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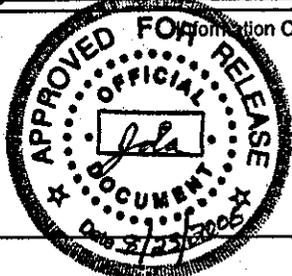
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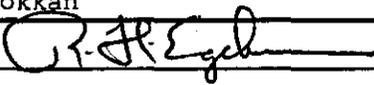
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EXECUTIVE SUMMARY

This report fulfills the annual environmental data reporting requirements of U.S. Department of Energy (DOE) Orders 5400.5, *Radiation Protection of the Public and the Environment*, and 450.1, *Environmental Protection Program*, as well as DOE Manual 231.1, *Environment, Safety and Health Reporting Manual*. The report contains data summaries on radioactive and nonradioactive hazardous air emissions and liquid effluents released to the environment as well as nonroutine releases during calendar year 2005. These releases were from facilities and activities managed by Bechtel Hanford, Inc. (BHI), Bechtel National, Inc. (BNI), CH2M HILL Hanford Group, Inc. (CH2M HILL), Johnson Controls, Inc. (JCI), Fluor Hanford, Inc. (FH), and Washington Closure Hanford, LLC (WCH). The releases were estimated from direct sampling and the resulting analysis data; calculations based upon approved release factors; and inventory records. This report was prepared in accordance with 10 CFR 830, *Nuclear Safety Management*; DOE Order 414.1A, *Quality Assurance*, "Contractor Requirements Document"; and NQA-1, *Quality Assurance Requirements for Nuclear Facility Application*.

This report further serves as a supplemental, detailed resource to the *Hanford Site Environmental Report for Calendar Year 2005* (HSER; PNNL-15892), published by the Pacific Northwest National Laboratory. The HSER includes a yearly accounting of the impacts on the surrounding populace and environment from major activities at the Hanford Site, while also summarizing the regulatory compliance status of the Site.

Tables ES-1 through ES-4 display data summaries of air emissions and liquid effluents during 2005. The data displayed in these tables consist of the following information:

- Radionuclide air emissions (refer to Table ES-1)
- Nonradioactive air emissions (refer to Table ES-2)
- Radionuclides in liquid effluents discharged to ground (refer to Table ES-3)
- Radionuclides discharged to the Columbia River (refer to Table ES-4).

Table ES-1. Radionuclide Air Emissions from Facilities
Managed by BHI, CH2M HILL, FH, and WCH during 2005.

Radionuclide	Release, CI ^a
⁹⁰ Sr	8.4 E-05
¹²⁹ I	1.3 E-03
¹³⁷ Cs	4.5 E-05
¹⁵⁵ Eu	3.9 E-08
²³⁸ Pu	3.2 E-06
^{239/240} Pu	8.1 E-05
²⁴¹ Pu	1.9 E-04
²⁴¹ Am	2.9 E-05

^a 1 curie = 3.7 E+10 becquerels/sec.

^b HTO = tritiated water.

Table ES-2. Nonradioactive Constituents in Air Emissions from Facilities Managed by BHI, CH2M HILL, FH, and WCH during 2005.

Constituent	Quantities, lb (kg)
Particulate matter total	14,000 (6,500)
Particulate matter-10 μm	6,200 (2,800)
Particulate matter-2.5 μm	2,200 (1,000)
Sulfur oxides (SO _x)	6,600 (3,000)
Nitrogen oxides (NO _x)	27,000 (12,000)
Carbon monoxide (CO)	31,000 (14,000)
Volatile organic compounds ^{a, b}	30,000 (14,000)
Ammonia ^c	25,000 (12,000)
Lead	1.0 (0.47)
Other toxic air pollutants ^d	14,000 (6,600)

^a The estimate of volatile organic compounds does not include emissions from certain laboratory operations.

^b Produced from burning fossil fuel for steam and electrical generators and calculated estimates from the 200-East and 200-West Areas tank farms, evaporative losses from fuel dispensing, operation of the 242-A Evaporator, the 200 Area Effluent Treatment Facility, the Central Waste Complex, the T Plant Complex, and the Waste Receiving and Processing Facility.

^c Ammonia releases are calculated estimates from the 200-East Area and 200-West Areas tank farms and operation of the 242-A Evaporator and the 200 Area Effluent Treatment Facility.

^d Releases are a composite of calculated estimates of toxic air pollutants, excluding ammonia, from the 200-East and 200-West Areas tank farms, operation of the 242-A Evaporator, the 200 Area Effluent Treatment Facility, the Central Waste Complex, the T Plant Complex, and the Waste Receiving and Processing Facility. Toxic air pollutant emissions, excluding ammonia, are a subset of volatile organic compound emissions and included in the total of those emissions.

Table ES-3. Radionuclides in Liquid Effluents Discharged to the State-Approved Land Disposal Site^a Managed by FH during 2005.

Effluent Source	Average flow rate, gpm (Lpm)	Volume, gal (L) ^b	Radionuclide	Release, Ci ^c
200 Area Effluent Treatment Facility	11.5 (43)	6.0 E+06 (2.3 E+07)	³ H	2.3

^a The State-Approved Land Disposal Site is also known as the 616-A Crib.

^b 1 gal = 3.785 L

^c Ci = 3.7 E+10 becquerels/sec.

Table ES-4. Radionuclides in Liquid Effluents
Discharged to the Columbia River from Facilities
Managed by BHL, FH, and WCH during 2005.

Radionuclide	Release, Ci ^a
³ H	7.5 E-03
⁹⁰ Sr	6.4 E-04
¹²⁵ Sb	4.7 E-03
¹³⁷ Cs	4.1 E-03
¹⁵² Eu	8.5 E-03
¹⁵⁴ Eu	3.5 E-03
²³⁸ Pu	5.3 E-06
^{239/240} Pu	2.7 E-05

^a 1 curie = 3.7 E+10 becquerels/sec.

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GLOSSARY

AOP	Air Operating Permit
BNI	Bechtel National, Inc.
BHI	Bechtel Hanford, Inc.
BOD	biological oxygen dependence
Bq	becquerel
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
CFR	Code of Federal Regulations
CH2M HILL	CH2M HILL Hanford Group, Inc.
Ci	curie
DCG	derived concentration guide
DL	detection limit
DOE	U.S. Department of Energy
DOE-RL	U.S. Department of Energy, Richland Operations Office
Ecology	State of Washington Department of Ecology
EDE	effective dose equivalent
EDP	electronic data processing [code]
EP	external publication
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
ESPC	energy savings performance contract
ETF	Effluent Treatment Facility
FH	Fluor Hanford, Inc.
FFTF	Fast Flux Test Facility
ft ³	cubic foot
gal	gallons as in gallons per minute
HEHF	Hanford Environmental Health Foundation
HEPA	high-efficiency particulate air [filter]
HSER	Hanford Site Environmental Report
HT	tritium gas
HTO	tritiated water
kg	kilogram
L	liter
LWDF	Liquid Waste Disposal Facility

GLOSSARY (cont)

m ³	cubic meter
MASF	Maintenance and Storage Facility
MEI	maximally exposed individual
μCi	microcurie
μSv	microsievert
ml	milliliter
mrem	millirem (unit of dose)
MSGP	multi-sector general permit
ND	no discharge
NPDES	National Pollutant Discharge Elimination System
NM	not measured
NQ	not quantifiable
PCB	polychlorinated biphenyl
pCi	picocurie
PFPP	Plutonium Finishing Plant
PHMC	Project Hanford Management Contract
PNNL	Pacific Northwest National Laboratory
POTW	publicly owned treatment works
PM _{2.5}	particulate matter with a diameter of 2.5 μm
PM ₁₀	particulate matter with a diameter of 10 μm
ppm	parts per million
PSD	Prevention of Significant Deterioration
PUREX	plutonium-uranium extraction
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
REDOX	reduction-oxidation
RQ	reportable quantity
SALDS	State-Approved Land Disposal Site
TEDF	Treated Effluent Disposal Facility
TRIGA	Test Reactor and Isotope Production, General Atomics
TRU	transuranic
TRUSAF	224-T Transuranic Waste Storage and Assay Facility
UO ₃	uranium trioxide
WAC	Washington Administrative Code
WCH	Washington Closure Hanford, LLC
WDOH	Washington State Department of Health
WESF	Waste Encapsulation Storage Facility
WMH	Waste Management Federal Services of Hanford, Incorporated
WRAP	Waste Receiving and Processing Facility
WSCF	Waste Sampling and Characterization Facility
WTP	Hanford Tank Waste Treatment and Immobilization Plant

ENVIRONMENTAL RELEASES FOR CALENDAR YEAR 2005

1.0 INTRODUCTION

Bechtel Hanford, Inc. (BHI), CH2M HILL Hanford Group, Inc. (CH2M Hill), Bechtel National, Inc. (BNI), Fluor Hanford, Inc. (FH), and Washington Closure Hanford, LLC (WCH), are responsible for monitoring radioactive and nonradioactive material in environmental air emission and liquid effluent releases from the U.S. Department of Energy (DOE) Hanford Site facilities. This report documents releases during calendar year 2005, thereby fulfilling reporting requirements of DOE Orders 450.1, 5400.5, as well as DOE Manual 231.1. Release data are presented in both summary and in detailed tabular forms.

