WW-014102) (gpd[a])	Date	Influent to Lagoon (WW-014101) (gpd[a])	Effluent to Pivot (WW-014102) (gpd[a])
1/20/2003	68,125	NF	2/19/2003	98,706	NF
1/21/2003	92,218	NF	2/20/2003	103,273	NF
1/22/2003	87,685	NF	2/21/2003	78,703	NF
1/23/2003	100,118	NF	2/22/2003	67,648	NF
1/24/2003	83,396	NF	2/23/2003	63,443	NF
1/25/2003	72,187	NF	2/24/2003	64,771	NF
1/26/2003	68,390	NF	2/25/2003	85,067	NF
1/27/2003	76,865	NF	2/26/2003	85,333	NF
1/28/2003	97,114	NF	2/27/2003	86,773	NF
1/29/2003	94,723	NF	2/28/2003	82,105	NF
1/30/2003	93,356	NF	3/1/2003	61,606	NF
1/31/2003	88,497	NF	3/2/2003	60,571	NF
2/1/2003	71,740	NF	3/3/2003	73,367	NF
2/2/2003	67,335	NF	3/4/2003	90,886	NF
2/3/2003	67,244	NF	3/5/2003	84,759	NF
2/4/2003	94,588	NF	3/6/2003	82,303	NF
2/5/2003	90,475	NF	3/7/2003	79,949	NF
2/6/2003	99,206	NF	3/8/2003	65,088	NF
2/7/2003	80,911	NF	3/9/2003	60,801	NF
2/8/2003	58,806	NF	3/10/2003	72,513	NF
2/9/2003	60,974	NF	3/11/2003	100,871	NF
2/10/2003	67,595	NF	3/12/2003	101,763	NF
2/11/2003	102,329	NF	3/13/2003	98,456	NF
2/12/2003	96,631	NF	3/14/2003	97,922	NF
2/13/2003	86,030	NF	3/15/2003	71,702	NF
2/14/2003	78,714	NF	3/16/2003	70,208	NF
2/15/2003	67,590	NF	3/17/2003	68,007	NF
2/16/2003	72,488	NF	3/18/2003	114,566	NF
2/17/2003	63,408	NF	3/19/2003	103,500	NF
2/18/2003	90,179	NF	3/20/2003	113,771	NF

Table A-1. (continued).

Date	Influent to Lagoon (WW-014101) (gpd[a])	Effluent to Pivot (WW-014102) (gpd[a])	Date	Influent to Lagoon (WW-014101) (gpd[a])	Effluent to Pivot (WW-014102) (gpd[a])
3/21/2003	91,810	NF	4/20/2003	83,358	NF
3/22/2003	72,800	NF	4/21/2003	62,766	NF
3/23/2003	91,222	NF	4/22/2003	104,081	NF
3/24/2003	50,963	NF	4/23/2003	103,477	NF
3/25/2003	99,560	NF	4/24/2003	104,161	NF
3/26/2003	88,143	NF	4/25/2003	93,955	NF
3/27/2003	85,775	NF	4/26/2003	66,450	NF
3/28/2003	80,609	NF	4/27/2003	60,669	NF
3/29/2003	64,944	NF	4/28/2003	74,231	NF
3/30/2003	67,784	NF	4/29/2003	95,459	NF
3/31/2003	78,789	NF	4/30/2003	85,134	NF
4/1/2003	107,227	NF	5/1/2003	102,949	NF
4/2/2003	88,927	NF	5/2/2003	80,389	NF
4/3/2003	89,171	NF	5/3/2003	79,764	NF
4/4/2003	83,764	NF	5/4/2003	62,695	NF
4/5/2003	62,497	NF	5/5/2003	74,485	NF
4/6/2003	59,748	NF	5/6/2003	98,170	NF
4/7/2003	65,026	NF	5/7/2003	96,829	NF
4/8/2003	92,194	NF	5/8/2003	103,205	NF
4/9/2003	108,291	NF	5/9/2003	91,002	NF
4/10/2003	105,617	NF	5/10/2003	73,855	NF
4/11/2003	90,523	NF	5/11/2003	68,934	NF
4/12/2003	80,163	NF	5/12/2003	81,057	NF
4/13/2003	82,642	NF	5/13/2003	89,436	NF
4/14/2003	79,523	NF	5/14/2003	108,162	NF
4/15/2003	94,451	NF	5/15/2003	113,255	NF
4/16/2003	92,622	NF	5/16/2003	105,040	NF
4/17/2003	96,369	NF	5/17/2003	79,610	NF
4/18/2003	91,620	NF	5/18/2003	76,482	NF
4/19/2003	66,918	NF	5/19/2003	68,577	NF

Table A-1. (continued).

Date	Influent to Lagoon (WW-014101) (gpd[a])	Effluent to Pivot (WW-014102) (gpd[a])	Date	Influent to Lagoon (WW-014101) (gpd[a])	Effluent to Pivot (WW-014102) (gpd[a])
5/20/2003	103,186	NF	6/19/2003	159,840	163,200
5/21/2003	144,607	NF	6/20/2003	154,452	NF
5/22/2003	74,582	NF	6/21/2003	74,027	NF
5/23/2003	117,500	NF	6/22/2003	88,138	NF
5/24/2003	85,037	NF	6/23/2003	98,874	NF
5/25/2003	93,718	NF	6/24/2003	127,748	158,500
5/26/2003	91,912	NF	6/25/2003	134,476	160,600
5/27/2003	109,114	NF	6/26/2003	138,318	157,200
5/28/2003	128,170	NF	6/27/2003	133,776	NF
5/29/2003	153,865	NF	6/28/2003	109,570	NF
5/30/2003	133,890	NF	6/29/2003	99,911	NF
5/31/2003	105,263	NF	6/30/2003	128,839	142,200
6/1/2003	91,152	NF	7/1/2003	147,628	153,700
6/2/2003	101,704	NF	7/2/2003	143,280	151,900
6/3/2003	129,927	NF	7/3/2003	158,235	159,000
6/4/2003	131,531	NF	7/4/2003	133,439	NF
6/5/2003	135,612	NF	7/5/2003	103,574	NF
6/6/2003	116,809	NF	7/6/2003	127,059	NF
6/7/2003	102,057	NF	7/7/2003	105,756	NF
6/8/2003	78,502	NF	7/8/2003	145,877	NF
6/9/2003	99,633	NF	7/9/2003	152,783	160,000
6/10/2003	132,366	NF	7/10/2003	147,611	161,800
6/11/2003	122,940	NF	7/11/2003	151,299	NF
6/12/2003	135,964	NF	7/12/2003	33,218	NF
6/13/2003	120,310	NF	7/13/2003	20,637	NF
6/14/2003	100,841	NF	7/14/2003	129,727	NF
6/15/2003	97,569	NF	7/15/2003	82,176	156,400
6/16/2003	118,938	162,900	7/16/2003	137,474	NF
6/17/2003	135,906	139,600	7/17/2003	169,098	NF
6/18/2003	178,156	162,700	7/18/2003	154,048	NF

Table A-1. (continued).

Date	Influent to Lagoon (WW-014101) (gpd[a])	Effluent to Pivot (WW-014102) (gpd[a])	Date	Influent to Lagoon (WW-014101) (gpd[a])	Effluent to Pivot (WW-014102) (gpd[a])
7/19/2003	130,902	NF	8/18/2003	141,499	NF
7/20/2003	127,483	NF	8/19/2003	165,548	159,000
7/21/2003	139,984	NF	8/20/2003	171,110	159,300
7/22/2003	162,612	NF	8/21/2003	182,924	158,200
7/23/2003	168,881	162,800	8/22/2003	169,032	NF
7/24/2003	166,344	NF	8/23/2003	141,522	NF
7/25/2003	188,795	NF	8/24/2003	118,121	NF
7/26/2003	121,140	NF	8/25/2003	142,776	NF
7/27/2003	130,012	NF	8/26/2003	174,225	157,300
7/28/2003	133,159	NF	8/27/2003	174,995	158,800
7/29/2003	162,771	NF	8/28/2003	186,645	158,300
7/30/2003	152,729	165,400	8/29/2003	159,133	NF
7/31/2003	179,800	150,700	8/30/2003	118,899	NF
8/1/2003	151,651	NF	8/31/2003	117,110	NF
8/2/2003	141,370	NF	9/1/2003	118,718	NF
8/3/2003	144,098	NF	9/2/2003	142,620	NF
8/4/2003	132,661	NF	9/3/2003	157,147	158,400
8/5/2003	95,065	148,900	9/4/2003	168,036	159,700
8/6/2003	163,021	NF	9/5/2003	168,057	NF
8/7/2003	188,256	NF	9/6/2003	126,693	NF
8/8/2003	149,076	NF	9/7/2003	130,349	NF
8/9/2003	145,945	NF	9/8/2003	140,714	NF
8/10/2003	117,664	NF	9/9/2003	133,874	NF
8/11/2003	152,823	NF	9/10/2003	144,661	162,500
8/12/2003	170,469	159,100	9/11/2003	152,111	156,500
8/13/2003	171,936	159,100	9/12/2003	145,282	NF
8/14/2003	166,705	158,700	9/13/2003	109,246	NF
8/15/2003	175,177	NF	9/14/2003	96,830	NF
8/16/2003	152,553	NF	9/15/2003	106,653	155,500
8/17/2003	130,783	NF	9/16/2003	125,430	157,400

Table A-1. (continued).

Date	Influent to Lagoon (WW-014101) (gpd[a])	Effluent to Pivot (WW-014102) (gpd[a])	Date	Influent to Lagoon (WW-014101) (gpd[a])	Effluent to Pivot (WW-014102) (gpd[a])
9/17/2003	128,701	157,600	10/16/2003	109,855	NF
9/18/2003	126,728	150,300	10/17/2003	104,613	NF
9/19/2003	109,303	NF	10/18/2003	69,239	NF
9/20/2003	103,155	NF	10/19/2003	84,688	NF
9/21/2003	100,260	NF	10/20/2003	103,492	NF
9/22/2003	104,761	NF	10/21/2003	116,383	NF
9/23/2003	141,755	158,300	10/22/2003	111,420	NF
9/24/2003	131,230	157,900	10/23/2003	128,935	NF
9/25/2003	148,234	156,600	10/24/2003	104,040	NF
9/26/2003	155,116	NF	10/25/2003	88,396	NF
9/27/2003	104,510	NF	10/26/2003	94,806	NF
9/28/2003	127,237	NF	10/27/2003	91,294	NF
9/29/2003	127,507	NF	10/28/2003	121,453	NF
9/30/2003	145,376	NF	10/29/2003	121,041	NF
10/1/2003	141,663	NF	10/30/2003	117,892	NF
10/2/2003	142,106	NF	10/31/2003	99,420	NF
10/3/2003	136,022	NF	11/1/2003	87,907	NF
10/4/2003	97,890	NF	11/2/2003	79,630	NF
10/5/2003	96,153	NF	11/3/2003	93,853	NF
10/6/2003	107,313	NF	11/4/2003	99,817	NF
10/7/2003	133,597	NF	11/5/2003	101,983	NF
10/8/2003	133,651	NF	11/6/2003	98,674	NF
10/9/2003	131,347	NF	11/7/2003	77,514	NF
10/10/2003	114,356	NF	11/8/2003	69,494	NF
10/10/2003	114,356	NF	11/9/2003	71,847	NF
10/11/2003	84,451	NF	11/10/2003	78,257	NF
10/12/2003	174,677	NF	11/11/2003	91,429	NF
10/13/2003	97,232	NF	11/12/2003	93,812	NF
10/14/2003	112,397	NF	11/13/2003	98,537	NF
10/15/2003	122,203	NF	11/14/2003	102,473	NF

Table A-1. (continued).

Date	Influent to Lagoon (WW-014101) (gpd[a])	Effluent to Pivot (WW-014102) (gpd[a])	Date	Influent to Lagoon (WW-014101) (gpd[a])	Effluent to Pivot (WW-014102) (gpd[a])
11/15/2003	78,244	NF	11/23/2003	69,735	NF
11/16/2003	80,739	NF	11/24/2003	71,321	NF
11/17/2003	81,388	NF	11/25/2003	92,778	NF
11/18/2003	98,582	NF	11/26/2003	89,038	NF
11/19/2003	114,132	NF	11/27/2003	96,459	NF
11/20/2003	103,492	NF	11/28/2003	66,999	NF
11/21/2003	90,007	NF	11/29/2003	66,633	NF
11/22/2003	68,754	NF	11/30/2003	77,779	NF

a. gpd—Gallons per day.

b. NF—No flow.

Figure A-1. Central Facilities Area Sewage Treatment Plant, 1995 (95-627-7-4).

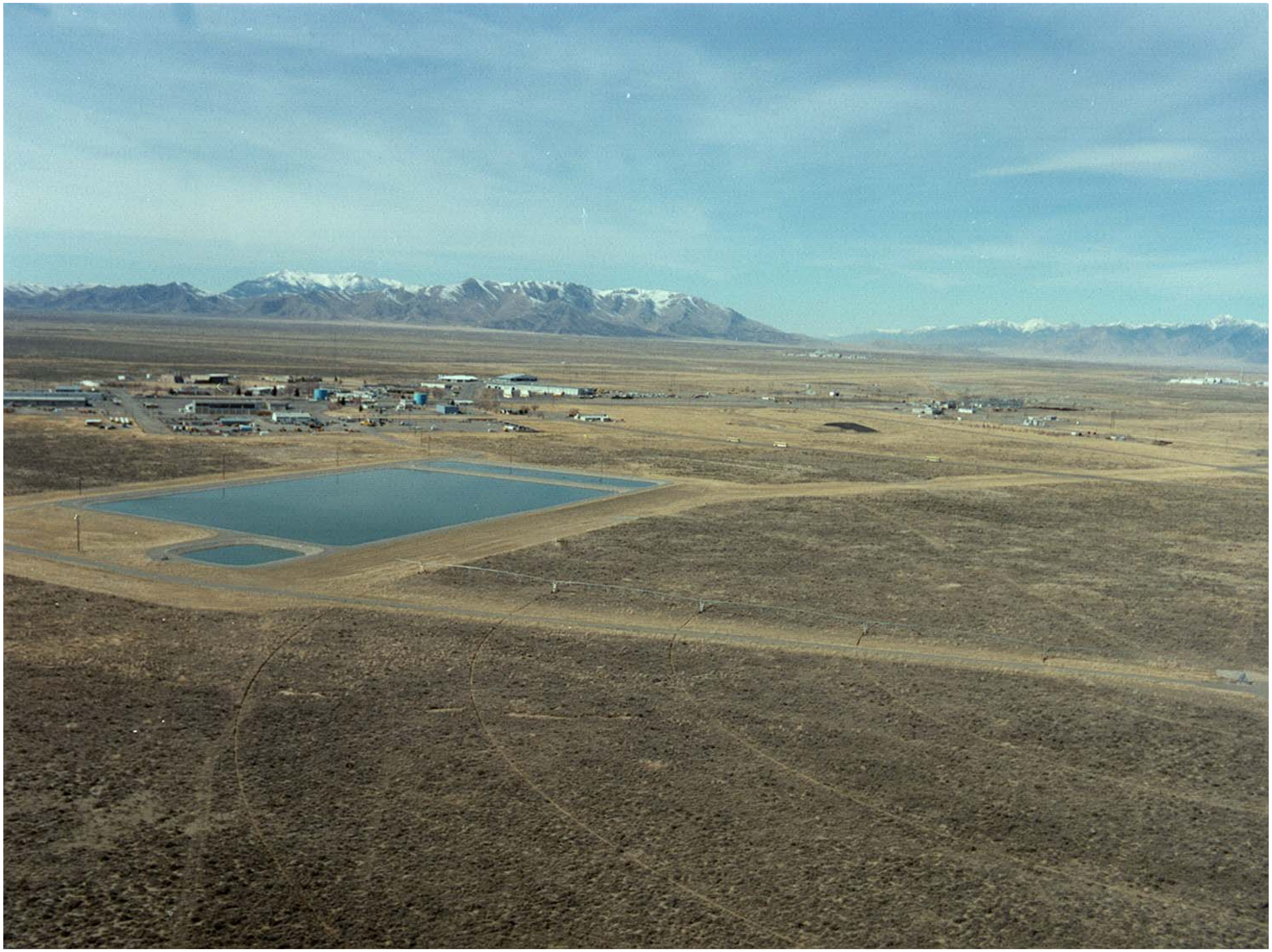

Figure A-2. Central Facilities Area Sewage Treatment Plant, 1996 (96-174-9-8).