This report also supplements information in the *Hanford Site Environmental Report for Calendar Year 2005* (HSER; PNNL-15892), published by Battelle's Pacific Northwest National Laboratory (PNNL). The HSER report details PNNL effluent releases and contains a public accounting of Hanford Site activities that affect the environment, as well as a summary of the compliance status of Hanford Site with environmental regulations.

1.1 TYPES AND LOCATIONS OF RELEASES

Radioactive air emissions were released during 2005 from facilities and activities in the 100, 200, 300, 400, and 600 Areas of the Hanford Site. Radioactive liquid effluents were discharged to the soil in the 600 Area and to the Columbia River along the riverbank bordering the 100-K and 100-N Areas. The N Springs along the 100-N Area shoreline contributed a small amount of radioactive material to the Columbia River. The material originated from past N Reactor wastewater discharges to an engineered ground disposal facility and migrated to the river via the groundwater.

Nonradioactive air emissions of industrial origin at Hanford during 2005 are (1) fossil-fuel combustion emissions from the operation of package boilers; (2) fossil-fuel combustion emissions from generators and (3) emissions of nitrogen oxides, ammonia, and volatile organic compounds from the 242-A Evaporator, the 200 Area Effluent Treatment Facility (ETF), and tanks containing radioactive liquid waste. Most of these sources are located in the 200 and 300 Areas.

Nonradioactive process wastewater in the 200 Area is sent to the 200 Area Treated Effluent Disposal Facility (TEDF) for discharge to ground by way of two percolation basins. Radioactive wastewater from many Hanford Site sources is treated at 200 Area ETF and then discharged to ground at the State Approved Land Disposal Site (SALDS). Wastewater generated in the 300 Area is sent to the 300 Area TEDF for treatment before being discharged to the Columbia River via a permitted outfall. The 100-N Sewage Treatment Lagoon receives sanitary wastewater from 100-N facilities and from failed septic systems in the 100-K and 200 Areas. Sanitary wastewater in the 100-DR and 100-K Areas is discharged into septic tanks or to drain fields. In the 200 Areas, sanitary wastewater is discharged to several septic tanks or subsurface disposal systems located there. Sanitary wastewater in the 300 Area is discharged to the city of Richland's publicly owned treatment works (POTW). Sanitary wastewater in the 400 Area is discharged to the Columbia Generating Station sewage treatment plant.

1.2 ENVIRONMENTAL RELEASE LIMITS AND GUIDELINES

This section presents relevant environmental release standards for radiological and nonradiological constituents. These standards are applicable to the release and environmental transport of constituents and are important to (1) demonstrate compliance with any issued federal, state, or local permits and to (2) demonstrate compliance with any federal, state, or local regulations, or guidelines prescribed by the U.S. Department of Energy, Richland Operations Office (DOE-RL).

The HSER (PNNL-15892) contains a PNNL assessment of the Hanford Site radiological dose impact to the public in accordance with DOE Orders 450.1 and 5400.5. Effluent data contained in the HSER and in the *Radionuclide Air Emissions Report for the Hanford Site during Calendar Year 2005* (DOE/RL-2006-01) were used by PNNL to estimate offsite radiological doses. The offsite radiological dose demonstrates compliance with applicable regulations. Related compliance determinations to federal and state dose standards are also published in the HSER.

1.2.1 Limits for Radioactive Releases

Quantities of radionuclides in air emissions and liquid effluents from the Hanford Site are governed by DOE Order 5400.5, *Radiation Protection of the Public and the Environment*. Quantities of radionuclides in air emissions are also regulated by Title 40 of the Code of Federal Regulations (CFR) Part 61, Subpart H, and by the Washington Administrative Code (WAC) Chapter 246-247. The effective dose equivalent (EDE) received by any member of the offsite public from all Hanford Site routine operational effluents and emissions is not to exceed 100 mrem/yr (1 mSv/yr). For occasional exposure from noncontinuous releases, the EDE is not to exceed 500 mrem/yr (5 mSv/yr). From the air pathway only, the EDE to any member of the public is not to exceed 10 mrem/yr (0.1 mSv/yr). The derived concentration guide (DCG) values published in DOE Order 5400.5 apply to all radioactive effluents and emissions to which members of the public are exposed. DCG values are not emissions limits and are used for comparison purposes only.

The 300 Area TEDF is regulated by an aquatic-lands sewer outfall lease (Lease Number 20-012257) from the U.S. Department of Natural Resources. Limits for radioactive constituents include 15 pCi/L ($5.5 \text{ E}+02 \text{ Bq/m}^3$) alpha, 50 pCi/L ($1.9 \text{ E}+03 \text{ Bq/m}^3$) beta, and 20,000 pCi/L ($7.4 \text{ E}+05 \text{ Bq/m}^3$) tritium.

1.2.2 Limits for Nonradioactive Releases

The following regulations, as applicable, govern nonradioactive constituents in air emissions and liquid effluents: *Clean Water Act of 1977*, *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980*; *Resource Conservation and Recovery Act (RCRA) of 1976*; *Safe Drinking Water Act of 1974*; *Toxic Substances Control Act of 1976*; the State of Washington regulations WAC 173-216, 173-218, 173-303, 173-400, 173-401, and 173-460; and the Benton County Clean Air Authority *Regulation 1*.

The Washington State Department of Ecology (Ecology) issues permits governing Hanford Site liquid effluent discharges to the ground per the requirements of WAC 173-216. Monitoring, sampling, analysis parameters, and release limits for specific constituents are defined in discharge permits issued by Ecology.

The U.S. Environmental Protection Agency (EPA) issues permits governing Hanford Site liquid effluents discharged to the Columbia River per the requirements of the National Pollutant Discharge Elimination System (NPDES) regulations. Monitoring, sampling, analysis parameters, and release limits for specific constituents are defined in discharge permits issued by the EPA.

2.0 AIR EMISSIONS

Facilities and activities managed by BHI, BNI, CH2M Hill, FH, and WCH released radioactive and nonradioactive air emissions to the atmosphere during 2005. Release data for each type of emission are discussed separately.

2.1 RADIONUCLIDE AIR EMISSIONS

Radionuclide air emissions from actively ventilated point sources having a potential to emit radioactive material to the atmosphere are routinely monitored. Actively ventilated point source emissions are measured and documented in this report when the following criteria were met during calendar year 2005: (1) the point source requires continuous monitoring or periodic confirmatory measurements in accordance with 40 CFR 61, Subpart H, or WAC 246-247, (2) the point source is listed in the *Hanford Site Title V Air Operating Permit 00-05-006* (AOP), and (3) the point source normally emits radioactive material or has the potential to emit radioactive material. Point sources not included in this section either did not meet those criteria or their air emissions were not actively ventilated. Examples of sources without active ventilation include deactivated sources, sources sealed off from the ambient atmosphere, and passively ventilated point sources. Actively ventilated point sources were sampled for radioactive air emissions only if they had a potential to emit radionuclides.

Radionuclide air emissions from passively vented point sources are monitored as diffuse and fugitive emissions. Diffuse and fugitive emissions are monitored collectively by the Near-Facility Monitoring Program and the Environmental Surveillance Program. Monitoring data from these sources are not presented in this report but are available in the *Radionuclide Air Emissions Report for the Hanford Site, Calendar Year 2005* (DOE/RL-2006-01), the HSER (PNNL-15892), and the *Hanford Site Near-Facility Environmental Monitoring Data Report for Calendar Year 2005* (PNNL-15892, APP. 2).

2.1.1 Mitigation of Radionuclide Air Emissions

The following examples of radionuclide air emission removal systems are used at the Hanford Site: (1) high-efficiency particulate air (HEPA) filters, (2) sand filters, (3) charcoal absorbers (for iodine removal), (4) water scrubbers, (5) deep-bed fiberglass filters, and (6) fiberglass prefilters. No practical air emissions removal systems exist for tritium effluents. Generally, at least one stage of HEPA filtration is used as the final particulate removal method before air is discharged to the atmosphere. All installed HEPA filters are required to have an in place removal efficiency of $\geq 99.95\%$ for polydispersed airborne particles with a median diameter of $0.7 \mu\text{m}$. Routine in place testing of HEPA filters assures ventilation systems operate at the prescribed level of efficiency. HEPA filtration systems have proven effective at mitigating radioactive air emissions as indicated by release concentrations near or below the lowest limits of analytical detection.

2.1.2 Radionuclide Air Emissions Data

Radionuclide air emission release data from facilities, by operating area, are in Table 2-1. Table 2-2 presents radionuclide air emission data from major point sources while Table 2-3 presents radionuclide air emission data from minor point sources. Major point sources have a potential to emit radionuclides greater than 0.1 mrem/yr EDE to the maximally exposed individual (MEI) member of the public. Minor point sources have a potential to emit radionuclides less than or equal to 0.1 mrem/yr EDE to the MEI. These data include annual average radionuclide concentrations emitted and total curies released.

2.1.3 Radionuclide Data Summary

Tables 2-2 and 2-3 list the numerical emissions data under a variety of column headings. The column headings and associated technical terms as used in these tables are defined and clarified in this section.

The stack identifiers are a unique number assigned to each air effluent stack and follow a regular numbering sequence. In the 200 Areas, stacks and vents are designated by a number that has a "291" or "296" prefix, depending on stack height. The "291" prefix is used exclusively for stacks that are 200 feet (61 meters) high, and the "296" prefix is used for all other, and shorter, stacks and vents. In the 100, 300, and 400 Areas, stacks and vents are usually identified with the corresponding facility number where they are located (an exception is the Cold Vacuum Drying Facility stack, 296-K-42, in the 100-K Area). Stacks in the 600 Area have the prefix of "696."

The EDP code is the electronic data processing code and represents a unique number assigned to air sampling locations for data tracking purposes.

The average operating flow rate is the average stack flow rate for the period of time the stack fan actually operates. In other words, the average operating flow rate is the total volume of effluent emitted divided by the stack operating time:

$$\left[\text{Average Operating Flow rate} = \frac{\text{total annual stack volume}}{\text{time operated in one year}} \right]$$

The volume is the total volume of air emitted by the stack during the year:

$$\text{Volume} = \sum (\text{stack flow rate measurement}) \times (\text{length of time operated at that flow rate}).$$

The average operating concentration is the total curies emitted divided by the total volume of air emitted:

$$\text{Average operating concentration} = \frac{(\text{Curie Emissions})}{(\text{Volume})}$$

The emissions are the calculated curies emitted during the year:

$$\text{Emissions} = \sum (\text{sample conc.}) \times (\text{stack volume emitted during sample collection period})$$

Table 2-1. Radionuclide Air Emissions from Facilities Managed by BHI, CH2M HILL, FH, and WCH in 2005.

Radionuclide	Releases, Ci ^a					
	100 Areas	200 East Area	200 West Area	300 Area	400 Area	Total
³ H (as HTO)	NM	NM	NM	NM	ND	ND
⁹⁰ Sr	2.8 E-05	3.3 E-05	2.2 E-05	9.9 E-07	NM	8.4 E-05
¹²⁹ I	NM	1.3 E-03	NM	NM	NM	1.3 E-03
¹³⁷ Cs	NM	3.4 E-05	1.4 E-06	4.2 E-07	8.9 E-06	4.5 E-05
¹⁵⁵ Eu	ND	ND	3.9 E-08	ND	NM	3.9 E-08
²³⁸ Pu	1.6 E-06	5.4 E-08	1.5 E-06	ND	NM	3.2 E-06
^{239/240} Pu	1.2 E-05	2.6 E-06	6.6 E-05	6.5 E-08	3.0 E-07	8.1 E-05
²⁴¹ Pu	1.3 E-04	ND	6.0 E-05	ND	NM	1.9 E-04
²⁴¹ Am	1.4 E-05	3.7 E-06	1.1 E-05	4.2 E-09	NM	2.9 E-05

^a 1 Ci = 1 curie = 3.7 E+10 becquerels/sec
 NM = not measured
 ND = not detected

Table 2-2. Hanford Site Radionuclide Air Emissions from Major Point Sources in 2005 (major point source: potential of >0.1 mrem/yr EDE to nearest public receptor)

Stack (facility; contractor; EDP Code) ^a	Average operating flow rate, ^b ft ³ /min (m ³ /s)	Volume, ft ³ (m ³)	Radionuclide or type of radioactivity	Average operating concentration, ^c µCi/mL	Emissions, Ci
100 Area Major Point Sources					
KE Purge Vent (105-KE Basin; FH; Y267)	this CERCLA ^d emission point had no measurable flow, and thus no release				
KE Purge Vent (105-KE Basin; FH; Y268)	this CERCLA ^d emission point had no measurable flow, and thus no release				
296-K-142 (CVDF; FH; Y201)	16,183 (7.64)	8.5 E+09 (2.4 E+08)	⁹⁰ Sr ²³⁸ Pu ^{239/240} Pu ²⁴¹ Pu ²⁴¹ Am gross α gross β	≤0 ≤0 6.6 E-18 7.5 E-16 ≤0 5.4 E-17 1.0 E-15	0 0 2.8 E-09 3.2 E-07 0 2.3 E-08 4.3 E-07

Table 2-2. Hanford Site Radionuclide Air Emissions from Major Point Sources in 2005
(major point source: potential of >0.1 mrem/yr EDE to nearest public receptor)

Stack (facility; contractor; EDP Code) ^a	Average operating flow rate, ^b ft ³ /min (m ³ /s)	Volume, ft ³ (m ³)	Radionuclide or type of radioactivity	Average operating concentration, ^c μCi/mL	Emissions, Ci
200 East Area Major Point Sources					
291-A-1 (PUREX Plant; FH; A006)	33,560 (15.84)	1.7 E+10 (4.9 E+08)	⁹⁰ Sr	1.9 E-15	1.9 E-06
			¹²⁹ I	2.2 E-12	1.3 E-03
			¹³⁷ Cs	2.3 E-14	2.0 E-05
			²³⁸ Pu	5.4 E-17	5.4 E-08
			^{239/240} Pu	1.5 E-15	1.5 E-06
			²⁴¹ Am	3.6 E-15	3.7 E-06
			gross α	4.4 E-15	4.4 E-06
			gross β	2.4 E-14	2.4 E-05
296-A-42 (RPP; CH2M HILL; E147)	842 (0.40)	4.4 E+08 (1.3 E+07)	⁹⁰ Sr	∅	0
			¹²⁹ I	∅	0
			¹³⁷ Cs	∅	0
			²³⁸ Pu	∅	0
			^{239/240} Pu	∅	0
			²⁴¹ Am	∅	0
			gross α	3.9 E-17	6.7 E-10
			gross β	4.2 E-16	7.2 E-09
296-B-1 (B Plant; FH; B001)	16,557 (7.81)	8.6 E+09 (2.4 E+08)	⁹⁰ Sr	1.1 E-16	3.4 E-08
			¹³⁷ Cs	∅	0
			²³⁸ Pu	∅	0
			^{239/240} Pu	∅	0
			²⁴¹ Am	∅	0
			gross α	3.7 E-17	1.1 E-08
			gross β	2.9 E-16	8.7 E-08
296-B-10 (WESF; FH; B748)	24,390 (11.51)	1.3 E+10 (3.6 E+08)	⁹⁰ Sr	6.1 E-14	2.9 E-05
			¹³⁷ Cs	3.0 E-14	1.4 E-05
			²³⁸ Pu	∅	0
			^{239/240} Pu	∅	0
			²⁴¹ Am	∅	0
			gross α	4.6 E-16	2.1 E-07
			gross β	2.2 E-13	1.0 E-04
296-B-28 (TF; CH2M HILL; E886)	did not operate; declared out of service June 30, 2005				
296-C-5 (TF; CH2M HILL; E069)	did not operate; declared out of service June 30, 2005				
296-C-6 (TF; CH2M HILL; E083)	did not operate; permanently closed in 2003				