Figure A-3. Central Facilities Area Sewage Treatment Plant, 1997 (97-620-5-14).

Figure A-4. Central Facilities Area Sewage Treatment Plant, 1998 (98-454-11-6).

Figure A-5. Central Facilities Area Sewage Treatment Plant, 1999 (99-344-10-9).

Figure A-6. Central Facilities Area Sewage Treatment Plant, 2000 (00-296-2-2).

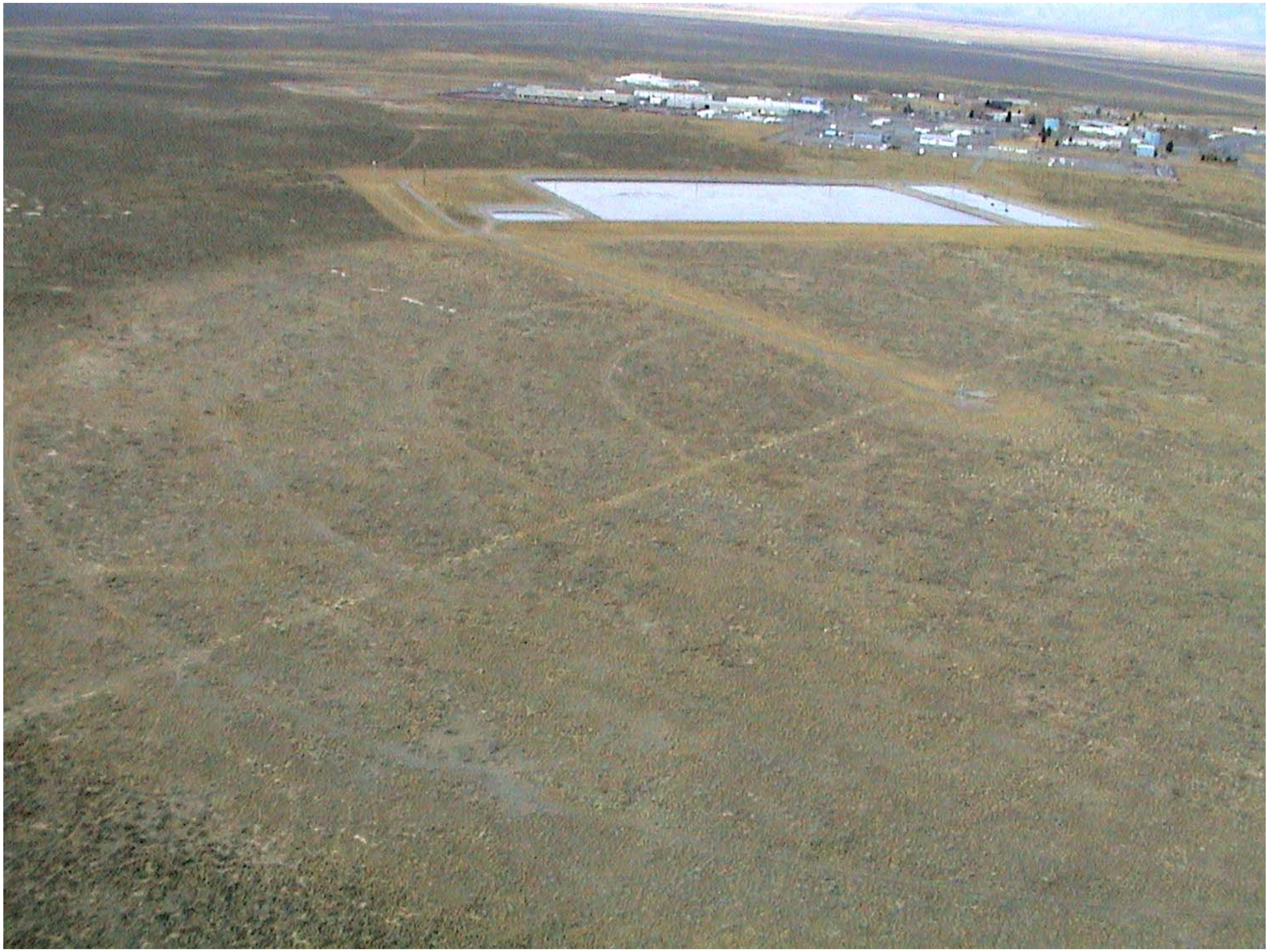

Figure A-7. Central Facilities Area Sewage Treatment Plant, 2002 (PD020741-02).

Figure A-8. Central Facilities Area Sewage Treatment Plant, 2003 (PD030339-01)

The following tables (Tables A-2 through A-6) represent hardcopies of the electronic WLAP data files required by the DEQ (DEQ 2002a). Section 5, "Electronic Data Entry," of DEQ 2002a, states "assemble data tables (electronic tables) with other parts of the annual report." The following tables were first compiled as worksheets within the WLAP Data Entry for LA-141-1.xls file using Microsoft Excel 97. The individual worksheets were saved as text files and incorporated as tables in this appendix. Other than formatting to fit the page, and tabulating the data columns, no other formatting was performed. Columns for those parameters not required by the permit are not included in the tables, nor are rejected results shown in these data tables.

Table A-2. Hydraulic Worksheet from WLAP Data Entry for LA-141-1.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000141-01
Software and Version no.:-----> MS Excel 97 SR-2

HYDRAULIC APPLICATION RATE

				Suppl		
	Month	Manage-	WW	Irrig W		
Permit	(use 15th	ment	Applied	Applied		
No.	as date)	Unit	(MG)	(MG)		
permitno	month	mangunit	wwapp	irrwapp		
LA-000141	6/15/03	MU-014101	1.25			
LA-000141	7/15/03	MU-014101	1.42			
LA-000141	8/15/03	MU-014101	1.58			
LA-000141	9/15/03	MU-014101	1.73			

Note:
1. Dates here denote each month of the year.
2. These dates by convention shall be the 15th of the month.
3. Each twelve month cycle is repeated for each management unit.
4. If the management unit was not used for land application, enter all zeros.
5. For monthly date, use date function.
6. Do not change any protected cell.
3. Make sure units for data entered are consistent with units specified in column headings.

Table A-3. MU Summary Worksheet from WLAP Data Entry for LA-141-1.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000141-01
Software and Version no.:-----> MS Excel 97 SR-2

Management Unit Summary Format

				(2)								(10)			
				WW	(3)							COD	(11)	(12)	
				Applied	WW	(4)	(5)	(6)			(9)	Applied	COD	COD	
			(1)	Non-	Applied	Suppl	N from	Fert		(8)	Crop	Non-	Applied	Applied	(13)
	Report-	Manage-	WW	Growing	Growing	Irrig W	WW	N	(7)	Crop	N	Growing	Growing	Yearly	P
Permit	ing	ment	Applied	Season	Season	Applied	Applied	Applied	Crop	Yield	Removed	Season	Season	Ave	Applied
No.	Year	Unit	MGA	in/ac/yr	in/ac/yr	in/ac/yr	lb/ac/yr	lb/ac/yr	Type	lb/ac/yr	lb/ac/yr	lb/ac/d	lb/ac/d	lb/ac/d	lb/ac/yr
permitno	repyear	mangunit	wwapp	wwngs	wwgs	irrapp	napplied	fertnapp	croptype	cropyield	cnrem	codngs	codgs	codapp	phosapp
LA-000141	2003	MU-014101	5.98				2.70							0.07	0.194

(1) Total of twelve months WW loadings (million gallons per annum MGA).
(2) Non-growing season WW application.
(3) Growing season WW application.
(4) Growing season Irrigation water application.
(5) Multiply total WW loading (in MG) by flow-weighted total constituent concentration (ppm); then multiply by 8.327; divide by acreage of management unit
(6) Multiply pounds of fertilizer applied by the nitrogen fertilizer guarentee number; then divide by 100 and divide again by acreage of management unit
(7) Crop type (e.g. wheat, corn). Use standard names provided in documentation
(8) Weight per acre of harvested portion of crop.
(9) multiply crop yield (converted to pounds/acre) by total nitrogen percent (from tissue test);
(10) Multiply NGS WW loading (MG) by flow-weighted constituent concentration (ppm); then multiply by 8.327; divide by acreage of management unit and number of NGS days
(11) Multiply GS WW loading (MG) by flow-weighted constituent concentration (ppm); then multiply by 8.327; divide by acreage of management unit and number of GS days
(12) Multiply total WW loading (MG) by flow-weighted constituent concentration (ppm); then multiply by 8.327; divide by acreage of management unit and 365 days
(13) See No (5)

All columns are formatted for the appropriate decimal places - do not modify.
Do not change any protected cell.
All units should be as noted below each column heading.

Table A-4. Soils Worksheet from WLAP Data Entry for LA-141-1.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000141-01
Software and Version no.:-----> MS Excel 97 SR-2

Soil Analyses

		depth	depth	Soil	organic				EC		Plant Avail
Permit	Sample	top	bottom	Mon.	matter	Nitrate	Ammonia		(umhos/	pH	Phos
No.	Date	(inches)	(inches)	Unit	(%)	(ppm)	(ppm)	SAR	cm)	(S.U.)	(ppm)
permitno	smpldate	depthtop	depthbot	soilunit	ssom	ssnitrate	ssammonia	sssar	ssec	ssph	ssp_avail
LA-000141	11/19/2003	0	12	SU-014101-5	1.15	4.03	-4.07	6.20	1220	7.97	8.85
LA-000141	11/19/2003	12	24	SU-014101-5	0.62	1.06	-4.00	9.12	1270	8.02	-4.09

1. If a parameter was analyzed but not detected, put the method detection limit (MDL) preceeded by a minus (-) sign. Contact your laboratory for the MDL if not known.
2. If a parameter was not analyzed, leave blank.
3. Make sure units for data entered are consistent with units specified in column headings.
4. For Date field, utilize date cell.
5. All columns are formatted for appropriate decimal places - do not modify.
6. Do not change any protected cell. You may add parameters on right hand side of spreadsheet if needed. You may hide columns that are not typically used.

Table A-5. Wastewater Worksheet from WLAP Data Entry for LA-141-1.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000141-01
Software and Version no.:-----> MS Excel 97 SR-2

Wastewater Quality Data

		Sampling		total			total			fecal	nitrate+
Permit	Sample	Location	COD	coli	TKN	pH	phos	TSS	BOD	coli	nitrite
No.	Date	(Station)	(ppm)	(count)	(ppm)	(S.U.)	(ppm)	(ppm)	(ppm)	(count)	(ppm)
permitno	smpldate	station	wwcod	wwtotalc	wwtkn	wwph	wwphostot	wwtss	wwbod	wwfecalc	wwnnn
LA-000141	01/22/2003	WW-014101	196		19.5	7.65		28.3	49.7		0.499
LA-000141	02/04/2003	WW-014101	147		1.73	7.92		95.7	51.2		0.336
LA-000141	03/05/2003	WW-014101	93.3		24.9	8.15		55.9	54.6		0.774
LA-000141	04/29/2003	WW-014101	94.9		1.72	8.21		39.9	27		0.532
LA-000141	04/29/2003	WW-014101	110		1.48			33	32.7		0.429
LA-000141	05/28/2003	WW-014101	77.4		12.8	7.7		40.5	56.8		1.22
LA-000141	06/19/2003	WW-014101	56.5		12.3	7.62		31.1	53.5		0.642
LA-000141	07/30/2003	WW-014101	73.5		10.3	7.66		18.9	23		0.979
LA-000141	08/20/2003	WW-014101	41.8		11.6	7.95		33.8	37.4		0.409
LA-000141	09/24/2003	WW-014101	54.6		5.13	7.76		48.4	44.1		0.765
LA-000141	10/14/2003	WW-014101	79.2		17.7	7.75		68.5	47.8		0.354
LA-000141	11/04/2003	WW-014101	120		14.6	7.82		324	59.1		0.479
LA-000141	12/10/2002	WW-014101	119		18.2	7.92		76	58.4		0.42
LA-000141	06/18/2003	WW-014102		8						1	
LA-000141	06/19/2003	WW-014102	35.3		1.81	9.89	0.316	6.5	4.35		0.071
LA-000141	07/29/2003	WW-014102				8.77					
LA-000141	07/30/2003	WW-014102	34.5		4.25	9.49	0.408	-4	2.14		0.034
LA-000141	07/31/2003	WW-014102		6						1	
LA-000141	08/20/2003	WW-014102		80						29	
LA-000141	08/20/2003	WW-014102	40.1		6.7	9.48	0.235	-4	7.38		0.012
LA-000141	09/24/2003	WW-014102	41.6		2.9	9.56	0.213	-4	3.15		0.012
LA-000141	09/25/2003	WW-014102		1						1	

Table A-5. (continued).
Wastewater Quality Data

1. If a parameter was analyzed but not detected, put the method detection limit (MDL) preceeded by a minus (-) sign.. Contact your laboratory for the MDL if it is not known.
2. If a parameter was not analyzed, leave blank.
3. Make sure units for data entered are consistent with units specified in column headings.
4. Bacteria are plate counts; pH in standard units; sp cond in umhos/cm; gross alpha & beta in pCi/L.
5. Note also that alkalinity should be expressed as CaCO3.
6. For Date field, utilize a date cell.
7. All columns are formatted for appropriate decimal places - do not modify.
8. Do not change any protected cell. You may add parameter on right hand side of spreadsheet if needed.
9. You may hide columns that are not typically used.

Table A-6. Site Summary Worksheet from WLAP Data Entry for LA-141-1.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000141-01
Software and Version no.:-----> MS Excel 97 SR-2

Permitted Site Summary

			(2)
		(1)	WW
	Report-	WW	Application
Permit	ing	Applied	Season
No.	Year	MGA	(days)
permitno	repyear	wwgen	wwgenday
LA-000141	2003	5.98	102

(1) Total WW applied in million gallons per annum (MGA).
(2) Length of wastewater application season.

1. There should only be one entry for each permit number on this spreadsheet.
2. Make sure units for data entered are consistent with units specified in column headings.
3. All columns are formatted for the appropriate decimal places - do not modify.
4. Do not change any protected cell.