Table 2-2. Hanford Site Radionuclide Air Emissions from Major Point Sources in 2005
(major point source: potential of >0.1 mrem/yr EDE to nearest public receptor)

Stack (facility; contractor; EDF Code) ^a	Average operating flow rate, ^b ft ³ /min (m ³ /s)	Volume, ft ³ (m ³)	Radionuclide or type of radioactivity	Average operating concentration, ^c μCi/mL	Emissions, Ci
296-H-212 (CSB; FH; C601)	8,419 (3.97)	4.4 E+09 (1.3 E+08)	⁹⁰ Sr	2.0 E-16	3.1 E-08
			¹³⁷ Cs	∅	0
			²³⁸ Pu	∅	0
			^{239/240} Pu	1.6 E-17	2.4 E-09
			²⁴¹ Am	∅	0
			gross α	1.0 E-16	1.5 E-08
			gross β	5.6 E-16	8.5 E-08
296-P-32 (TF; CH2M HILL; E401)	did not operate; permanently closed				
296-P-33 (TF; CH2M HILL; E307)	did not operate; permanently closed				
296-P-34 (TF; CH2M HILL; E308)	did not operate; permanently closed				
296-P-45 (TF; CH2M HILL; E047)	did not operate (this portable exhaustor was not located at a facility in 2005)				
296-P-47 (TF; CH2M HILL; E096)	708 (0.33)	1.0 E+07 (3.0 E+05)	⁹⁰ Sr	1.2 E-14	4.8 E-09
			¹³⁷ Cs	∅	0
			²³⁸ Pu	∅	0
			^{239/240} Pu	∅	0
			²⁴¹ Am	∅	0
			gross α	∅	0
			gross β	5.1 E-14	2.1 E-08
296-P-48 (TF; CH2M HILL; E098)	338 (0.16)	4.5 E+07 (1.3 E+06)	⁹⁰ Sr	∅	0
			¹³⁷ Cs	∅	0
			²³⁸ Pu	∅	0
			^{239/240} Pu	∅	0
			²⁴¹ Am	∅	0
			gross α	∅	0
			gross β	1.2 E-15	2.0 E-09
200 West Area Major Point Sources					
291-T-1 (T Plant; FH; W882)	40,000 (18.88)	2.1 E+10 (6.0 E+08)	⁹⁰ Sr	9.3 E-16	7.0 E-07
			¹³⁷ Cs	1.8 E-15	1.4 E-06
			²³⁸ Pu	∅	0
			^{239/240} Pu	3.4 E-15	2.6 E-06
			²⁴¹ Pu	1.5 E-15	1.1 E-06
			²⁴¹ Am	3.0 E-16	2.2 E-07
			gross α	2.6 E-15	2.0 E-06
gross β	5.3 E-15	4.0 E-06			

Table 2-2. Hanford Site Radionuclide Air Emissions from Major Point Sources in 2005
(major point source: potential of >0.1 mrem/yr EDE to nearest public receptor)

Stack (facility; contractor; EDP Code) ^a	Average operating flow rate, ^b ft ³ /min (m ³ /s)	Volume, ft ³ (m ³)	Radionuclide or type of radioactivity	Average operating concentration, ^c μCi/mL	Emissions, Ci
296-P-43 (TF; CH2M HILL; E045)	463 (0.22)	5.0 E+07 (1.4 E+06)	⁹⁰ Sr	∅	0
			¹³⁷ Cs	∅	0
			²³⁸ Pu	∅	0
			^{239/240} Pu	∅	0
			²⁴¹ Am	∅	0
			gross α	4.9 E-16	9.4 E-10
			gross β	1.2 E-15	2.4 E-09
296-P-44 (TF; CH2M HILL; E046)	472 (0.22)	5.5 E+07 (1.6 E+06)	⁹⁰ Sr	∅	0
			¹³⁷ Cs	∅	0
			²³⁸ Pu	∅	0
			^{239/240} Pu	∅	0
			²⁴¹ Am	∅	0
			gross α	∅	0
			gross β	1.1 E-15	2.4 E-09
296-S-21 (TF; CH2M HILL; W2)	75,866 (35.8)	4.0 E+10 (1.1 E+12)	⁹⁰ Sr	∅	0
			¹³⁷ Cs	∅	0
			²³⁸ Pu	∅	0
			^{239/240} Pu	∅	0
			²⁴¹ Am	∅	0
			gross α	7.3 E-17	1.1 E-07
			gross β	9.0 E-16	1.4 E-06
296-S-22 (TF; CH2M HILL; W880)	did not operate; declared out of service June 30, 2005				
296-T-18 (TF; CH2M HILL; W882)	270 (0.13)	3.6 E+07 (1.0 E+06)	⁹⁰ Sr	∅	0
			¹³⁷ Cs	∅	0
			²³⁸ Pu	∅	0
			^{239/240} Pu	5.8 E-17	8.4 E-11
			²⁴¹ Pu	∅	0
			²⁴¹ Am	∅	0
			gross α	1.3 E-15	1.9 E-09
gross β	2.8 E-15	4.1 E-09			

Table 2-2. Hanford Site Radionuclide Air Emissions from Major Point Sources in 2005
(major point source: potential of >0.1 mrem/yr EDE to nearest public receptor)

Stack (facility; contractor; EDP Code) ^a	Average operating flow rate, ^b ft ³ /min (m ³ /s)	Volume, ft ³ (m ³)	Radionuclide or type of radioactivity	Average operating concentration, ^c μCi/mL	Emissions, Ci
296-W-4 (WRAP; FH; W123)	14,096 (6.65)	7.4 E+09 (2.1 E+08)	⁹⁰ Sr	≤0	0
			¹³⁷ Cs	≤0	0
			¹⁵⁵ Eu	1.4 E-16	3.9 E-08
			²³⁸ Pu	≤0	0
			^{239/240} Pu	7.9 E-18	2.3 E-09
			²⁴¹ Pu	7.6 E-16	2.2 E-07
			²⁴¹ Am	≤0	0
			gross α	1.3 E-17	3.8 E-09
gross β	6.8 E-16	1.9 E-07			
291-Z-1 (FPF; FH; Z810)	290,000 (136.86)	1.5 E+11 (4.3 E+09)	²³⁸ Pu	2.9 E-16	1.4 E-06
			^{239/240} Pu	1.3 E-14	6.3 E-05
			²⁴¹ Pu	1.2 E-14	5.8 E-05
			²⁴¹ Am	2.2 E-15	1.1 E-05
			gross α	2.5 E-14	1.2 E-04
			gross β	2.5 E-15	1.3 E-05
296-Z-3 (FPF; FH; Z813) [under CERCLA ^d]	3,000 (1.42)	1.6 E+09 (4.5 E+07)	²³⁸ Pu	9.6 E-16	4.8 E-08
			^{239/240} Pu	4.9 E-16	2.4 E-08
			²⁴¹ Pu	2.1 E-15	1.0 E-07
			²⁴¹ Am	2.8 E-16	1.4 E-08
			gross α	2.5 E-15	1.2 E-07
			gross β	4.8 E-15	2.4 E-07
296-Z-7 (FPF; FH; Z818)	1,134 (0.54)	6.0 E+08 (1.7 E+07)	²³⁸ Pu	≤0	0
			^{239/240} Pu	7.8 E-18	1.7 E-10
			²⁴¹ Pu	7.9 E-16	1.7 E-08
			²⁴¹ Am	≤0	0
			gross α	4.0 E-17	8.6 E-10
			gross β	9.1 E-16	2.0 E-08
296-Z-14 (FPF; FH; Z814) [under CERCLA ^d]	4,000 (1.89)	2.1 E+09 (6.0 E+07)	²³⁸ Pu	2.7 E-17	2.2 E-09
			^{239/240} Pu	1.7 E-17	1.4 E-09
			²⁴¹ Pu	2.1 E-15	1.7 E-07
			²⁴¹ Am	≤0	0
			gross α	2.3 E-16	1.9 E-08
			gross β	2.7 E-15	2.2 E-07

Table 2-2. Hanford Site Radionuclide Air Emissions from Major Point Sources in 2005
(major point source: potential of >0.1 mrem/yr EDE to nearest public receptor)

Stack (facility; contractor; EDP Code) ^a	Average operating flow rate, ^b ft ³ /min (m ³ /s)	Volume, ft ³ (m ³)	Radionuclide or type of radioactivity	Average operating concentration, ^c µCi/mL	Emissions, Ci
300 Area Major Point Sources					
EP-324-01-S (324 Building; FH and WCH; F025)	63,408 (29.92)	3.3 E+10 (9.4 E+08)	⁹⁰ Sr	≤0	0
			¹³⁷ Cs	≤0	0
			²³⁸ Pu	≤0	0
			^{239/240} Pu	1.2 E-18	1.3 E-09
			²⁴¹ Am	≤0	0
			gross α	1.2 E-17	1.3 E-08
			gross β	2.1 E-16	2.3 E-07
EP-327-01-S (327 Building; FH and WCH; F026)	42,479 (20.05)	2.2 E+10 (6.3 E+08)	⁹⁰ Sr	3.8 E-17	2.8 E-08
			¹³⁷ Cs	5.7 E-16	4.2 E-07
			²³⁸ Pu	≤0	0
			^{239/240} Pu	6.3 E-18	4.6 E-09
			²⁴¹ Am	5.8 E-18	4.2 E-09
			gross α	2.5 E-16	1.8 E-07
			gross β	2.4 E-15	1.8 E-06

General definitions: ≤0 = analytical result equal to level of laboratory ambient background radioactivity or less than that level, which in practical terms means the radionuclide or type of radioactivity was not detected in the emission sampled; Ci = curie; 1 Ci = 3.7 E+10 becquerels (Bq); ft³ = cubic feet; HT is tritium, or elemental tritium, in the form of an incondensable gas (for purposes of dose modeling, all curies of HT were considered as curies of HTO); HTO is tritiated water vapor, or tritium in the form of condensable water vapor; m³ = cubic meters; min = minute; mrem = millirem; NA = not applicable; NF = not factored (i.e., if an isotopic release is reported, the reported release of the corresponding gross radioactivity type is not included in CAP88-PC calculations); s = second; yr = year

^a Acronyms in this column are: BHI = Bechtel Hanford, Inc.; CH2M HILL = CH2M HILL Hanford Group, Inc.; EDP code = electronic data processing code, used in chain-of-custody activities to identify sampling locations; FH = Fluor Hanford;

PNNL = Pacific Northwest National Laboratory; PFP = Plutonium Finishing Plant; PUREX = Plutonium-Uranium Extraction; TF = Tank Farms; WCH = Washington Closure Hanford, LLC; WESF = Waste Encapsulation and Storage Facility; WRAP = Waste Receiving and Processing Facility.

^b Reflects stack flow rate averaged over time of stack operation.

^c Reflects concentration averaged over time of stack operation.

^d Emissions from these point sources are associated with cleanup operations conducted under the authority of CERCLA. Reporting those emissions in Table 2-2 demonstrates compliance with monitoring requirements of 40 CFR 61, Subpart H, which is a substantive equivalent law (i.e., "applicable, relevant, or appropriate requirement") as defined by CERCLA.

Table 2-3. Hanford Site Radionuclide Air Emissions from Minor Point Sources in 2005
(minor point source: potential of ≤ 0.1 mrem/yr EDE to nearest public receptor)

Stack (facility; contractor; EDP Code) ^a	Average operating flow rate, ^b ft ³ /min (m ³ /s)	Volume, ft ³ (m ³)	Radionuclide or type of radioactivity	Average operating concentration, ^c μ Ci/mL	Emissions, Ci
100 Area Minor Point Sources					
105-KE Basin (100-K Area; FH; Y245, Y246, Y248 [under CERCLA ^d])	30,400 (14.35)	1.4 E+10 (3.9 E+08)	⁹⁰ Sr	2.3 E-14	9.7 E-06
			²³⁸ Pu	2.1 E-15	9.2 E-07
			^{239/240} Pu	1.5 E-14	6.3 E-06
			²⁴¹ Pu	1.3 E-13	5.8 E-05
			²⁴¹ Am	1.6 E-14	6.9 E-06
			gross α	4.0 E-14	1.7 E-05
			gross β	1.9 E-13	8.0 E-05
105-KW Basin (100-K Area; FH; Y234, Y235, Y236 [under CERCLA ^d])	24,300 (11.47)	7.3 E+09 (2.1 E+08)	⁹⁰ Sr	7.8 E-14	1.8 E-05
			²³⁸ Pu	3.2 E-15	7.1 E-07
			^{239/240} Pu	2.4 E-14	5.5 E-06
			²⁴¹ Pu	3.4 E-13	7.7 E-05
			²⁴¹ Am	3.0 E-14	6.8 E-06
			gross α	6.9 E-14	1.6 E-05
			gross β	4.7 E-13	1.1 E-04
107-N (100 N Area; BHI and WCH; Y265 [under CERCLA ^d])	7,700 (3.63)	4.0 E+09 (1.1 E+08)	gross α	≤ 0	0
			gross β	3.0 E-15	4.7 E-07
1706-KE (100-K Area; FH; Y243)	12,000 (5.66)	3.5 E+07 (9.8 E+05)	gross α	≤ 0	0
			gross β	7.1 E-15	9.5 E-09
200 East Area Minor Point Sources					
296-A-10 (PUREX; FH; A550)	did not operate				
296-A-18 (TF; CH2M HILL; E060)	1,182 (0.56)	6.2 E+08 (1.8 E+07)	gross α	1.0 E-15	2.4 E-08
			gross β	3.0 E-15	7.2 E-08
296-A-19 (TF; CH2M HILL; E061)	927 (0.44)	4.9 E+08 (1.4 E+07)	gross α	1.5 E-15	2.8 E-08
			gross β	4.8 E-15	9.0 E-08
296-A-20 (TF; CH2M HILL; E197)	2,125 (1.00)	1.1 E+09 (3.2 E+07)	gross α	2.5 E-16	9.3 E-09
			gross β	1.1 E-15	4.1 E-08
296-A-21 (242-A Evaporator; CH2M HILL; E645)	15,234 (7.19)	6.6 E+09 (1.9 E+08)	gross α	5.2 E-16	1.2 E-07
			gross β	1.3 E-15	3.0 E-07
296-A-22 (242-A Evaporator; CH2M HILL; E643)	476 (0.22)	2.5 E+08 (7.1 E+06)	⁹⁰ Sr	≤ 0	0
			¹³⁷ Cs	1.3 E-15	1.1 E-08
			²³⁸ Pu	≤ 0	0
			^{239/240} Pu	2.5 E-18	2.3 E-11
			²⁴¹ Am	1.4 E-17	1.2 E-10
			gross α	4.0 E-16	3.5 E-09
gross β	4.5 E-15	4.0 E-08			

Table 2-3. Hanford Site Radionuclide Air Emissions from Minor Point Sources in 2005
(minor point source: potential of ≤ 0.1 mrem/yr EDE to nearest public receptor)