Appendix B

Idaho Nuclear Technology and Engineering Center New Percolation Ponds Daily Effluent Flow Readings and Electronic Data Files

Appendix B

Idaho Nuclear Technology and Engineering Center New Percolation Ponds Daily Effluent Flow Readings and Electronic Data Files

Table B-1. Idaho Nuclear Technology and Engineering Center New Percolation Ponds daily effluent flows.

Date	Effluent (WW-013001) CPP-797 (gpd[a])	Date	Effluent (WW-013001) CPP-797 (gpd[a])
11/1/2002	1,489,600	11/25/2002	1,551,300
11/2/2002	1,779,400	11/26/2002	1,559,600
11/3/2002	1,818,000	11/27/2002	1,544,300
11/4/2002	1,821,400	11/28/2002	1,545,900
11/5/2002	1,806,300	11/29/2002	1,539,200
11/6/2002	1,853,200	11/30/2002	1,526,100
11/7/2002	1,819,700	12/1/2002	1,575,400
11/8/2002	1,778,200	12/2/2002	1,595,400
11/9/2002	1,707,300	12/3/2002	1,580,900
11/10/2002	1,690,900	12/4/2002	1,573,400
11/11/2002	1,630,200	12/5/2002	1,580,400
11/12/2002	1,633,400	12/6/2002	1,553,200
11/13/2002	1,636,600	12/7/2002	1,613,900
11/14/2002	1,636,800	12/8/2002	1,625,200
11/15/2002	1,606,800	12/9/2002	1,569,400
11/16/2002	1,613,900	12/10/2002	1,564,600
11/17/2002	1,618,100	12/11/2002	1,539,800
11/18/2002	1,583,200	12/12/2002	1,524,100
11/19/2002	1,611,600	12/13/2002	1,556,100
11/20/2002	1,580,500	12/14/2002	1,554,300
11/21/2002	1,596,100	12/15/2002	1,521,100
11/22/2002	1,558,700	12/16/2002	1,534,000
11/23/2002	1,579,200	12/17/2002	1,600,500
11/24/2002	1,589,600	12/18/2002	1,601,100

Table B-1. (continued).

Date	Effluent (WW-013001) CPP-797 (gpd[a])	Date	Effluent (WW-013001) CPP-797 (gpd[a])
12/19/2002	1,572,200	1/18/2003	1,569,100
12/20/2002	1,559,400	1/19/2003	1,562,800
12/21/2002	1,511,500	1/20/2003	1,545,200
12/22/2002	1,486,900	1/21/2003	1,532,500
12/23/2002	1,488,400	1/22/2003	1,543,800
12/24/2002	1,478,200	1/23/2003	1,544,600
12/25/2002	1,512,800	1/24/2003	1,519,300
12/26/2002	1,561,100	1/25/2003	1,532,800
12/27/2002	1,550,900	1/26/2003	1,558,300
12/28/2002	1,536,300	1/27/2003	1,536,800
12/29/2002	1,554,800	1/28/2003	1,557,700
12/30/2002	1,523,000	1/29/2003	1,526,000
12/31/2002	1,558,500	1/30/2003	1,545,000
1/1/2003	1,550,600	1/31/2003	1,525,500
1/2/2003	1,574,900	2/1/2003	1,537,000
1/3/2003	1,530,900	2/2/2003	1,515,000
1/4/2003	1,531,000	2/3/2003	1,607,100
1/5/2003	1,525,400	2/4/2003	1,551,100
1/6/2003	1,605,600	2/5/2003	1,550,500
1/7/2003	1,583,600	2/6/2003	1,556,900
1/8/2003	1,564,600	2/7/2003	1,602,500
1/9/2003	1,662,400	2/8/2003	1,611,400
1/10/2003	1,570,400	2/9/2003	1,602,100
1/11/2003	1,634,300	2/10/2003	1,578,800
1/12/2003	1,576,300	2/11/2003	1,626,200
1/13/2003	1,566,800	2/12/2003	1,588,400
1/14/2003	1,568,700	2/13/2003	1,604,300
1/15/2003	1,558,500	2/14/2003	1,626,000
1/16/2003	1,544,800	2/15/2003	1,532,600
1/17/2003	1,559,900	2/16/2003	1,526,600

Table B-1. (continued).

Date	Effluent (WW-013001) CPP-797 (gpd[a])	Date	Effluent (WW-013001) CPP-797 (gpd[a])
2/17/2003	1,552,100	3/19/2003	1,426,800
2/18/2003	1,525,400	3/20/2003	1,394,800
2/19/2003	1,531,300	3/21/2003	1,405,100
2/20/2003	1,539,000	3/22/2003	1,416,100
2/21/2003	1,469,000	3/23/2003	1,394,600
2/22/2003	1,428,300	3/24/2003	1,419,200
2/23/2003	1,422,000	3/25/2003	1,384,900
2/24/2003	1,405,800	3/26/2003	1,398,600
2/25/2003	1,522,500	3/27/2003	1,404,300
2/26/2003	1,429,200	3/28/2003	1,376,700
2/27/2003	1,400,200	3/29/2003	1,381,300
2/28/2003	1,420,100	3/30/2003	1,382,800
3/1/2003	1,401,700	3/31/2003	1,400,600
3/2/2003	1,420,100	4/1/2003	1,406,100
3/3/2003	1,451,900	4/2/2003	1,384,200
3/4/2003	1,419,400	4/3/2003	1,409,200
3/5/2003	1,436,000	4/4/2003	1,390,100
3/6/2003	1,428,000	4/5/2003	1,367,600
3/7/2003	1,447,700	4/6/2003	1,352,400
3/8/2003	1,444,300	4/7/2003	1,407,900
3/9/2003	1,435,200	4/8/2003	1,364,200
3/10/2003	1,403,800	4/9/2003	1,463,900
3/11/2003	1,434,300	4/10/2003	1,485,000
3/12/2003	1,397,300	4/11/2003	1,443,400
3/13/2003	1,432,500	4/12/2003	1,444,600
3/14/2003	1,404,500	4/13/2003	1,475,400
3/15/2003	1,408,300	4/14/2003	1,436,000
3/16/2003	1,442,700	4/15/2003	1,410,200
3/17/2003	1,405,100	4/16/2003	1,362,200
3/18/2003	1,389,100	4/17/2003	1,415,400

Table B-1. (continued).

Date	Effluent (WW-013001) CPP-797 (gpd[a])	Date	Effluent (WW-013001) CPP-797 (gpd[a])
4/18/2003	1,397,300	5/18/2003	1,257,600
4/19/2003	1,378,600	5/19/2003	1,254,400
4/20/2003	1,387,500	5/20/2003	1,258,600
4/21/2003	1,382,500	5/21/2003	1,192,000
4/22/2003	1,386,100	5/22/2003	1,281,300
4/23/2003	1,411,100	5/23/2003	1,314,200
4/24/2003	1,396,300	5/24/2003	1,348,000
4/25/2003	1,373,500	5/25/2003	1,442,300
4/26/2003	1,341,800	5/26/2003	1,392,000
4/27/2003	1,346,300	5/27/2003	1,327,300
4/28/2003	1,340,900	5/28/2003	1,281,500
4/29/2003	763,200	5/29/2003	1,388,700
4/30/2003	912,400	5/30/2003	1,439,000
5/1/2003	1,308,800	5/31/2003	1,505,400
5/2/2003	1,296,000	6/1/2003	1,431,100
5/3/2003	1,294,800	6/2/2003	1,475,100
5/4/2003	1,306,000	6/3/2003	1,469,400
5/5/2003	1,293,700	6/4/2003	1,471,300
5/6/2003	1,293,100	6/5/2003	1,434,300
5/7/2003	1,227,700	6/6/2003	1,435,200
5/8/2003	1,188,700	6/7/2003	1,424,600
5/9/2003	1,017,200	6/8/2003	1,292,000
5/10/2003	1,206,400	6/9/2003	1,292,800
5/11/2003	1,358,300	6/10/2003	1,413,000
5/12/2003	1,155,000	6/11/2003	1,477,700
5/13/2003	1,111,100	6/12/2003	1,489,300
5/14/2003	1,112,800	6/13/2003	1,456,500
5/15/2003	1,209,000	6/14/2003	1,413,100
5/16/2003	1,305,800	6/15/2003	1,314,900
5/17/2003	1,261,200	6/16/2003	1,240,900

Table B-1. (continued).

Date	Effluent (WW-013001) CPP-797 (gpd[a])	Date	Effluent (WW-013001) CPP-797 (gpd[a])
6/17/2003	1,283,300	7/17/2003	1,524,700
6/18/2003	1,469,000	7/18/2003	1,457,300
6/19/2003	1,451,600	7/19/2003	1,454,100
6/20/2003	1,492,100	7/20/2003	1,471,900
6/21/2003	1,527,300	7/21/2003	1,470,300
6/22/2003	1,488,000	7/22/2003	1,534,400
6/23/2003	1,431,300	7/23/2003	1,490,400
6/24/2003	1,441,600	7/24/2003	1,507,100
6/25/2003	1,430,000	7/25/2003	1,401,200
6/26/2003	1,367,000	7/26/2003	1,316,100
6/27/2003	1,352,400	7/27/2003	1,323,400
6/28/2003	1,508,800	7/28/2003	1,373,900
6/29/2003	1,552,400	7/29/2003	1,335,900
6/30/2003	1,538,800	7/30/2003	1,287,200
7/1/2003	1,503,500	7/31/2003	1,308,400
7/2/2003	1,519,800	8/1/2003[b]	1,280,500
7/3/2003	1,536,400	8/2/2003	1,273,100
7/4/2003	1,553,500	8/3/2003	1,218,700
7/5/2003	1,530,100	8/4/2003	1,180,500
7/6/2003	1,562,400	8/5/2003	1,187,800
7/7/2003	1,440,500	8/6/2003	1,025,900
7/8/2003	1,406,600	8/7/2003	1,038,100
7/9/2003	1,305,100	8/8/2003	1,060,800
7/10/2003	1,333,200	8/9/2003	1,053,700
7/11/2003	1,324,800	8/10/2003	1,040,000
7/12/2003	1,495,400	8/11/2003	1,024,300
7/13/2003	1,510,600	8/12/2003	1,040,600
7/14/2003	1,506,400	8/13/2003	1,249,900
7/15/2003	1,485,600	8/14/2003	1,125,600
7/16/2003	1,449,000	8/15/2003	1,207,900

Table B-1. (continued).

Date	Effluent (WW-013001) CPP-797 (gpd[a])	Date	Effluent (WW-013001) CPP-797 (gpd[a])
8/16/2003	1,157,200	9/15/2003	1,066,600
8/17/2003	1,093,200	9/16/2003	1,128,900
8/18/2003	996,600	9/17/2003	1,076,100
8/19/2003	1,082,300	9/18/2003	1,098,100
8/20/2003	1,190,800	9/19/2003	1,111,900
8/21/2003	1,156,400	9/20/2003	1,085,700
8/22/2003	1,166,700	9/21/2003	1,080,900
8/23/2003	1,161,300	9/22/2003	1,067,100
8/24/2003	1,062,300	9/23/2003	1,049,100
8/25/2003	1,058,700	9/24/2003	1,049,400
8/26/2003	1,063,300	9/25/2003	1,078,000
8/27/2003	1,051,000	9/26/2003	1,102,900
8/28/2003	663,400	9/27/2003	1,083,700
8/29/2003	833,900	9/28/2003	1,100,300
8/30/2003	910,900	9/29/2003	1,070,900
8/31/2003	920,600	9/30/2003	1,127,300
9/1/2003	921,800	10/1/2003	1,118,800
9/2/2003	909,200	10/2/2003	1,186,700
9/3/2003	903,200	10/3/2003	1,228,364
9/4/2003	947,700	10/4/2003	1,218,000
9/5/2003	927,800	10/5/2003	1,216,500
9/6/2003	925,300	10/6/2003	1,219,500
9/7/2003	903,900	10/7/2003	1,237,800
9/8/2003	932,000	10/8/2003	1,244,800
9/9/2003	888,200	10/9/2003	1,288,600
9/10/2003	869,800	10/10/2003	1,299,100
9/11/2003	863,000	10/11/2003	1,275,500
9/12/2003	1,063,400	10/12/2003	1,276,000
9/13/2003	1,056,200	10/13/2003	1,254,000
9/14/2003	1,083,400	10/14/2003	1,272,700

Table B-1. (continued).

Date	Effluent (WW-013001) CPP-797 (gpd[a])	Date	Effluent (WW-013001) CPP-797 (gpd[a])
10/15/2003	1,259,300	10/24/2003	766,200
10/16/2003	1,047,200	10/25/2003	954,340
10/17/2003	1,219,200	10/26/2003	1,201,200
10/18/2003	1,202,600	10/27/2003	1,227,000
10/19/2003	1,144,800	10/28/2003	1,105,780
10/20/2003	1,160,100	10/29/2003	959,170
10/21/2003	1,024,340	10/30/2003	1,071,790
10/22/2003	1,019,650	10/31/2003	1,189,650
10/23/2003	882,140		

a. gpd—Gallons per day.

b. On August 1, 2003, the discharge was switched from the south pond to the north pond.

The following tables (Tables B-2 through B-5) represent hardcopies of the electronic WLAP data files required by the DEQ (DEQ 2002a). Section 5, "Electronic Data Entry," of DEQ 2002a, states "assemble data tables (electronic tables) with other parts of the annual report." The following tables were first compiled as worksheets within the WLAP Data Entry for LA-130-3.xls file using Microsoft Excel 97. The individual worksheets were saved as text files and incorporated as tables in this appendix. Other than formatting to fit the page, and tabulating the data columns, no other formatting was performed. Columns for those parameters not required by the permit are not included in the tables, nor are rejected results shown in these data tables.

Table B-2. Hydraulic Worksheet from WLAP Data Entry for LA-130-3.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000130-03
Software and Version no.:-----> MS Excel 97 SR-2

HYDRAULIC APPLICATION RATE

				Suppl
	Month	Manage-	WW	Irrig W
Permit	(use 15th	ment	Applied	Applied
No.	as date)	Unit	(MG)	(MG)
permitno	month	mangunit	wwapp	irrwapp
LA-000130	11/15/2002	MU-013003	49.31	
LA-000130	12/15/2002	MU-013003	48.16	
LA-000130	01/15/2003	MU-013003	48.31	
LA-000130	02/15/2003	MU-013003	42.86	
LA-000130	03/15/2003	MU-013003	43.79	
LA-000130	04/15/2003	MU-013003	40.84	
LA-000130	05/15/2003	MU-013003	39.63	
LA-000130	06/15/2003	MU-013003	42.86	
LA-000130	07/15/2003	MU-013003	44.72	
LA-000130	11/15/2002	MU-013003	49.31	
LA-000130	12/15/2002	MU-013003	48.16	
LA-000130	08/15/2003	MU-013004	33.58	
LA-000130	09/15/2003	MU-013004	30.57	
LA-000130	10/15/2003	MU-013004	35.77	

Note:
1. Dates here denote each month of the year.
2. These dates by convention shall be the 15th of the month.
3. Each twelve month cycle is repeated for each management unit.
4. If the management unit was not used for land application, enter all zeros.
5. For monthly date, use date function.
6. Do not change any protected cell.
3. Make sure units for data entered are consistent with units specified in column headings.

Table B-3. Groundwater Worksheet from WLAP Data Entry for LA-130-3.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000130-03
Software and Version no.:-----> MS Excel 97 SR-2

Ground Water Quality Data

				Static									
				Water									total
Permit	Sample	Sampling	Well	Level	chloride	nitrate	pH	Fe	Mn	Na	TDS	fluoride	phos
No.	Date	Station	ID	(feet)	(ppm)	(ppm)	(S.U.)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
permitno	smpldate	station	wellid	wtrdepth	chloride	nitrate	ph	irontotal	mangtotal	sodium	tds	fluoride	phostot
LA-000130	4/14/2003	03N 29E 26cab01	GW-013005	495.53	12.5	0.48	8.46	3.92	0.0696	13.4	205	0.19	0.20
LA-000130	4/15/2003	03N 29E 35bac01	GW-013006	500.62	16.2	0.76	8.20	0.0613	-0.0025	8.08	224	0.21	0.074
LA-000130	4/14/2003	03N 29E 34aaa01	GW-013007	505.13	6.8	0.26	8.06	0.217	0.0697	9.15	185	0.26	-0.03
LA-000130	4/14/2003	03N 29E 34aaa01	GW-013007	505.13	13.6	0.23	8.06	0.238	0.0692	9.22	175	0.24	0.062
LA-000130	4/17/2003	03N 29E 26cbd01	GW-013009	117.85	91.4	0.82	8.04	1.240	0.0202	47.10	407	0.28	0.043
LA-000130	4/22/2003	03N 29E 26cca01	GW-013010	238.25	66.8	0.69	8.13	0.0631	-0.0025	11.40	404	0.14	0.074
LA-000130	10/6/2003	03N 29E 26cab01	GW-013005	495.29	7.1	0.46	7.88	3.68	0.0681	13.9	203	0.11	0.31
LA-000130	10/6/2003	03N 29E 26cab01	GW-013005	495.29	7.2	0.43	7.88	4.13	0.0758	14.0	213	0.13	0.27
LA-000130	10/6/2003	03N 29E 35bac01	GW-013006	500.62	17.5	0.62	7.55	0.0655	-0.0025	10.0	234	0.12	-0.10
LA-000130	10/6/2003	03N 29E 34aaa01	GW-013007	506.48	6.8	0.14	7.52	0.939	0.072	9.75	178	0.14	-0.10
LA-000130	10/7/2003	03N 29E 26cbd01	GW-013009	111.04	213	0.93	7.52	0.355	0.0054	134.0	554	0.39	-0.10
LA-000130	10/7/2003	03N 29E 26cca01	GW-013010	234.94	112	0.84	7.56	0.147	-0.0025	21.2	412	0.21	-0.10

				Static									
				Water									
Permit	Sample	Sampling	Well	Level	TKN	Hg	nitrite	As	Cd	Cr	Se	Ag	Cu
No.	Date	Station	ID	(feet)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
permitno	smpldate	Station	wellid	wtrdepth	tkn	mercury	nitrite	arsenic	cadmium	chromium	selinium	silver	copper
LA-000130	4/14/2003	03N 29E 26cab01	GW-013005	495.53	-0.90	-0.0002	-0.10	0.0026	-0.001	0.0136	-0.0025	-0.0025	0.0157
LA-000130	4/15/2003	03N 29E 35bac01	GW-013006	500.62	-1.8	-0.0002	-0.10	-0.0025	-0.001	0.0105	-0.0025	-0.0025	-0.001
LA-000130	4/14/2003	03N 29E 34aaa01	GW-013007	505.13	-0.90	-0.0002	-0.10	-0.0025	-0.001	0.0078	-0.0025	-0.0025	-0.001
LA-000130	4/14/2003	03N 29E 34aaa01	GW-013007	505.13	-0.90	-0.0002	-0.10	-0.0025	-0.001	0.0091	-0.0025	-0.0025	-0.001
LA-000130	4/17/2003	03N 29E 26cbd01	GW-013009	117.85	-1.8	-0.0002	-0.10	0.0029	-0.001	0.0063	-0.0025	-0.0025	0.0026
LA-000130	4/22/2003	03N 29E 26cca01	GW-013010	238.25	-1.8	-0.0002	-0.10	-0.0025	-0.001	0.0061	-0.0025	-0.0025	0.001
LA-000130	10/6/2003	03N 29E 26cab01	GW-013005	495.29	-1.0	-0.0002	-0.10	0.0033	-0.001	0.0147	-0.0025	-0.0025	0.0174
LA-000130	10/6/2003	03N 29E 26cab01	GW-013005	495.29	-1.0	-0.0002	-0.10	-0.0025	-0.001	0.0186	-0.0025	-0.0025	0.0182
LA-000130	10/6/2003	03N 29E 35bac01	GW-013006	500.62	-1.0	-0.0002	-0.10	-0.0025	-0.001	0.0084	-0.0025	-0.0025	0.0014
LA-000130	10/6/2003	03N 29E 34aaa01	GW-013007	506.48	-1.0	-0.0002	-0.10	-0.0025	-0.001	0.0177	-0.0025	-0.0025	0.004
LA-000130	10/7/2003	03N 29E 26cbd01	GW-013009	111.04	-1.0	-0.0002	-0.10	-0.0025	-0.001	0.0075	-0.0025	-0.0025	0.0029
LA-000130	10/7/2003	03N 29E 26cca01	GW-013010	234.94	-1.0	-0.0002	-0.10	-0.0025	-0.001	0.0066	-0.0025	-0.0025	0.001

Table B-3. (continued).
Ground Water Quality Data

				Static							
				Water							
Permit	Sample	Sampling	Well	Level	Al						
No.	Date	Station	ID	(feet)	(ppm)						
permitno	smpldate	station	wellid	wtrdepth	aluminum	well name					
LA-000130	4/14/2003	03N 29E 26cab01	GW-013005	495.53	6.61	ICPP-MON-A-167					
LA-000130	4/15/2003	03N 29E 35bac01	GW-013006	500.62	-0.025	ICPP-MON-A-165					
LA-000130	4/14/2003	03N 29E 34aaa01	GW-013007	505.13	0.199	ICPP-MON-A-166					
LA-000130	4/14/2003	03N 29E 34aaa01	GW-013007	505.13	0.231	ICPP-MON-A-166					
LA-000130	4/17/2003	03N 29E 26cbd01	GW-013009	117.85	0.707	ICPP-MON-V-200					
LA-000130	4/22/2003	03N 29E 26cca01	GW-013010	238.25	0.0321	ICPP-MON-V-212					
LA-000130	10/6/2003	03N 29E 26cab01	GW-013005	495.29	5.82	ICPP-MON-A-167					
LA-000130	10/6/2003	03N 29E 26cab01	GW-013005	495.29	6.74	ICPP-MON-A-167					
LA-000130	10/6/2003	03N 29E 35bac01	GW-013006	500.62	-0.025	ICPP-MON-A-165					
LA-000130	10/6/2003	03N 29E 34aaa01	GW-013007	506.48	1.06	ICPP-MON-A-166					
LA-000130	10/7/2003	03N 29E 26cbd01	GW-013009	111.04	0.251	ICPP-MON-V-200					
LA-000130	10/7/2003	03N 29E 26cca01	GW-013010	234.94	0.0591	ICPP-MON-V-212					

1. If a parameter was analyzed but not detected, put the method detection limit (MDL) preceeded by a minus (-) sign. Contact your laboratory for the MDL if not known.a -1.0
2. If a parameter was not analyzed, leave blank
3. Make sure units for data entered are consistent with units specified in column headings.
4. Bacteria are plate counts; pH in standard units; sp cond in umhos/cm; gross alpha & beta in pCi/L.
5. Alkalinity should be expressed as CaCO3; static water level in feet.
6. For Date field, utilize date cell.
7. All columns are formated for appropriate decimal places- do not modify.
8. Sample methods are listed in the DEQ "Handbook for Land Application of Municipal and Industrial Wasteawter", April 1996, page IV-99-1 through 10.

Do not change any protected cell. You may add parameters on right hand side of spreadsheet if needed. You may hide columns that are not typically used

Table B-4. Wastewater Worksheet from WLAP Data Entry for LA-130-3.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000130-03
Software and Version no.:-----> MS Excel 97 SR-2

Wastewater Quality Data

		Sampling						total				
Permit	Sample	Location	chloride	nitrate	TKN	pH_grab	Na	phos	TDS	fluoride	Fe	Mn
No.	Date	(Station)	(ppm)	(ppm)	(ppm)		(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
permitno	smpldate	station	wwchloride	wwnitrate	wwtkn	wwphgrb	wwsodium	wwphostot	wwtds	wwflride	wwiron	wwmn
LA-000130	11/04/2002	WW-013001	76.1	0.89	-0.24	8.1	64.1	0.0231	338	0.2	-0.0161	0.0008
LA-000130	12/02/2002	WW-013001	806	0.93	-0.24	7.9	95.8	0.0684	1265	0.16	0.278	0.0032
LA-000130	01/07/2003	WW-013001	647	0.53	-0.24	7.9	351	0.0276	1210	0.12	-0.0132	0.0005
LA-000130	01/07/2003	WW-013001				7.9						
LA-000130	02/10/2003	WW-013001	15.9	0.89	-0.19	8	39.2	0.0219	243	-0.01	0.0111	0.0005
LA-000130	03/17/2003	WW-013001	17.2	0.91	-0.19	8	43.1	0.0271	242	0.16	0.0302	0.0009
LA-000130	04/08/2003	WW-013001	72.7	1	-0.19	7.5	46.8	0.0243	327	0.21	0.0198	0.001
LA-000130	05/06/2003	WW-013001	67.3	0.96	-0.19	8.1	69.6	0.0242	314	0.26	-0.0107	0.0008
LA-000130	06/03/2003	WW-013001	139	0.93	-0.19	8.3	57.6	0.0255	448	0.2	0.019	0.0007
LA-000130	07/14/2003	WW-013001	132	0.88	-0.13	8.1	58.1	0.023	412	0.19	0.0141	0.0009
LA-000130	08/25/2003	WW-013001	278	0.99	-0.13	8.2	172	0.02	671	0.21	-0.0055	-0.0003
LA-000130	09/08/2003	WW-013001	427	1	-0.13	8.2	258	0.0282	893	0.19	0.0096	0.0005
LA-000130	10/27/2003	WW-013001	73.8	0.96	-0.13	8.03	61.8	0.0295	330	0.2	-0.0063	-0.0003

		Sampling										
Permit	Sample	Location	Arsenic	Chromium	Mercury	Selenium	Nitrite	Aluminum	Silver	Copper	Cadmium	
No.	Date	(Station)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	
permitno	smpldate	station	wwarsenic	wwchromium	wwmercury	wwselenium	wwnitrite	wwalumin	wwsilver	wwcopper	wwcadmium	
LA-000130	11/04/2002	WW-013001	-0.0043	0.0057	-0.00008	-0.003	-0.0061	-0.0061	-0.002	0.0043	-0.0006	
LA-000130	12/02/2002	WW-013001	-0.0049	0.0072	-0.00008	0.0046	-3	0.0198	-0.003	0.0112	-0.0006	
LA-000130	01/07/2003	WW-013001	-0.004	0.0057	-0.00008	-0.0036	-1.7	-0.0054	-0.0015	0.0036	0.0004	
LA-000130	01/07/2003	WW-013001										
LA-000130	02/10/2003	WW-013001	-0.004	0.0056	-0.00008	-0.0036	-0.02	-0.0054	-0.0015	0.0022	-0.0003	
LA-000130	03/17/2003	WW-013001	-0.0043	0.006	-0.00008	-0.0039	-0.017	-0.0093	-0.0017	0.0104	-0.0004	
LA-000130	04/08/2003	WW-013001	-0.0043	0.0058	-0.00008	-0.0039	-0.0037	-0.0093	-0.0017	0.0046	-0.0004	
LA-000130	05/06/2003	WW-013001	-0.0043	0.0063	-0.00008	-0.0039	-0.0037	-0.0093	-0.0017	0.0069	-0.0004	
LA-000130	06/03/2003	WW-013001	-0.0043	0.0063	-0.00008	-0.0037	-0.0037	-0.0107	-0.0016	0.0019	-0.0007	
LA-000130	07/14/2003	WW-013001	-0.0035	0.006	-0.00008	-0.0038	-0.0037	0.0121	-0.0022	0.0025	-0.0004	
LA-000130	08/25/2003	WW-013001	-0.0043	0.0056	-0.00008	-0.0037	-0.0037	-0.0107	-0.0016	-0.0009	-0.0007	
LA-000130	09/08/2003	WW-013001	-0.0053	0.0058	-0.00008	-0.0035	-0.0037	-0.0073	-0.0032	0.0033	-0.0004	
LA-000130	10/27/2003	WW-013001	-0.0047	0.006	-0.00008	-0.0049	-0.0058	-0.0077	-0.0016	0.0026	0.0021	

Table B-4. (continued).
Wastewater Quality Data

1. If a parameter was analyzed but not detected, put the method detection limit (MDL) preceeded by a minus (-) sign.. Contact your laboratory for the MDL if it is not known.
2. If a parameter was not analyzed, leave blank.
3. Make sure units for data entered are consistent with units specified in column headings.
4. Bacteria are plate counts; pH in standard units; sp cond in umhos/cm; gross alpha & beta in pCi/L.
5. Note also that alkalinity should be expressed as CaCO3.
6. For Date field, utilize a date cell.
7. All columns are formatted for appropriate decimal places - do not modify.
8. Do not change any protected cell. You may add parameter on right hand side of spreadsheet if needed.
9. You may hide columns that are not typically used.

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Table B-5 Site Summary Worksheet from WLAP Data Entry for LA-130-3.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS   For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000130-03
Software and Version no.:-----> MS Excel 97 SR-2

Permitted Site Summary

			(2)
		(1)	WW
	Report-	WW	Application
Permit	ing	Applied	Season
No.	Year	MGA	(days)
permitno	repyear	wwgen	wwgenday
LA-000130	2003	500.38	365

(1) Total WW applied in million gallons per annum (MGA).
(2) Length of wastewater application season.

1. There should only be one entry for each permit number on this spreadsheet.
2. Make sure units for data entered are consistent with units specified in column headings.
3. All columns are formatted for the appropriate decimal places - do not modify.
4. Do not change any protected cell.

Appendix C

Idaho Nuclear Technology and Engineering Center Sewage Treatment Plant Influent and Effluent Flow Readings and Electronic Data Files

Appendix C

Idaho Nuclear Technology and Engineering Center Sewage Treatment Plant Daily Influent and Effluent Flow Readings and Electronic Data Files

Table C-1. Idaho Nuclear Technology and Engineering Center Sewage Treatment Plant daily influent and effluent flows.