Stack (facility; contractor; EDP Code) ^a	Average operating flow rate, ^b ft ³ /min (m ³ /s)	Volume, ft ³ (m ³)	Radionuclide or type of radioactivity	Average operating concentration, ^c μ Ci/mL	Emissions, Ci
296-A-26 (TF; CH2M HILL; E297)	1,336 (0.63)	3.2 E+08 (9.1 E+06)	gross α	1.6 E-16	2.0 E-09
			gross β	5.2 E-16	6.4 E-09
296-A-27 (TF; CH2M HILL; E270)	862 (0.41)	4.5 E+08 (1.3 E+07)	gross α	1.0 E-16	2.5 E-09
			gross β	1.2 E-15	3.0 E-08
296-A-28 (TF; CH2M HILL; E272)	6,104 (2.88)	3.2 E+09 (9.1 E+07)	gross α	6.3 E-16	1.2 E-07
			gross β	1.4 E-15	2.7 E-07
296-A-29 (TF; CH2M HILL; E901)	763 (0.36)	4.0 E+08 (1.1 E+07)	gross α	7.1 E-17	1.5 E-09
			gross β	4.7 E-15	1.0 E-07
296-A-30 (TF; CH2M HILL; E903)	7,300 (3.45)	3.8 E+09 (1.1 E+08)	gross α	8.7 E-16	1.7 E-07
			gross β	3.0 E-15	5.8 E-07
296-A-40 (TF; CH2M HILL; E013)	884 (0.42)	4.6 E+08 (1.3 E+07)	gross α	1.2 E-16	2.0 E-09
			gross β	2.1 E-15	3.5 E-08
296-A-41 (TF; CH2M HILL; E015)	8,292 (3.91)	4.4 E+09 (1.2 E+08)	gross α	1.2 E-15	1.8 E-07
			gross β	1.7 E-15	2.7 E-07
296-A-43 (TF; CH2M HILL; E148)	857 (0.40)	4.0 E+08 (1.1 E+07)	gross α	1.1 E-16	1.8 E-09
			gross β	3.5 E-16	5.4 E-09
296-E-1 (ETF; FH; E036)	55,773 (26.32)	2.9 E+10 (8.3 E+08)	gross α	1.5 E-16	1.7 E-07
			gross β	5.3 E-16	6.0 E-07
296-P-31 (209-E; FH; E209)	1,073 (0.51)	5.2 E+08 (1.5 E+07)	⁹⁰ Sr	≤ 0	0
			¹³⁷ Cs	≤ 0	0
			²³⁸ Pu	≤ 0	0
			^{239/240} Pu	4.3 E-17	7.0 E-10
			²⁴¹ Am	1.8 E-17	3.0 E-10
			gross α	2.7 E-16	4.4 E-09
gross β	1.7 E-15	2.8 E-08			
200 West Area Minor Point Sources					
291-S-1 (REDOX Plant; FH; S006)	21,376 (10.09)	1.1 E+10 (3.2 E+08)	gross α	4.1 E-16	1.8 E-07
			gross β	1.9 E-15	8.2 E-07
296-P-22 (TF; CH2M HILL; W191)	807 (0.38)	4.2 E+08 (1.2 E+07)	gross α	3.2 E-16	4.8 E-09
			gross β	7.7 E-16	1.2 E-08
296-P-28 (TF; CH2M HILL; W195)	did not operate				
296-S-15 (TF; CH2M HILL; W111)	did not operate				
296-S-16 (222-S; CH2M HILL; S264)	20 (0.01)	1.1 E+07 (3.0 E+05)	gross α	6.3 E-16	2.6 E-10
			gross β	6.0 E-15	2.5 E-09
296-S-18 (TF; CH2M HILL; W096)	4,909 (2.32)	1.1 E+09 (3.1 E+07)	gross α	9.8 E-16	4.4 E-08
			gross β	3.5 E-15	1.6 E-07

Table 2-3. Hanford Site Radionuclide Air Emissions from Minor Point Sources in 2005
(minor point source: potential of ≤ 0.1 mrem/yr EDE to nearest public receptor)

Stack (facility; contractor; EDP Code) ^a	Average operating flow rate, ^b ft ³ /min (m ³ /s)	Volume, ft ³ (m ³)	Radionuclide or type of radioactivity	Average operating concentration, ^c μ Cl/mL	Emissions, Ci	
296-S-25 (TF; CH2M HILL; W145) [alternate: 296-P-23 (W190)]	920 (0.43)	4.5 E+08 (1.3 E+07)	⁹⁰ Sr	≤ 0	0	
			¹³⁷ Cs	≤ 0	0	
	[1,017 (0.41)]		²³⁸ Pu	≤ 0	0	
			^{239/240} Pu	≤ 0	0	
			²⁴¹ Am	3.6 E-18	6.0 E-11	
				gross α	1.8 E-16	3.0 E-09
				gross β	7.7 E-16	1.3 E-08
296-T-7 (T Plant; FH; T154)	2,756 (1.30)	1.2 E+09 (3.5 E+07)	gross α	≤ 0	0	
			gross β	1.5 E-15	7.8 E-08	
296-T-17 (TF; CH2M HILL; W117)	did not operate					
291-U-1 (U Plant; FH; U771 [under CERCLA ^d])	25,376 (11.98)	1.3 E+10 (3.8 E+08)	gross α	≤ 0	0	
			gross β	9.7 E-15	5.0 E-06	
296-W-3 (TF; CH2M HILL; W003)	did not operate					
296-Z-5 (FPF; FH; Z913)	8,902 (4.20)	4.7 E+09 (1.3 E+08)	gross α	≤ 0	0	
			gross β	1.5 E-15	2.7 E-07	
296-Z-6 (FPF; FH; Z802)	9,935 (4.69)	5.2 E+09 (1.5 E+08)	gross α	≤ 0	0	
			gross β	7.7 E-16	1.6 E-07	
296-Z-15 (FPF; FH; Z915 [under CERCLA ^d])	1,561 (0.74)	8.2 E+08 (2.3 E+07)	gross α	≤ 0	0	
			gross β	≤ 0	0	
300 Area Minor Point Sources						
340-B (340 Complex; FH; F008)	did not operate					
340-DECON (340 Complex; FH; F009)	7,509 (3.54)	3.9 E+09 (1.1 E+08)	gross α	2.9 E-16	4.4 E-08	
			gross β	4.6 E-15	7.0 E-07	
340-NT-EX (340 Complex; FH; F002)	1,602 (0.76)	8.4 E+08 (2.4 E+07)	⁹⁰ Sr	≤ 0	0	
			¹³⁷ Cs	≤ 0	0	
			^{238/240} Pu	≤ 0	0	
			²⁴¹ Am	≤ 0	0	
			gross α	4.0 E-17	1.1 E-09	
			gross β	3.4 E-16	9.3 E-09	
EP-306W-03-V (306W Building; PNNL and WCH; NA)	did not operate; permanently closed					
EP-327-02-V (327 Building; FH and WCH;	626 (0.30)	3.3 E+08 (9.2 E+06)	gross α	≤ 0	0	
			gross β	6.2 E-16	6.5 E-09	

Table 2-3. Hanford Site Radionuclide Air Emissions from Minor Point Sources in 2005
(minor point source: potential of ≤ 0.1 mrem/yr EDE to nearest public receptor)

Stack (facility; contractor; EDP Code) ^a	Average operating flow rate, ^b ft ³ /min (m ³ /s)	Volume, ft ³ (m ³)	Radionuclide or type of radioactivity	Average operating concentration, ^c μ Ci/mL	Emissions, Ci
RCF-2-EX (MO-423; BHI and WCH; Y216)	622 (0.29)	2.7 E+08 (7.6 E+06)	¹³⁷ Cs	≤ 0	0
			gross α	6.1 E-17	6.3 E-10
			gross β	7.9 E-16	8.2 E-09
400 Area Minor Point Sources					
437-1-61 (MASF; FH; F019)	14,600 (6.89)	7.7 E+09 (2.2 E+08)	gross α	≤ 0	0
			gross β	1.7 E-15	5.0 E-07
437-MN&ST (MASF; FH; F014)	14,293 (6.75)	7.5 E+09 (2.1 E+08)	gross α	≤ 0	0
			gross β	2.6 E-15	8.4 E-07
FFTF-CB-EX (FFTF; FH; F011)	17,076 (8.06)	9.0 E+09 (2.5 E+08)	³ H	≤ 0	0
			gross α	2.9 E-17	1.0 E-08
			gross β	8.9 E-15	3.1 E-06
FFTF-HT-TR (FFTF; FH; F013)	5,417 (2.56)	2.8E+09 (8.1E+07)	gross α	4.0 E-17	4.4 E-09
			gross β	8.5 E-15	9.4 E-07
FFTF-RE-SB (FFTF; FH; F012)	12,650 (5.97)	6.6 E+09 (1.9 E+08)	gross α	1.1 E-15	2.8 E-07
			gross β	1.4 E-14	3.5 E-06
600 Area Minor Point Sources					
696-W-1 (WSCF; FH; W010)	48,752 (23.01)	2.6 E+10 (7.3 E+08)	gross α	≤ 0	0
			gross β	2.5 E-16	2.5 E-07
696-W-2 (WSCF; FH; W011)	1,052 (0.50)	5.5 E+08 (1.6 E+07)	gross α	≤ 0	0
			gross β	2.6 E-15	5.5 E-08

General definitions: ≤ 0 = analytical result equal to level of laboratory ambient background radioactivity or less than that level, which in practical terms means the radionuclide or type of radioactivity was not detected in the emission sampled; Ci = curie; 1 Ci = 3.7 E+10 becquerels (Bq); ft³ = cubic feet; HT is tritium, or elemental tritium, in the form of an incondensable gas (for purposes of dose modeling, all curies of HT were considered as curies of HTO); HTO is tritiated water vapor, or tritium in the form of condensable water vapor; m³ = cubic meters; min = minute; mrem = millirem; NA = not applicable; NF = not factored (i.e., if an isotopic release is reported, the reported release of the corresponding gross radioactivity type is not included in CAP88-PC calculations); s = second; yr = year.

^a Acronyms in this column are: BHI = Bechtel Hanford, Inc.; CH2M HILL = CH2M HILL Hanford Group, Inc.; EDP code = electronic data processing code, used in chain-of-custody activities to identify sampling locations; FFTF = Fast Flux Test Facility; FH = Fluor Hanford; MASF = Maintenance and Storage Facility; PFP = Plutonium Finishing Plant; TF = Tanks Farms; WCH = Washington Closure Hanford, LLC; and WSCF = Waste Sampling and Characterization Facility.

^b Reflects stack flow rate averaged over time of stack operation.

^c Reflects concentration averaged over time of stack operation.

^d Emissions from these point sources are associated with cleanup operations conducted under the authority of CERCLA. Reporting these emissions in Table 2-3 demonstrates compliance with monitoring requirements of 40 CFR 61, Subpart H, which is a substantive equivalent law (i.e., "applicable, relevant, or appropriate requirement") as defined by CERCLA.

2.2 NONRADIONUCLIDE AIR EMISSIONS

Nonradioactive air emissions discharged in calendar year 2005 were from the following areas and facilities: package boilers in the 200 and 300 Areas; East Tank Farms; West Tank Farms, 242-A Evaporator; 200 Area ETF, and internal combustion engines (500 horsepower and greater). Emission data are in Table 2-4.

Combustion source emissions such as package boilers and internal combustion engines were estimated by applying formulas approved by the EPA (EPA 450/4-90-003) with information on the type and quantity of fuel consumed. Table 2-5 gives a summary of the type and quantity of fuel consumed by the package boilers and internal combustion engines. Emissions of toxic air pollutants were estimated by calculation, utilizing sample measurements and/or process knowledge.

Table 2-4. Nonradioactive Air Emissions from the Hanford Site during 2005.

Criteria Pollutant	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Diesel, tons													
NO _x	1.68	0.98	1.42	0.65	0.30	0.19	0.11	0.07	0.14	0.39	1.09	1.72	8.7
SO ₂	0.57	0.33	0.48	0.22	0.10	0.06	0.04	0.02	0.05	0.13	0.37	0.58	3
CO	0.79	0.46	0.67	0.31	0.14	0.09	0.05	0.03	0.06	0.18	0.51	0.81	4.1
PM _{2.5}	0.03	0.02	0.03	0.01	0.01	0	0	0	0	0.01	0.02	0.03	0.2
PM ₁₀	0.12	0.07	0.10	0.05	0.02	0.01	0.01	0	0.01	0.03	0.08	0.13	0.6
Total PM	0.17	0.10	0.14	0.06	0.03	0.02	0.01	0.01	0.01	0.04	0.11	0.17	0.9
VOCs	0.15	0.09	0.12	0.06	0.03	0.02	0.01	0.01	0.01	0.03	0.09	0.15	0.8
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0
Ammonia	1.24	0.73	1.05	0.48	0.22	0.14	0.08	0.05	0.10	0.29	0.80	1.27	6.5
Natural gas, tons													
NO _x	0.51	0.38	0.25	0.15	0.07	0.03	0.03	0.02	0.05	0.11	0.35	0.55	2.5
SO ₂	0.01	0	0	0	0	0	0	0	0	0	0	0.01	0.03
CO	2.31	1.73	1.13	0.67	0.30	0.12	0.12	0.10	0.21	0.48	1.61	2.47	11.3
PM _{2.5}	0.12	0.09	0.06	0.04	0.02	0.01	0.01	0.01	0.01	0.03	0.09	0.13	0.60
PM ₁₀	0.12	0.09	0.06	0.04	0.02	0.01	0.01	0.01	0.01	0.03	0.09	0.13	0.60
Total PM	0.12	0.09	0.06	0.04	0.02	0.01	0.01	0.01	0.01	0.03	0.09	0.13	0.60
VOCs	0.13	0.10	0.07	0.04	0.02	0.01	0.01	0.01	0.01	0.03	0.09	0.14	0.65
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0
Ammonia	0.03	0.02	0.01	0.01	0	0	0	0	0	0.01	0.02	0.03	0.14
200 Area, kg													
NO _x	1,526	891.8	1,285	589.6	270.2	172.5	99.5	61.4	124.1	351.1	986.7	1,562	7,919
SO ₂	518	302.7	436.6	200.2	91.9	58.6	33.8	20.9	42.2	119.1	334.9	530.2	2,689
CO	721	421.4	607.7	278.7	127.9	81.6	47.1	29.1	58.7	165.9	466.2	738.1	3,743
PM _{2.5}	28	16.3	23.5	10.8	5	3.2	1.8	1.1	2.3	6.4	18.1	28.6	145
PM ₁₀	112	65.4	94.2	43.2	19.8	12.7	7.3	4.5	9.1	25.7	72.2	114.4	580
Total PM	152	89.0	128.4	58.9	27	17.3	10	6.1	12.4	35	98.5	156	790.8
VOCs	132	77.2	111.3	51	23.4	15	8.6	5.3	10.6	30.4	85.4	135.1	685.5
Lead	0.19	0.1	0.08	0.03	0.02	0.01	0.01	0	0.01	0.02	0.06	0.09	0.47
Ammonia	1,129	660	951.8	436.4	200.3	127.9	73.7	45.5	91.97	259.8	730.1	1,156	5,863

Table 2-4. Nonradioactive Air Emissions from the Hanford Site during 2005.

Criteria Pollutant	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
300 Area, kg													
NO _x	462	347	226.2	133.6	59.9	23.6	24.7	19.0	41.5	95.5	321.5	495	2,249
SO ₂	5.5	4.3	2.7	1.6	0.7	0.3	0.3	0.2	0.5	1.2	3.9	6	27.2
CO	2,096	1,572	1,026	606.	271.8	106.9	112.1	86.4	188.1	433	1,452	2,245	10,202
PM _{2.5}	112	84	54.7	32.3	14.5	5.7	6	4.6	10.0	23.1	77.8	119.8	544.1
PM ₁₀	112	84	54.7	32.3	14.5	5.7	6	4.6	10.0	23.1	77.8	119.8	544.1
Total PM	112	84	54.7	32.3	14.5	5.7	6	4.6	10.0	23.1	77.8	119.8	544.1
VOCs	121	91	59.3	35	15.7	6.2	6.5	5	10.9	25	84.3	129.7	589.4
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0
Ammonia	26.3	19.7	12.9	7.6	3.4	1.3	1.4	1.1	2.4	5.4	18.3	28.2	128

Table 2-5. WTP Nonradioactive Air Emissions during 2005.