Date	Influent (WW-011501) (gpd[a])	Effluent (WW-0115-2) (gpd)[a]	Date	Influent (WW-011501) (gpd[a])	Effluent (WW-0115-2) (gpd)[a]
11/1/2002	32,852[b]	19,954	11/25/2002	40,227[b]	31,195
11/2/2002	32,852[b]	19,954	11/26/2002	57,647[b]	40,414
11/3/2002	41,560[b]	20,420	11/27/2002	54,373[b]	40,263
11/4/2002	41,724[b]	21,168	11/28/2002	50,409[b]	41,315
11/5/2002	49,412[b]	28,227	11/29/2002	41,722[b]	32,632
11/6/2002	51,757[b]	43,211	11/30/2002	38,751[b]	29,606
11/7/2002	56,745[b]	33,387	12/1/2002	44,083[b]	32,916
11/8/2002	53,130[b]	48,486	12/2/2002	42,627[b]	29,757
11/9/2002	25,995[b]	15,390	12/3/2002	54,729[b]	37,926
11/10/2002	27,174[b]	20,215	12/4/2002	55,870[b]	40,552
11/11/2002	34,886[b]	11,810	12/5/2002	62,707[b]	44,760
11/12/2002	55,204[b]	31,097	12/6/2002	58,115[b]	48,182
11/13/2002	54,033[b]	32,422	12/7/2002	35,265[b]	26,801
11/14/2002	53,167[b]	30,882	12/8/2002	41,068[b]	32,672
11/15/2002	53,523[b]	45,203	12/9/2002	40,859[b]	29,923
11/16/2002	42,015[b]	39,433	12/10/2002	59,895[b]	42,295
11/17/2002	36,258[b]	31,863	12/11/2002	54,966[b]	44,248
11/18/2002	37,541[b]	29,971	12/12/2002	77,914[b]	43,097
11/19/2002	55,997[b]	44,107	12/13/2002	NR[c,d]	43,871
11/20/2002	52,770[b]	44,475	12/14/2002	74,201[b]	38,724
11/21/2002	53,306[b]	43,708	12/15/2002	20,688[b]	34,364
11/22/2002	45,208[b]	48,583	12/16/2002	28,398[b]	30,949
11/23/2002	41,790[b]	34,903	12/17/2002	52,467[b]	46,309
11/24/2002	3,430[b]	39,009	12/18/2002	50,656[b]	38,632

Table C-1. (continued).

Date	Influent (WW-011501) (gpd[a])	Effluent (WW-0115-2) (gpd)[a]	Date	Influent (WW-011501) (gpd[a])	Effluent (WW-0115-2) (gpd)[a]
12/19/2002	45,724[b]	35,230	1/19/2003	28,262[b]	13,955
12/20/2002	42,923[b]	33,736	1/20/2003	29,438[b]	15,227
12/21/2002	36,192[b]	26,157	1/21/2003	47,707[b]	25,356
12/22/2002	29,665[b]	26,542	1/22/2003	40,869[b]	29,332
12/23/2002	26,295[b]	21,990	1/23/2003	42,972[b]	25,225
12/24/2002	44,891[b]	28,773	1/24/2003	38,689[b]	28,182
12/25/2002	29,475[b]	23,532	1/25/2003	28,164[b]	19,705
12/26/2002	31,420[b]	24,729	1/26/2003	40,163[b]	21,906
12/27/2002	25,471[b]	25,537	1/27/2003	39,167[b]	23,279
12/28/2002	26,124[b]	27,903	1/28/2003	44,383[b]	34,837
12/29/2002	26,871[b]	26,578	1/29/2003	40,110[b]	27,531
12/30/2002	26,100[b]	24,616	1/30/2003	46,938[b]	28,660
12/31/2002	22,364[b]	20,800	1/31/2003	36,858[b]	26,362
1/1/2003	27,182[b]	26,615	2/1/2003	33,789[b]	23,665
1/2/2003	30,036[b]	24,720	2/2/2003	29,511[b]	21,892
1/3/2003	32,309[b]	26,898	2/3/2003	31,101[b]	17,006
1/4/2003	24,648[b]	20,454	2/4/2003	44,364[b]	26,364
1/5/2003	32,958[b]	26,441	2/5/2003	43,014[b]	25,751
1/6/2003	30,192[b]	21,938	2/6/2003	50,487[b]	28,303
1/7/2003	53,140[b]	37,271	2/7/2003	41,128[b]	27,605
1/8/2003	49,889[b]	38,101	2/8/2003	24,058[b]	15,389
1/9/2003	48,568[b]	39,893	2/9/2003	33,221[b]	19,824
1/10/2003	41,425[b]	35,672	2/10/2003	30,178[b]	18,672
1/11/2003	29,300[b]	30,099	2/11/2003	43,432[b]	28,616
1/12/2003	24,476[b]	15,659	2/12/2003	61,227[b]	28,844
1/13/2003	21,567[b]	16,648	2/13/2003	62,144	28,902
1/14/2003	47,233[b]	26,180	2/14/2003	60,121	36,633
1/15/2003	44,993[b]	29,744	2/15/2003	47,794	27,128
1/16/2003	49,942[b]	29,253	2/16/2003	43,892	22,332
1/17/2003	45,297[b]	24,200	2/17/2003	49,239	26,256
1/18/2003	18,106[b]	24,732	2/18/2003	60,316	30,467

Table C-1. (continued).

Date	Influent (WW-011501) (gpd[a])	Effluent (WW-0115-2) (gpd)[a]	Date	Influent (WW-011501) (gpd[a])	Effluent (WW-0115-2) (gpd)[a]
2/19/2003	52,969	25,382	3/22/2003	42,879	5,436
2/20/2003	56,954	26,448	3/23/2003	54,430	10,033
2/21/2003	55,883	26,738	3/24/2003	49,406	4,802
2/22/2003	39,549	19,039	3/25/2003	62,927	13,260
2/23/2003	40,963	16,705	3/26/2003	54,626	12,724
2/24/2003	28,129	10,949	3/27/2003	56,830	11,847
2/25/2003	60,996	22,653	3/28/2003	62,159	12,967
2/26/2003	44,533	21,714	3/29/2003	45,867	2,300[e]
2/27/2003	49,037	21,834	3/30/2003	44,747	328[e]
2/28/2003	45,661	22,248	3/31/2003	44,933	664[e]
3/1/2003	31,231	14,549	4/1/2003	56,104	7,700[e]
3/2/2003	30,054	12,344	4/2/2003	58,945	13,901[e]
3/3/2003	32,486	12,670	4/3/2003	57,813	12,831[e]
3/4/2003	53,112	21,673	4/4/2003	57,337	9,040[e]
3/5/2003	48,018	23,213	4/5/2003	41,683	2,521[e]
3/6/2003	47,334	21,882	4/6/2003	41,562	772[e]
3/7/2003	41,861	19,700	4/7/2003	40,855	833[e]
3/8/2003	34,984	16,362	4/8/2003	51,216	7,220[e]
3/9/2003	27,114	10,931	4/9/2003	50,403	8,239[e]
3/10/2003	33,108	14,528	4/10/2003	48,774	8,343[e]
3/11/2003	56,056	23,362	4/11/2003	NR[f]	6,379[e]
3/12/2003	48,419	21,676	4/12/2003	NR[f]	735[e]
3/13/2003	48,705	20,841	4/13/2003	NR[f]	84[e]
3/14/2003	47,541	20,904	4/14/2003	NR[f]	769[e]
3/15/2003	45,127	16,759	4/15/2003	52,866	18,951[e]
3/16/2003	43,557	17,015	4/16/2003	47,281	18,828[e]
3/17/2003	43,497	5,520	4/17/2003	42,782	9,461[e]
3/18/2003	61,500	11,785	4/18/2003	45,243	10,904[e]
3/19/2003	55,130	10,547	4/19/2003	31,606	1,777[e]
3/20/2003	59,294	13,543	4/20/2003	26,042	214[e]
3/21/2003	58,711	14,115	4/21/2003	32,027	18[e]

Table C-1. (continued).

Date	Influent (WW-011501) (gpd[a])	Effluent (WW-0115-2) (gpd)[a]	Date	Influent (WW-011501) (gpd[a])	Effluent (WW-0115-2) (gpd)[a]
4/22/2003	30,247	1,129[e]	5/23/2003	23,644	12,412
4/23/2003	NR[g]	3,767[e]	5/24/2003	NR[h]	3,980
4/24/2003	33,086	12,916[e]	5/25/2003	NR[h]	611
4/25/2003	38,768	2,643[e]	5/26/2003	NR[h]	2,670
4/26/2003	14,239	465[e]	5/27/2003	33,762	667
4/27/2003	15,110	77[e]	5/28/2003	45,949	6,059
4/28/2003	17,244	NR[e]	5/29/2003	53,491	19,804
4/29/2003	32,599	11,220[e]	5/30/2003	41,787	18,648
4/30/2003	36,476	10,654[e]	5/31/2003	29,308	4,971
5/1/2003	33,316	3,851[e]	6/1/2003	30,606	3,394
5/2/2003	29,506	2,876[e]	6/2/2003	30,077	3,629
5/3/2003	16,801	22,350[e]	6/3/2003	46,750	13,051
5/4/2003	14,074	1,683[e]	6/4/2003	50,895	22,537
5/5/2003	16,037	NR[e]	6/5/2003	45,787	18,703
5/6/2003	34,061	3,753[e]	6/6/2003	47,222	24,249
5/7/2003	37,764	4,089[e]	6/7/2003	28,499	7,902
5/8/2003	31,075	1,258[e]	6/8/2003	30,541	5,931
5/9/2003	43,062	649[e]	6/9/2003	32,559	8,572
5/10/2003	27,127	31[e]	6/10/2003	49,947	16,574
5/11/2003	34,103	NR[e]	6/11/2003	53,902	17,910
5/12/2003	32,562	157[e]	6/12/2003	53,720	20,247
5/13/2003	40,456	837[e]	6/13/2003	59,175	32,204
5/14/2003	52,862	1,783[e]	6/14/2003	33,512	11,592
5/15/2003	45,208	1,386[e]	6/15/2003	30,660	5,201
5/16/2003	61,415	798[e]	6/16/2003	38,646	10,738
5/17/2003	25,923	3,900[e]	6/17/2003	58,876	24,265
5/18/2003	32,185	8,607[e]	6/18/2003	68,865	24,458
5/19/2003	30,262	1,852[e]	6/19/2003	79,739	22,856
5/20/2003	55,300	11,479[e]	6/20/2003	70,929	19,817
5/21/2003	30,386	69[e]	6/21/2003	52,427	5,495
5/22/2003	39,079	13,168	6/22/2003	56,307	2,553

Table C-1. (continued).

Date	Influent (WW-011501) (gpd[a])	Effluent (WW-0115-2) (gpd)[a]	Date	Influent (WW-011501) (gpd[a])	Effluent (WW-0115-2) (gpd)[a]
6/23/2003	47,768	4,428	7/24/2003	53,995	26,727
6/24/2003	64,720	31,078	7/25/2003	56,860	20,500
6/25/2003	50,565	30,429	7/26/2003	45,373	13,669
6/26/2003	48,941	31,999	7/27/2003	51,993	21,803
6/27/2003	42,112	25,550	7/28/2003	47,678	14,585
6/28/2003	40,264	14,444	7/29/2003	68,580	36,658
6/29/2003	38,569	11,124	7/30/2003	62,600	35,569
6/30/2003	33,739	9,341	7/31/2003	69,611	32,610
7/1/2003	49,279	17,301	8/1/2003	50,891	25,881
7/2/2003	57,730	20,800	8/2/2003	NR[i]	NR[i]
7/3/2003	48,499	18,053	8/3/2003	NR[i]	NR[i]
7/4/2003	46,360	15,218	8/4/2003	NR[i]	NR[i]
7/5/2003	43,011	12,360	8/5/2003	NR[i]	NR[i]
7/6/2003	51,360	10,308	8/6/2003	NR[i]	32,832
7/7/2003	45,122	9,296	8/7/2003	60,250	24,381
7/8/2003	53,472	21,702	8/8/2003	53,625	27,590
7/9/2003	51,153	13,547	8/9/2003	38,421	15,587
7/10/2003	49,357	21,181	8/10/2003	48,895	16,741
7/11/2003	50,378	23,737	8/11/2003	43,473	14,123
7/12/2003	53,297	12,827	8/12/2003	59,786	29,582
7/13/2003	32,882	7,018	8/13/2003	55,287	30,257
7/14/2003	34,188	1,010	8/14/2003	56,215	28,470
7/15/2003	47,573	17,403	8/15/2003	57,996	33,188
7/16/2003	48,743	22,604	8/16/2003	39,632	20,684
7/17/2003	49,314	18,678	8/17/2003	39,178	10,012
7/18/2003	44,682	15,925	8/18/2003	43,346	16,108
7/19/2003	26,900	9,865	8/19/2003	55,243	31,822
7/20/2003	28,521	5,995	8/20/2003	57,040	33,533
7/21/2003	32,398	4,089	8/21/2003	58,918	30,628
7/22/2003	55,052	27,386	8/22/2003	60,030	43,815
7/23/2003	56,147	27,399	8/23/2003	45,632	28,369

Table C-1. (continued).

Date	Influent (WW-011501) (gpd[a])	Effluent (WW-0115-2) (gpd)[a]	Date	Influent (WW-011501) (gpd[a])	Effluent (WW-0115-2) (gpd)[a]
8/24/2003	41,787	21,019	9/24/2003	45,104	19,127
8/25/2003	45,451	19,001	9/25/2003	41,070	18,449
8/26/2003	67,747	43,808	9/26/2003	39,631	18,293
8/27/2003	60,645	39,742	9/27/2003	30,717	8,043
8/28/2003	61,245	35,180	9/28/2003	24,067	5,107
8/29/2003	58,496	33,483	9/29/2003	29,247	4,939
8/30/2003	38,297	22,897	9/30/2003	48,683	19,265
8/31/2003	48,505	27,944	10/1/2003	45,342	20,124
9/1/2003	34,564	25,462	10/2/2003	41,487	21,260
9/2/2003	56,619	23,800	10/3/2003	NR[j]	37,003
9/3/2003	54,990	37,921	10/4/2003	NR[j]	5,462
9/4/2003	62,980	33,161	10/5/2003	NR[j]	9,574
9/5/2003	57,423	32,238	10/6/2003	NR[j]	10,125
9/6/2003	59,882	29,294	10/7/2003	NR[j]	30,602
9/7/2003	52,936	46,954	10/8/2003	NR[j]	32,892
9/8/2003	42,040	20,809	10/9/2003	NR[j]	35,053
9/9/2003	50,878	24,832	10/10/2003	40,275	31,913
9/10/2003	50,017	35,234	10/11/2003	44,720	18,651
9/11/2003	56,163	36,985	10/12/2003	41,208	15,981
9/12/2003	47,860	28,477	10/13/2003	44,744	13,406
9/13/2003	31,312	9,327	10/14/2003	60,670	34,506
9/14/2003	31,930	13,685	10/15/2003	60,160	35,501
9/15/2003	34,804	17,062	10/16/2003	56,489	30,993
9/16/2003	53,734	32,066	10/17/2003	47,912	30,540
9/17/2003	49,080	27,063	10/18/2003	36,301	16,086
9/18/2003	38,622	23,275	10/19/2003	35,662	13,955
9/19/2003	35,398	22,299	10/20/2003	38,617	12,682
9/20/2003	18,368	6,563	10/21/2003	48,790	26,442
9/21/2003	21,805	4,829	10/22/2003	50,146	28,392
9/22/2003	21,392	5,712	10/23/2003	68,125	36,293
9/23/2003	51,193	23,047	10/24/2003	64,314	35,172

Table C-1. (continued).

Date	Influent (WW-011501) (gpd[a])	Effluent (WW-0115-2) (gpd)[a]	Date	Influent (WW-011501) (gpd[a])	Effluent (WW-0115-2) (gpd)[a]
10/25/2003	58,905	29,178	10/29/2003	79,450	41,322
10/26/2003	65,563	32,468	10/30/2003	75,450	40,748
10/27/2003	61,192	31,897	10/31/2003	83,072	41,881
10/28/2003	70,763	39,485			

a. gpd—Gallons per day.

b. The south influent flow meter was out of service (OOS) from November 1, 2002, through February 12, 2003. Based on historical data and worst-case scenario calculations, the influent flow is estimated to be 68,514 gpd during November; 50,291 gpd during December; 52,583 during January; and 55,580 from February 1 through February 12.

c. NR—No flow reading available.

d. No influent reading was taken on December 13, 2002. Based on worst case scenario calculations, the influent flow is estimated to be is 53,860 gpd.

e. Effluent meter readings from March 29, 2003, through May 21, 2003 are suspect due to a leaking weir plate discharge valve. Based on historical data and worst-case scenario calculations, the effluent flow is estimated to be 29,157 gpd during this period.

f. No influent reading taken due to power outage. Based on worst case scenario calculations, the influent flow is estimated to be 43,381 gpd.

g. No influent reading taken due to work being performed on new power supply. Based on worst case scenario calculations, the influent flow is estimated to be 53,340 gpd.

h. No influent reading available due to the readings being incorrectly taking. Based on worst case scenario calculations, the influent flow is estimated to be 42,160 gpd for this period.

i. Flow meters were OOS due to a power outage. Based on historical data and worst-case scenario calculations, the influent flow is estimated to be 48,276 gpd during this period. Based on historical data and worst-case scenario calculations, the effluent flow is estimated to be 27,286 gpd during this period.

j. No influent reading taken due to power outage. Based on historical data and worst-case scenario calculations, the influent flow is estimated to be 51,347 gpd during this period.

The following tables (Tables C-2 through C-5) represent hardcopies of the electronic WLAP data files required by the DEQ (DEQ 2002a). Section 5, “Electronic Data Entry,” of DEQ 2002a, states “assemble data tables (electronic tables) with other parts of the annual report.” The following tables were first compiled as worksheets within the WLAP Data Entry for LA-115-2.xls file using Microsoft Excel 97. The individual worksheets were saved as text files and incorporated as tables in this appendix. Other than formatting to fit the page, and tabulating the data columns, no other formatting was performed. Columns for those parameters not required by the permit are not included in the tables, nor are rejected results shown in these data tables.

Table C-2. Hydraulic Worksheet from WLAP Data Entry for LA-115-2.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000115-02
Software and Version no.:-----> MS Excel 97 SR-2

HYDRAULIC APPLICATION RATE

				Suppl
	Month	Manage-	WW	Irrig W
Permit	(use 15th	ment	Applied	Applied
No.	as date)	Unit	(MG)	(MG)
permitno	month	mangunit	wwapp	irrwapp
LA-000115	11/15/02	MU-011501	0.21	
LA-000115	12/15/02	MU-011501	0.261	
LA-000115	01/15/03	MU-011501	0.219	
LA-000115	02/15/03	MU-011501	0.16	
LA-000115	03/15/03	MU-011501	0.127	
LA-000115	04/15/03	MU-011501	0.069	
LA-000115	05/15/03	MU-011501	0.081	
LA-000115	06/15/03	MU-011501	0.152	
LA-000115	07/15/03	MU-011501	0.142	
LA-000115	08/15/03	MU-011501	0.189	
LA-000115	09/15/03	MU-011501	0.133	
LA-000115	10/15/03	MU-011501	0.175	
LA-000115	11/15/02	MU-011502	0.223	
LA-000115	12/15/02	MU-011502	0.277	
LA-000115	01/15/03	MU-011502	0.165	
LA-000115	02/15/03	MU-011502	0.191	
LA-000115	03/15/03	MU-011502	0.135	
LA-000115	04/15/03	MU-011502	0.032	
LA-000115	05/15/03	MU-011502	0.01	
LA-000115	06/15/03	MU-011502	0.105	
LA-000115	07/15/03	MU-011502	0.213	
LA-000115	08/15/03	MU-011502	0.248	
LA-000115	09/15/03	MU-011502	0.123	
LA-000115	10/15/03	MU-011502	0.201	
LA-000115	11/15/02	MU-011503	0.285	
LA-000115	12/15/02	MU-011503	0.238	
LA-000115	01/15/03	MU-011503	0.165	
LA-000115	02/15/03	MU-011503	0.171	
LA-000115	03/15/03	MU-011503	0.071	
LA-000115	04/15/03	MU-011503	0.061	
LA-000115	05/15/03	MU-011503	0.031	
LA-000115	06/15/03	MU-011503	0.112	
LA-000115	07/15/03	MU-011503	0.109	
LA-000115	08/15/03	MU-011503	0.117	
LA-000115	09/15/03	MU-011503	0.228	
LA-000115	10/15/03	MU-011503	0.289	
LA-000115	11/15/02	MU-011504	0.276	
LA-000115	12/15/02	MU-011504	0.257	
LA-000115	01/15/03	MU-011504	0.266	
LA-000115	02/15/03	MU-011504	0.145	
LA-000115	03/15/03	MU-011504	0.085	
LA-000115	04/15/03	MU-011504	0.021	
LA-000115	05/15/03	MU-011504	0.033	
LA-000115	06/15/03	MU-011504	0.11	
LA-000115	07/15/03	MU-011504	0.091	
LA-000115	08/15/03	MU-011504	0.182	
LA-000115	09/15/03	MU-011504	0.169	
LA-000115	10/15/03	MU-011504	0.175	

Table C-2. (continued).

HYDRAULIC APPLICATION RATE

Note:
1. Dates here denote each month of the year.
2. These dates by convention shall be the 15th of the month.
3. Each twelve month cycle is repeated for each management unit.
4. If the management unit was not used for land application, enter all zeros.
5. For monthly date, use date function.
6. Do not change any protected cell.
3. Make sure units for data entered are consistent with units specified in column headings.

Table C-3. Groundwater Worksheet from WLAP Data Entry for LA-115-2.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000115-02
Software and Version no.:-----> MS Excel 97 SR-2

Ground Water Quality Data

				Static							
				Water						fecal	total
Permit	Sample	Sampling	Well	Level	chloride	nitrate	ammonium	TDS	BOD	coli	coli
No.	Date	Station	ID	(feet)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(count)	(count)
permitno	smpldate	station	wellid	wtrdepth	chloride	nitrate	ammonia	tds	bod	fecalcoli	totalcoli
LA-000115	04/15/03	03N 30E 19bda01	GW-011502	61.55	91.0	10.8	-0.100	422	3.8	0	0
LA-000115	04/14/03	03N 30E 19cac01	GW-011501	457.26	31.3	3.7	-0.100	261	2.5	0	0
LA-000115	04/14/03	03N 30E 19cac01	GW-011501	457.26	31.5	3.7	-0.100	214	2.8	0	0
LA-000115	04/15/03	03N 30E 18ccc01	GW-011503	460.92	12.2	0.70	-0.100	178	3.0	0	0
LA-000115	10/08/02	03N 30E 19bda01	GW-011502	63.8	139	5.8	-0.100	569	-2.0	2	500
LA-000115	10/21/02	03N 30E 19cac01	GW-011501	459.32	25.8	2.7	-0.100	254	-2.0	0	0
LA-000115	10/21/02	03N 30E 19cac01	GW-011501	459.32	25.8	2.6	-0.100	257	-2.0	0	0
LA-000115	10/08/02	03N 30E 18ccc01	GW-011503	460.94	12.0	0.70	-0.100	219	-2.0	0	0

Table C-3. (continued).

Ground Water Quality Data

				Static				
				Water	total			
Permit	Sample	Sampling	Well	Level	phos	TKN	nitrite	
No.	Date	Station	ID	(feet)	(ppm)	(ppm)	(ppm)	
permitno	smpldate	station	wellid	wtrdepth	phostot	tkn	nitrite	well name
LA-000115	04/15/03	03N 30E 19bda01	GW-011502	61.55	2.1	-0.90	-0.10	ICPP-MON-PW-024
LA-000115	04/14/03	03N 30E 19cac01	GW-011501	457.26	0.068	-0.90	-0.10	USGS-52
LA-000115	04/14/03	03N 30E 19cac01	GW-011501	457.26	0.085	-0.90	-0.10	USGS-52 (duplicate)
LA-000115	04/15/03	03N 30E 18ccc01	GW-011503	460.92	0.077	-0.90	-0.10	USGS-121
LA-000115	10/08/02	03N 30E 19bda01	GW-011502	63.8	2.4	-1.00	-0.10	ICPP-MON-PW-024
LA-000115	10/21/02	03N 30E 19cac01	GW-011501	459.32	-0.10	-1.00	-0.10	USGS-52
LA-000115	10/21/02	03N 30E 19cac01	GW-011501	459.32	-0.10	-1.00	-0.10	USGS-52 (duplicate)
LA-000115	10/08/02	03N 30E 18ccc01	GW-011503	460.94	-0.10	-1.00	-0.10	USGS-121

1. If a parameter was analyzed but not detected, put the method detection limit (MDL) preceeded by a minus (-) sign. Contact your laboratory for the MDL if not known.a -1.0
2. If a parameter was not analyzed, leave blank
3. Make sure units for data entered are consistent with units specified in column headings.
4. Bacteria are plate counts; pH in standard units; sp cond in umhos/cm; gross alpha & beta in pCi/L.
5. Alkalinity should be expressed as CaCO3; static water level in feet.
6. For Date field, utilize date cell.
7. All columns are formated for appropriate decimal places- do not modify.
8. Sample methods are listed in the DEQ "Handbook for Land Application of Municipal and Industrial Wasteawter", April 1996, page IV-99-1 through 10.
9. Do not change any protected cell. You may add parameters on right hand side of spreadsheet if needed. You may hide columns that are not typically used

Table C-4. Wastewater Worksheet from WLAP Data Entry for LA-115-2.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000115-02
Software and Version no.:-----> MS Excel 97 SR-2

Wastewater Quality Data

		Sampling	total	sp cond			total				No3-N +
Permit	Sample	Location	coli	(umhos/	chloride	TKN	phos	TSS	TDS	BOD	No2-N
No.	Date	(Station)	(count)	cm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
permitno	smpldate	station	wwtotalc	wwspcond	wwchloride	wwtkn	wwphostot	wwtss	wwtds	wwbod	wwnnn
LA-000115	11/20/02	WW-011501				27.2	3.75	228		81	0.096
LA-000115	12/03/02	WW-011501				36.2	5.05	260		137	0.209
LA-000115	01/29/03	WW-011501				29.2	5.87	236		169	0.302
LA-000115	02/19/03	WW-011501				48.5	5.12	132		137	0.365
LA-000115	03/25/03	WW-011501				36.4	5.79	133		135	0.309
LA-000115	04/16/03	WW-011501				36.8	5.35	195		180	0.245
LA-000115	05/15/03	WW-011501				68	8.79	280		365	0.144
LA-000115	06/11/03	WW-011501				46.5	6.92	163		879	0.21
LA-000115	07/08/03	WW-011501				65	6.17	55.2		122	0.073
LA-000115	07/08/03	WW-011501				65.4	6.56	92.2		121	0.071
LA-000115	08/14/03	WW-011501				52.9	5.83	175		255	0.133
LA-000115	09/03/03	WW-011501				41.9	6.32	164		162	0.073
LA-000115	10/01/03	WW-011501				73.4	10.4	388		534	0.156
LA-000115	11/20/02	WW-011502		918.2	136	12.5	3.64	18.6	483	10.9	3.2
LA-000115	11/21/02	WW-011502	1580								
LA-000115	12/03/02	WW-011502		874.5	154	14	3.14	107	663	9.23	3.61
LA-000115	12/04/02	WW-011502	940								
LA-000115	01/29/03	WW-011502	2700								
LA-000115	01/29/03	WW-011502		736	86.1	13.3	3.21	7.5	359	8.74	3
LA-000115	02/19/03	WW-011502	4300								
LA-000115	02/19/03	WW-011502		651	70	15.5	2.98	12.8	296	17.9	2.24
LA-000115	03/25/03	WW-011502		592.8	69	27.8	3.09	47.5	349	19.3	1.16

Table C-4. (continued).

Wastewater Quality Data

Permit No.	Sample Date	Sampling Location (Station)	total coli (count)	sp cond (umhos/ cm)	chloride (ppm)	TKN (ppm)	total phos (ppm)	TSS (ppm)	TDS (ppm)	BOD (ppm)	No3-N + No2-N (ppm)
permitno	smpldate	station	wwtotalc	wwspcond	wwchloride	wwtkn	wwphostot	wwtss	wwtds	wwbod	wwnnn
LA-000115	03/26/03	WW-011502	8000								
LA-000115	04/16/03	WW-011502	3000	632.7	78.2	7.7	3.02	27.7	450	35.6	1.09
LA-000115	05/13/03	WW-011502	50								
LA-000115	05/15/03	WW-011502		686.9	97.6	13.3	3.91	25.2	451	19.2	1.12
LA-000115	06/11/03	WW-011502		356.3	115	9.75	3.72	69.1	518	387	0.099
LA-000115	06/12/03	WW-011502	700								
LA-000115	07/08/03	WW-011502		877.4	151	12.7	2.95	67.8	573	27.4	0.262
LA-000115	07/08/03	WW-011502			152	15.1	3	67	574	25.4	0.268
LA-000115	07/10/03	WW-011502	100								
LA-000115	08/14/03	WW-011502	143	1045	181	12	4.19	10.6	681	29	0.433
LA-000115	09/03/03	WW-011502		997.6	173	12.1	3.97	22.6	640	27.1	2
LA-000115	09/04/03	WW-011502	7900								
LA-000115	10/01/03	WW-011502		960.2	162	9.97	4.29	33.5	873	18.3	0.484
LA-000115	10/02/03	WW-011502	840								

1. If a parameter was analyzed but not detected, put the method detection limit (MDL) preceeded by a minus (-) sign.. Contact your laboratory for the MDL if it is not known.
2. If a parameter was not analyzed, leave blank.
3. Make sure units for data entered are consistent with units specified in column headings.
4. Bacteria are plate counts; pH in standard units; sp cond in umhos/cm; gross alpha & beta in pCi/L.
5. Note also that alkalinity should be expressed as CaCO3.
6. For Date field, utilize a date cell.
7. All columns are formatted for appropriate decimal places - do not modify.
8. Do not change any protected cell. You may add parameter on right hand side of spreadsheet if needed.
9. You may hide columns that are not typically used.

Table C-5. Site Summary Worksheet from WLAP Data Entry for LA-115-2.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000115-02
Software and Version no.:-----> MS Excel 97 SR-2

Permitted Site Summary

			(2)
		(1)	WW
	Report-	WW	Application
Permit	ing	Applied	Season
No.	Year	MGA	(days)
permitno	repyear	wwgen	wwgenday
LA-000115	2003	7.53	365

(1) Total WW applied in million gallons per annum (MGA).
(2) Length of wastewater application season.

1. There should only be one entry for each permit number on this spreadsheet.
2. Make sure units for data entered are consistent with units specified in column headings.
3. All columns are formatted for the appropriate decimal places - do not modify.
4. Do not change any protected cell.

Appendix D

Test Area North/Technical Support Facility Sewage Treatment Plant Daily Effluent Flow Readings and Electronic Data Files

Appendix D

Test Area North/Technical Support Facility Sewage Treatment Plant Daily Effluent Flow Readings and Electronic Data Files

Table D-1. Test Area North/Technical Support Facility Sewage Treatment Plant daily effluent flows.

Date	Effluent (WW-15301) (gpd[a])	Date	Effluent (WW-15301) (gpd[a])
11/1/2002	7,000	11/26/2002	33,000
11/2/2002	13,000	11/27/2002	24,000
11/3/2002	12,000	11/28/2002	32,000
11/4/2002	30,000	11/29/2002	31,000
11/5/2002	41,000	11/30/2002	30,000
11/6/2002	26,000	12/1/2002	28,000
11/7/2002	23,000	12/2/2002	30,000
11/8/2002	31,000	12/3/2002	31,000
11/9/2002	21,000	12/4/2002	32,000
11/10/2002	28,000	12/5/2002	31,000
11/11/2002	5,000	12/6/2002	31,000
11/12/2002	17,000	12/7/2002	34,000
11/13/2002	23,000	12/8/2002	26,000
11/14/2002	11,000	12/9/2002	26,000
11/15/2002	16,000	12/10/2002	34,000
11/16/2002	20,000	12/11/2002	26,000
11/17/2002	27,000	12/12/2002	35,000
11/18/2002	21,000	12/13/2002	33,000
11/19/2002	30,000	12/14/2002	33,000
11/20/2002	30,000	12/15/2002	34,000
11/21/2002	31,000	12/16/2002	32,000
11/22/2002	19,000	12/17/2002	32,000
11/23/2002	25,000	12/18/2002	37,000
11/24/2002	29,000	12/19/2002	35,000
11/25/2002	25,000	12/20/2002	40,000

Table D-1. (continued).

Date	Effluent (WW-15301) (gpd[a])	Date	Effluent (WW-15301) (gpd[a])
12/21/2002	25,000	1/21/2003	31,000
12/22/2002	34,000	1/22/2003	36,000
12/23/2002	34,000	1/23/2003	31,000
12/24/2002	30,000	1/24/2003	29,000
12/25/2002	33,000	1/25/2003	37,000
12/26/2002	42,000	1/26/2003	28,000
12/27/2002	27,000	1/27/2003	32,000
12/28/2002	32,000	1/28/2003	35,000
12/29/2002	32,000	1/29/2003	34,000
12/30/2002	34,000	1/30/2003	35,000
12/31/2002	34,000	1/31/2003	32,000
1/1/2003	32,000	2/1/2003	30,000
1/2/2003	34,000	2/2/2003	31,000
1/3/2003	36,000	2/3/2003	32,000
1/4/2003	30,000	2/4/2003	38,000
1/5/2003	32,000	2/5/2003	35,000
1/6/2003	37,000	2/6/2003	35,000
1/7/2003	35,000	2/7/2003	37,000
1/8/2003	35,000	2/8/2003	31,000
1/9/2003	35,000	2/9/2003	33,000
1/10/2003	31,000	2/10/2003	34,000
1/11/2003	32,000	2/11/2003	31,000
1/12/2003	30,000	2/12/2003	34,000
1/13/2003	34,000	2/13/2003	35,000
1/14/2003	33,000	2/14/2003	33,000
1/15/2003	31,000	2/15/2003	30,000
1/16/2003	34,000	2/16/2003	28,000
1/17/2003	34,000	2/17/2003	33,000
1/18/2003	32,000	2/18/2003	33,000
1/19/2003	32,000	2/19/2003	32,000
1/20/2003	31,000	2/20/2003	32,000

Table D-1. (continued).

Date	Effluent (WW-15301) (gpd[a])	Date	Effluent (WW-15301) (gpd[a])
2/21/2003	34,000	3/24/2003	3,000[b]
2/22/2003	29,000	3/25/2003	4,000[b]
2/23/2003	30,000	3/26/2003	4,000[b]
2/24/2003	33,000	3/27/2003	2,000[b]
2/25/2003	33,000	3/28/2003	1,000[b]
2/26/2003	43,000	3/29/2003	NR[b,c]
2/27/2003	33,000	3/30/2003	1,000[b]
2/28/2003	26,000	3/31/2003	NR[b]
3/1/2003	33,000	4/1/2003	1,000[b]
3/2/2003	30,000	4/2/2003	1,000[b]
3/3/2003	35,000	4/3/2003	NR[b]
3/4/2003	30,000	4/4/2003	NR[b]
3/5/2003	30,000	4/5/2003	NR[b]
3/6/2003	35,000	4/6/2003	NR[b]
3/7/2003	32,000	4/7/2003	NR[b]
3/8/2003	28,000	4/8/2003	1,000[b]
3/9/2003	33,000	4/9/2003	NR[b]
3/10/2003	35,000	4/10/2003	NR[b]
3/11/2003	28,000	4/11/2003	NR[b]
3/12/2003	33,000	4/12/2003	1,000[b]
3/13/2003	31,000	4/13/2003	NR[b]
3/14/2003	29,000	4/14/2003	NR[b]
3/15/2003	26,000	4/15/2003	NR[b]
3/16/2003	29,000	4/16/2003	NR[b]
3/17/2003	28,000	4/17/2003	1,000[b]
3/18/2003	22,000	4/18/2003	NR[b]
3/19/2003	10,000[b]	4/19/2003	1,000[b]
3/20/2003	15,000[b]	4/20/2003	NR[b]
3/21/2003	3,000[b]	4/21/2003	2,000[b]
3/22/2003	9,000[b]	4/22/2003	NR[b]
3/23/2003	2,000[b]	4/23/2003	NR[b]

Table D-1. (continued).

Date	Effluent (WW-15301) (gpd[a])	Date	Effluent (WW-15301) (gpd[a])
4/24/2003	NR[b]	5/25/2003	NR[b]
4/25/2003	NR[b]	5/26/2003	NR[b]
4/26/2003	NR[b]	5/27/2003	NR[b]
4/27/2003	NR[b]	5/28/2003	NR[b]
4/28/2003	NR[b]	5/29/2003	NR[b]
4/29/2003	NR[b]	5/30/2003	NR[b]
4/30/2003	NR[b]	5/31/2003	NR[b]
5/1/2003	NR[b]	6/1/2003	NR[b]
5/2/2003	NR[b]	6/2/2003	NR[b]
5/3/2003	NR[b]	6/3/2003	NR[b]
5/4/2003	NR[b]	6/4/2003	NR[b]
5/5/2003	NR[b]	6/5/2003	NR[b]
5/6/2003	NR[b]	6/6/2003	NR[b]
5/7/2003	NR[b]	6/7/2003	NR[b]
5/8/2003	NR[b]	6/8/2003	NR[b]
5/9/2003	NR[b]	6/9/2003	NR[b]
5/10/2003	NR[b]	6/10/2003	NR[b]
5/11/2003	NR[b]	6/11/2003	NR[b]
5/12/2003	1,000[b]	6/12/2003	NR[b]
5/13/2003	NR[b]	6/13/2003	NR[b]
5/14/2003	NR[b]	6/14/2003	NR[b]
5/15/2003	NR[b]	6/15/2003	NR[b]
5/16/2003	NR[b]	6/16/2003	NR[b]
5/17/2003	NR[b]	6/17/2003	NR[b]
5/18/2003	NR[b]	6/18/2003	NR[b]
5/19/2003	NR[b]	6/19/2003	NR[b]
5/20/2003	NR[b]	6/20/2003	NR[b]
5/21/2003	NR[b]	6/21/2003	33,000
5/22/2003	NR[b]	6/22/2003	35,000
5/23/2003	NR[b]	6/23/2003	30,000
5/24/2003	NR[b]	6/24/2003	36,000

Table D-1. (continued).

Date	Effluent (WW-15301) (gpd[a])	Date	Effluent (WW-15301) (gpd[a])
6/25/2003	67,000[d]	7/26/2003	35,000
6/26/2003	44,000	7/27/2003	37,000
6/27/2003	30,000[e]	7/28/2003	36,000
6/28/2003	30,000[e]	7/29/2003	45,000
6/29/2003	32,000	7/30/2003	42,000
6/30/2003	30,000	7/31/2003	41,000
7/1/2003	40,000	8/1/2003	44,000
7/2/2003	36,000	8/2/2003	30,000
7/3/2003	34,000	8/3/2003	37,000
7/4/2003	32,000	8/4/2003	36,000
7/5/2003	33,000	8/5/2003	42,000
7/6/2003	34,000	8/6/2003	48,000
7/7/2003	33,000	8/7/2003	38,000
7/8/2003	35,000	8/8/2003	40,000
7/9/2003	37,000	8/9/2003	35,000
7/10/2003	36,000	8/10/2003	36,000
7/11/2003	35,000	8/11/2003	37,000
7/12/2003	26,000	8/12/2003	40,000
7/13/2003	25,000	8/13/2003	39,000
7/14/2003	29,000	8/14/2003	38,000
7/15/2003	39,000	8/15/2003	45,000
7/16/2003	36,000	8/16/2003	38,000
7/17/2003	46,000	8/17/2003	39,000
7/18/2003	46,000	8/18/2003	41,000
7/19/2003	35,000	8/19/2003	43,000
7/20/2003	32,000	8/20/2003	47,000
7/21/2003	37,000	8/21/2003	50,000
7/22/2003	45,000	8/22/2003	43,000
7/23/2003	46,000	8/23/2003	39,000
7/24/2003	42,000	8/24/2003	39,000
7/25/2003	41,000	8/25/2003	45,000

Table D-1. (continued).

Date	Effluent (WW-15301) (gpd[a])	Date	Effluent (WW-15301) (gpd[a])
8/26/2003	40,000	9/26/2003	34,000
8/27/2003	46,000	9/27/2003	30,000
8/28/2003	44,000	9/28/2003	29,000
8/29/2003	43,000	9/29/2003	27,000
8/30/2003	39,000	9/30/2003	30,000
8/31/2003	37,000	10/1/2003	33,000
9/1/2003	38,000	10/2/2003	31,000
9/2/2003	39,000	10/3/2003	31,000
9/3/2003	42,000	10/4/2003	32,000
9/4/2003	42,000	10/5/2003	29,000
9/5/2003	43,000	10/6/2003	30,000
9/6/2003	42,000	10/7/2003	30,000
9/7/2003	41,000	10/8/2003	31,000
9/8/2003	40,000	10/9/2003	32,000
9/9/2003	40,000	10/10/2003	31,000
9/10/2003	41,000	10/11/2003	28,000
9/11/2003	34,000	10/12/2003	30,000
9/12/2003	32,000	10/13/2003	28,000
9/13/2003	28,000	10/14/2003	32,000
9/14/2003	30,000	10/15/2003	35,000
9/15/2003	29,000	10/16/2003	31,000
9/16/2003	33,000	10/17/2003	30,000
9/17/2003	32,000	10/18/2003	28,000
9/18/2003	33,000	10/19/2003	30,000
9/19/2003	29,000	10/20/2003	29,000
9/20/2003	29,000	10/21/2003	33,000
9/21/2003	30,000	10/22/2003	29,000
9/22/2003	27,000	10/23/2003	32,000
9/23/2003	33,000	10/24/2003	28,000
9/24/2003	26,000	10/25/2003	26,000
9/25/2003	35,000	10/26/2003	29,000

Table D-1. (continued).

Date	Effluent (WW-15301) (gpd[a])	Date	Effluent (WW-15301) (gpd[a])
10/27/2003	26,000	10/30/2003	29,000
10/28/2003	34,000	10/31/2003	31,000
10/29/2003	29,000		

a. gpd—Gallons per day.

b. Effluent flow meter readings are suspect from March 19, 2003, through June 20, 2003, when the flow meter was replaced. Based on historical data and worst-case scenario calculations, the effluent flow is estimated to be 30,400 gpd during this period.

c. NR—No flow reading available.

d. The high flow on June 25, 2003, was the result of a complete water outage occurring on that day, in which all water hydrants were opened to allow for the lines to drain.

e. Effluent flows shown are the average of the flow from June 28, 2003, because no flow readings were taken on June 27, 2003.

The following tables (Tables D-2 through D-5) represent hardcopies of the electronic WLAP data files required by the DEQ (DEQ 2002a). Section 5, "Electronic Data Entry," of DEQ 2002a, states "assemble data tables (electronic tables) with other parts of the annual report." The following tables were first compiled as worksheets within the WLAP Data Entry for LA-153-1.xls file using Microsoft Excel 97. The individual worksheets were saved as text files and incorporated as tables in this appendix. Other than formatting to fit the page, and tabulating the data columns, no other formatting was performed. Columns for those parameters not required by the permit are not included in the tables, nor are rejected results shown in these data tables.

Table D-2. Hydraulic Worksheet from WLAP Data Entry for LA-153-1.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000153-01
Software and Version no.:-----> MS Excel 97 SR-2

HYDRAULIC APPLICATION RATE

Permit No.	Month (use 15th as date)	Manage- ment Unit	WW Applied (MG)	Suppl Irrig W Applied (MG)
permitno	month	mangunit	wwapp	irrwapp
LA-000153	11/15/2002	MU-015301	0.71	
LA-000153	12/15/2002	MU-015301	1.00	
LA-000153	01/15/2003	MU-015301	1.02	
LA-000153	02/15/2003	MU-015301	0.92	
LA-000153	03/15/2003	MU-015301	0.60	
LA-000153	04/15/2003	MU-015301	0.01	
LA-000153	05/15/2003	MU-015301	0.00	
LA-000153	06/15/2003	MU-015301	0.37	
LA-000153	07/15/2003	MU-015301	1.15	
LA-000153	08/15/2003	MU-015301	1.26	
LA-000153	09/15/2003	MU-015301	1.02	
LA-000153	10/15/2003	MU-015301	0.94	

Note:
1. Dates here denote each month of the year.
2. These dates by convention shall be the 15th of the month.
3. Each twelve month cycle is repeated for each management unit.
4. If the management unit was not used for land application, enter all zeros.
5. For monthly date, use date function.
6. Do not change any protected cell.
3. Make sure units for data entered are consistent with units specified in column headings.

Table D-3. Groundwater Worksheet from WLAP Data Entry for LA-153-1.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000153-01
Software and Version no.:-----> MS Excel 97 SR-2

Ground Water Quality Data

				Static								
				Water								
Permit	Sample	Sampling	Well	Level	sulfate	chloride	nitrate	ammonium	Fe	Mn	Na	TDS
No.	Date	Station	ID	(feet)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
permitno	smpldate	station	wellid	wtrdepth	sulfate	chloride	nitrate	ammonia	irontotal	mangtotal	sodium	tds
LA-000153	04/21/03	06N 31E 14aad01	GW-015301	206.31	32.8	121	0.83	-0.10	0.0356	-0.0025	7.56	248
LA-000153	04/21/03	06N 31E 14dad01	GW-015304	210.73	13.3	3.6	0.48	-0.10	0.172	0.0039	5.49	225
LA-000153	04/21/03	06N 31E 14dad01	GW-015304	210.73	13.4	3.1	0.51	-0.10	0.158	0.0034	5.56	216
LA-000153	04/16/03	06N 31E 13cba01	GW-015303	206.93	39.6	101	1.1	-0.10	0.433	0.0082	51.9	424
LA-000153	04/16/03	06N 31E 13cca01	GW-015302	209.35	14.2	7.2	0.40	-0.10	0.0387	-0.0025	5.63	147
LA-000153	10/14/03	06N 31E 14aad01	GW-015301	207.96	30.8	10.9	0.79	-0.10	0.0538	-0.0025	7.14	225
LA-000153	10/14/03	06N 31E 14dad01	GW-015304	211.41	14.0	3.3	0.50	-0.10	0.0935	-0.0025	5.87	196
LA-000153	10/14/03	06N 31E 14dad01	GW-015304	211.41	13.6	3.2	0.52	-0.10	0.0777	-0.0025	5.83	188
LA-000153	10/01/03	06N 31E 13cba01	GW-015303	209.79	39.5	99.6	0.83	-0.10	1.07	0.0111	48.6	479
LA-000153	10/01/03	06N 31E 13cca01	GW-015302	209.05	13.8	3.2	0.40	-0.10	0.0932	-0.0025	5.54	95

				Static								
				Water		fecal	total		total			
Permit	Sample	Sampling	Well	Level	BOD	coli	coli	fluoride	phos	TKN	Hg	nitrite
No.	Date	Station	ID	(feet)	(ppm)	(count)	(count)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
permitno	smpldate	station	wellid	wtrdepth	bod	fecalcoli	totalcoli	fluoride	phostot	tkn	mercury	nitrite
LA-000153	04/21/03	06N 31E 14aad01	GW-015301	206.31	2.9	0	0	0.16	0.084	-0.90	-0.0002	-0.1
LA-000153	04/21/03	06N 31E 14dad01	GW-015304	210.73	2.6	0	0	0.18	-0.030	-1.8	-0.0002	-0.1
LA-000153	04/21/03	06N 31E 14dad01	GW-015304	210.73	2.8	0	0	0.19	0.084	-1.8	-0.0002	-0.1
LA-000153	04/16/03	06N 31E 13cba01	GW-015303	206.93	3.1	0	0	0.11	0.21	-1.8	-0.0002	-0.1
LA-000153	04/16/03	06N 31E 13cca01	GW-015302	209.35	-2.0	0	0	0.18	-0.030	-0.90	-0.0002	-0.1
LA-000153	10/14/03	06N 31E 14aad01	GW-015301	207.96	-2.0	0	4	0.17	0.12	2.2	-0.0002	-0.1
LA-000153	10/14/03	06N 31E 14dad01	GW-015304	211.41	-2.0	0	17	0.16	-0.10	2.0	-0.0002	-0.1
LA-000153	10/14/03	06N 31E 14dad01	GW-015304	211.41	-2.0	0	26	0.12	-0.10	1.7	-0.0002	-0.1
LA-000153	10/01/03	06N 31E 13cba01	GW-015303	209.79	-2.0	0	0	0.17	-0.10	-1.0	-0.0002	-0.1
LA-000153	10/01/03	06N 31E 13cca01	GW-015302	209.05	-2.0	0	72	0.21	-0.50	-1.0	-0.0002	-0.1

Table D-3. (continued).
Ground Water Quality Data

				Static Water Level (feet)	As (ppm)	Cr (ppm)	Se (ppm)	Ba (ppm)	Pb (ppm)	Zn (ppm)	
Permit No.	Sample Date	Sampling Station	Well ID								
permitno	smpldate	station	wellid	wtrdepth	arsenic	chromium	selinium	barium	lead	zinc	well name
LA-000153	04/21/03	06N 31E 14aad01	GW-015301	206.31	-0.0025	0.0043	-0.0025	0.0806	-0.0015	0.0506	TANT-MON-A-001
LA-000153	04/21/03	06N 31E 14dad01	GW-015304	210.73	0.0027	0.0089	-0.0025	0.0800	-0.0015	0.201	TANT-MON-A-002
LA-000153	04/21/03	06N 31E 14dad01	GW-015304	210.73	-0.0025	0.0057	-0.0025	0.0796	-0.0015	0.188	TANT-MON-A-002 (duplicate)
LA-000153	04/16/03	06N 31E 13cba01	GW-015303	206.93	-0.0025	-0.0025	-0.0025	0.241	-0.0015	0.0291	TAN-10A
LA-000153	04/16/03	06N 31E 13cca01	GW-015302	209.35	-0.0025	0.0044	-0.0025	0.0752	-0.0015	0.171	TAN-13A
LA-000153	10/14/03	06N 31E 14aad01	GW-015301	207.96	0.0027	0.0042	-0.0025	0.078	-0.0015	0.0398	TANT-MON-A-001
LA-000153	10/14/03	06N 31E 14dad01	GW-015304	211.41	0.0027	0.0079	-0.0025	0.0773	-0.0015	0.107	TANT-MON-A-002
LA-000153	10/14/03	06N 31E 14dad01	GW-015304	211.41	0.0038	0.0064	-0.0025	0.0769	-0.0015	0.103	TANT-MON-A-002 (duplicate)
LA-000153	10/01/03	06N 31E 13cba01	GW-015303	209.79	-0.0025	-0.0025	-0.0025	0.242	-0.0015	0.0226	TAN-10A
LA-000153	10/01/03	06N 31E 13cca01	GW-015302	209.05	-0.0025	0.0058	-0.0025	0.0748	-0.0015	0.174	TAN-13A

1. If a parameter was analyzed but not detected, put the method detection limit (MDL) preceeded by a minus (-) sign. Contact your laboratory for the MDL if not known.a -1.0
2. If a parameter was not analyzed, leave blank
3. Make sure units for data entered are consistent with units specified in column headings.
4. Bacteria are plate counts; pH in standard units; sp cond in umhos/cm; gross alpha & beta in pCi/L.
5. Alkalinity should be expressed as CaCO3; static water level in feet.
6. For Date field, utilize date cell.
7. All columns are formated for appropriate decimal places- do not modify.
8. Sample methods are listed in the DEQ "Handbook for Land Application of Municipal and Industrial Wasteawter", April 1996, page IV-99-1 through 10.
9. Do not change any protected cell. You may add parameters on right hand side of spreadsheet if needed. You may hide columns that are not typically used

Table D-4. Wastewater Worksheet from WLAP Data Entry for LA-153-1.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000153-01
Software and Version no.:-----> MS Excel 97 SR-2

Wastewater Quality Data

		Sampling	total					total			
Permit	Sample	Location	coli	chloride	TKN	ammonium	Na	phos	TSS	TDS	BOD
No.	Date	(Station)	(count)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
permitno	smpldate	station	wwtotalc	wwchloride	wwtkn	wwammonia	wwsodium	wwphostot	wwtss	wwtds	wwbod
LA-000153	11/14/02	WW-015301	80000								
LA-000153	11/14/02	WW-015301		323	3.49	2.55	177	0.722	13.6	798	15.2
LA-000153	12/17/02	WW-015301		136	1.13	0.053	83	2.18	-4	496	7.19
LA-000153	12/17/02	WW-015301		138	1.16	0.058	83.6	2.22	-4	489	7.4
LA-000153	12/19/02	WW-015301	90000								
LA-000153	01/15/03	WW-015301		196	2.14	0.709	122	0.557	5.3	412	15.6
LA-000153	01/15/03	WW-015301		198	2.41	0.715	120	0.566	6	438	13.7
LA-000153	01/16/03	WW-015301	80000								
LA-000153	02/26/03	WW-015301		108	3.53	0.405	93.4	0.207	-4	485	8.42
LA-000153	02/27/03	WW-015301	79000								
LA-000153	03/11/03	WW-015301		245	2	0.76	137	0.545	5.3	962	12.1
LA-000153	03/13/03	WW-015301	80000								
LA-000153	04/02/03	WW-015301		19.3	2.49	0.544	19.1	0.536	5.1	260	7.21
LA-000153	04/03/03	WW-015301	80000								
LA-000153	05/20/03	WW-015301		31.6	3.54	1.07	22.9	0.573	8.8	333	10.9
LA-000153	05/22/03	WW-015301	80000								
LA-000153	06/26/03	WW-015301	60000								
LA-000153	06/26/03	WW-015301		19.5	8.02	0.942	8.69	0.507	8.6	264	10.6
LA-000153	07/24/03	WW-015301	53000								
LA-000153	07/24/03	WW-015301		19.3	2.73	1	10.6	0.644	-4	262	7.19
LA-000153	08/05/03	WW-015301		19.6	2.05	0.698	9.67	0.555	10.1	284	11.7
LA-000153	08/07/03	WW-015301	80000								
LA-000153	09/17/03	WW-015301	80000								
LA-000153	09/18/03	WW-015301		24.8	4.99	1.78	10.5	0.731	9.2	306	7.75
LA-000153	10/22/03	WW-015301	160000								
LA-000153	10/22/03	WW-015301		47.1	3	1.06	26.1	0.755	7.7	285	12.6

Table D-4. (continued).
Wastewater Quality Data

		Sampling	fecal				nitrate+				
Permit	Sample	Location	coli	fluoride	Fe	Mn	nitrite	arsenic	barium	chromium	lead
No.	Date	(Station)	(count)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
permitno	smpldate	station	wwfecalc	wwflride	wwiron	wwmn	wwnnn	wwarsenic	wwbarium	wwchrom	wwlead
LA-000153	11/14/02	WW-015301	45000								
LA-000153	11/14/02	WW-015301		0.227	0.16	0.01	3.87	-0.003	0.122	0.003	0.003
LA-000153	12/17/02	WW-015301		0.201	0.065	0.003	1.3	-0.003	0.094	0.003	-0.002
LA-000153	12/17/02	WW-015301		-0.2	0.057	0.003	1.31	-0.003	0.095	0.003	-0.002
LA-000153	12/19/02	WW-015301	23000								
LA-000153	01/15/03	WW-015301		0.253	0.153	0.004	4	-0.003	0.097	0.003	-0.002
LA-000153	01/15/03	WW-015301		0.247	0.155	0.004	4.01	-0.003	0.098	0.003	-0.002
LA-000153	01/16/03	WW-015301	5000								
LA-000153	02/26/03	WW-015301		0.276	0.137	0.005	4.09	-0.003	0.092	0.003	0.001
LA-000153	02/27/03	WW-015301	5600								
LA-000153	03/11/03	WW-015301		0.23	0.184	0.005	3.84	0.003	0.114	-0.003	-0.0004
LA-000153	03/13/03	WW-015301	79000								
LA-000153	04/02/03	WW-015301		0.236	0.101	0.004	2.65	0.003	0.092	0.003	0.0004
LA-000153	04/03/03	WW-015301	34000								
LA-000153	05/20/03	WW-015301		-0.2	0.175	0.006	3.24	0.004	0.097	0.004	0.001
LA-000153	05/22/03	WW-015301	42000								
LA-000153	06/26/03	WW-015301	25000								
LA-000153	06/26/03	WW-015301		0.228	0.125	0.004	3.09	-0.003	0.091	0.003	0.001
LA-000153	07/24/03	WW-015301	14000								
LA-000153	07/24/03	WW-015301		0.239	0.091	0.003	4.07	-0.003	0.097	-0.003	-0.0004
LA-000153	08/05/03	WW-015301		0.237	0.112	0.003	2.71	-0.003	0.096	-0.003	-0.001
LA-000153	08/07/03	WW-015301	46000								
LA-000153	09/17/03	WW-015301	60000								
LA-000153	09/18/03	WW-015301		0.233	0.131	0.004	5.07	0.005	0.103	0.003	-0.001
LA-000153	10/22/03	WW-015301	76000								
LA-000153	10/22/03	WW-015301		0.242	0.178	0.004	4.35	-0.003	0.1	0.004	0.001

Table D-4. (continued).
Wastewater Quality Data

Permit No.	Sample Date	Sampling Location (Station)	mercury (ppm)	selenium (ppm)	sulfate (ppm)	zinc (ppm)					
permitno	smpldate	station	wwmercury	wwselen	wwsulfate	wwzinc					
LA-000153	11/14/02	WW-015301									
LA-000153	11/14/02	WW-015301	-0.0002	0.001	43.5	0.06					
LA-000153	12/17/02	WW-015301	-0.0002	0.002	37.7	0.018					
LA-000153	12/17/02	WW-015301	-0.0002	0.003	37.9	0.017					
LA-000153	12/19/02	WW-015301									
LA-000153	01/15/03	WW-015301	-0.0002	0.003	43.7	0.034					
LA-000153	01/15/03	WW-015301	-0.0002	0.001	43.4	0.044					
LA-000153	01/16/03	WW-015301									
LA-000153	02/26/03	WW-015301	-0.0002	-0.002	43.9	0.025					
LA-000153	02/27/03	WW-015301									
LA-000153	03/11/03	WW-015301	-0.0002	-0.002	42.4	0.03					
LA-000153	03/13/03	WW-015301									
LA-000153	04/02/03	WW-015301	-0.0002	-0.002	36.6	0.029					
LA-000153	04/03/03	WW-015301									
LA-000153	05/20/03	WW-015301	-0.0002	-0.002	37.7	0.033					
LA-000153	05/22/03	WW-015301									
LA-000153	06/26/03	WW-015301									
LA-000153	06/26/03	WW-015301	-0.0002	-0.002	36.3	0.028					
LA-000153	07/24/03	WW-015301									
LA-000153	07/24/03	WW-015301	-0.0002	-0.002	35.6	0.023					
LA-000153	08/05/03	WW-015301	-0.0002	-0.002	36.3	0.022					
LA-000153	08/07/03	WW-015301									
LA-000153	09/17/03	WW-015301									
LA-000153	09/18/03	WW-015301	-0.0002	-0.002	35.6	0.024					
LA-000153	10/22/03	WW-015301									
LA-000153	10/22/03	WW-015301	-0.0002	-0.002	38.4	0.034					

1. If a parameter was analyzed but not detected, put the method detection limit (MDL) preceeded by a minus (-) sign.. Contact your laboratory for the MDL if it is not known.
2. If a parameter was not analyzed, leave blank.
3. Make sure units for data entered are consistent with units specified in column headings.
4. Bacteria are plate counts; pH in standard units; sp cond in umhos/cm; gross alpha & beta in pCi/L.
5. Note also that alkalinity should be expressed as CaCO3.
6. For Date field, utilize a date cell.
7. All columns are formatted for appropriate decimal places - do not modify.
8. Do not change any protected cell. You may add parameter on right hand side of spreadsheet if needed.
9. You may hide columns that are not typically used.

Table D-5. Site Summary Worksheet from WLAP Data Entry for LA-153-1.XLS

LAND APPLICATION OF WASTEWATER PROGRAM
ANNUAL REPORT FORMS For Reporting Year -> 2002-2003
WLAP Permit No.--> LA-000153-01
Software and Version no.:-----> MS Excel 97 SR-2

Permitted Site Summary

			(2)
		(1)	WW
	Report-	WW	Application
Permit	ing	Applied	Season
No.	Year	MGA	(days)
permitno	repyear	wwgen	wwgenday
LA-000153	2003	8.98	365

(1) Total WW applied in million gallons per annum (MGA).
(2) Length of wastewater application season.

1. There should only be one entry for each permit number on this spreadsheet.
2. Make sure units for data entered are consistent with units specified in column headings.
3. All columns are formatted for the appropriate decimal places - do not modify.
4. Do not change any protected cell.