Source	Emissions (kg)		
	Particulate Matter	Sulfur Oxides (SO ₂)	Nitrogen Oxides (NO _x)
Emission Pt. No. 33: WTP Concrete Batch Plant 200-E Area (BNI)	1.0 E+03	9.1 E+00	1.8 E+1
Emission Pt. No. 34: WTP Concrete Batch Plant (Pit 30) 200-E Area (BNI)	5.5 E+03	NA	NA

3.0 LIQUID EFFLUENTS

During calendar year 2005, radioactive and nonradioactive liquid effluents were discharged to the ground and to the Columbia River from facilities and activities managed by BHI, BNI, CH2M HILL, FH, and WCH. All discharges were in accordance with the requirements of state and federal discharge permits. By August 1997, all 200 Area significant liquid effluent discharges to the ground were either discontinued or rerouted to the 200 Area TEDF. Significant wastewater streams from the Plutonium Finishing Plant, T Plant, PUREX Plant, B Plant, 242-A-81 Building, and 283-E and 283-W Water Treatment Plants were rerouted to the 200 Area TEDF. Other rerouted streams consist of steam condensate and cooling water from the 242-A Evaporator, 241-A Tank Farm, 244-AR Vault, and B Plant. Reporting on individual contributory liquid effluent streams is no longer required. Data are reported on the collective effluent discharged to the two 200 Area TEDF disposal basins.

Beginning in November 1995, the ETF began treating 242-A Evaporator process condensate, which previously had been discharged directly to the ground. The ETF also treats other radioactive liquids generated at the Hanford Site, such as groundwater from the UP-1 Operable Unit and wastewater from the 222-S Laboratory retention basins when the effluent will not meet 200 Area TEDF acceptance criteria. The ETF treats liquid waste by filtration, ultraviolet oxidation, pH adjustment, and reverse osmosis before they are sampled, analyzed, and approved for discharge to the State Approved Land Disposal Site (SALDS). Reporting on individual contributory liquid effluent streams is no longer required. Data are reported on the collective effluent discharged from the ETF.

Table 3-1 lists the permitted discharge points active in calendar year 2005.

3.1 DISCHARGES TO COLUMBIA RIVER

Liquid effluents discharged to the Columbia River from the 100-K and 300 Areas were regulated in accordance with NPDES permit WA-002592-7 for the Hanford Site.

Table 3-2 presents radionuclide release data by individual liquid effluent streams. A tabulation of NPDES-regulated discharge parameters is in Table 3-3 and Table 3-4. Combined totals of radionuclides discharged to the Columbia River are in Table ES-2 of the Executive Summary.

3.1.1 1908-K Outfall

The 1908-K Outfall (NPDES discharge number: 004), located in the 100-K area, discharges water treatment plant filter backwash water, overflow from water storage basins, and miscellaneous discharges from the water treatment plant operations to the Columbia River. The 100-K Intake Screen Wash Water (NPDES discharge number 003) did not operate during 2005. NPDES permit monitoring and analytical data parameters are in Table 3-3.

3.1.2 300 Area Treated Effluent Disposal Facility

The 300 Area TEDF (NPDES discharge number: 001) treats wastewater prior to discharge to the Columbia River. In 2005, all 300 Area industrial wastewaters were routed to the 300 Area TEDF for treatment prior to discharge. NPDES permit monitoring and analytical data parameters are in Table 3-4.

3.1.3 N Springs

Historically, 100-N radioactive liquid effluents were discharged to the 1301-N and 1325-N Liquid Waste Disposal Facilities (LWDFs). These discharges to the ground contributed to the release of radionuclides to the Columbia River through migration within groundwater. Radionuclides from these facilities enter the Columbia River along the riverbank region commonly referred to as the N Springs. Estimates of N Springs radionuclides released to the Columbia River during 2005 are in Table 3-2.

Riverbank springs and/or shoreline seepage wells along the 100-N Area shoreline are sampled annually to verify that the reported radionuclide release to the Columbia River are not underreported. The amount of radionuclides entering the river at these springs is calculated based on analyses of samples routinely collected from monitoring well 199-N-46, located near the shoreline. To calculate these releases, radionuclide concentrations in those samples are multiplied by the estimated volume of groundwater that seeps into the river. The estimated groundwater flow rate used to calculate the releases is 43 L/min (11 gal/minute). The results of the annual riverbank spring samples can then be compared to the concentrations measured in well 199-N-46 to ensure that concentrations in the well reflect the highest concentration of radionuclides in the groundwater. Additional discussion of the annual shoreline sampling effort may be found in *Hanford Site Near-Facility Environmental Monitoring Data Report for Calendar Year 2005* (PNNL-15892, APP. 2).

3.2 STATE PERMITTED DISCHARGES TO GROUND

State Waste Discharge Permits govern all Hanford Site liquid effluent streams discharged to the ground. The permitted streams are listed in Table 3-1 and described in succeeding sections.

3.2.1 200 Area Effluent Treatment Facility

The 200 Area Effluent Treatment Facility (ETF) discharges treated wastewater. The discharges are regulated in accordance with State Waste Discharge Permit ST 4500. Permit specified monitoring and analytical data parameters are in Table 3-5.

3.2.2 400 Area Secondary Cooling Water

The 400 Area Secondary Cooling Water Stream discharges cooling water from the secondary cooling loop of the Fast Flux Test Facility (FFTF) Cooling Towers. This stream is regulated in accordance with State Waste Discharge Permit ST 4501. Permit ST 4501 was re-issued September 18, 2003, with different monitoring and report requirements; the effective date of this permit was October 1, 2003. The required monitoring include only three parameters and the requirement to monitor groundwater wells was eliminated. Permit-specific monitoring and analytical data parameters are in Table 3-6.

3.2.3 200 Area Treated Effluent Disposal Facility

The 200 Area TEDF discharges treated wastewater to the ground. The facility consists of a piping network that conveys wastewater from numerous other facilities on the Hanford Site to two 5-acre disposal basins located near the facility. Discharges from the 200 Area TEDF are regulated in accordance with State Waste Discharge Permit ST 4502. Permit specified monitoring and analytical data parameters are in Table 3-7. The discharges routinely meet state drinking water standards

3.2.4 100-N Sewage Treatment Lagoon

The 100-N Sewage Treatment Lagoon treats sewage from the 100-N, 100-K, and 200 Areas. Domestic wastewater from the 100-N Sewage Treatment Lagoon is discharged to ground in accordance with State Waste Discharge Permit ST 4507. Leachate from residual solids and from radioactive waste is not sanctioned by the permit. Permit specified monitoring and analytical data parameters are in Table 3-8.

3.2.5 Hydrotest, Maintenance, and Construction Discharges

Hydrotest, maintenance, and construction activities occur at numerous locations throughout the Hanford Site producing wastewater discharges to soil. Such discharges are regulated in accordance with State Waste Discharge Permit ST 4511, which also includes discharges of cooling water, steam condensate, and stormwater. Permit ST 4511 became effective in February 2005. It was preceded by ST 4508, a permit specifically for hydrotest, maintenance, and construction discharges, which was combined with ST 4509 and ST 4510 to make ST 4511. Sampling the discharges is not required as long as compliance is maintained with an Ecology-approved Pollution Prevention and Best Management Practices Plan (DOE/RL-97-67, Rev. 5).

The Hanford Tank Waste Treatment and Immobilization Plant (WTP) discharges hydrotest, maintenance, and construction water to ground in volumes that exceed ST 4511 limits, yet sampling these discharges is not required as long as compliance is maintained with the Ecology-approved Pollution Prevention and Best Management Practices Plan (DOE/RL-97-67, Rev. 5), submitted to Ecology in November 2005.

3.2.6 Cooling Water and Steam Condensate Discharges

Cooling water and steam condensate discharges occur at numerous locations throughout the Hanford Site. Such discharges are regulated in accordance with State Waste Discharge Permit ST 4511, which also includes discharges of hydrotests, maintenance, construction, and stormwater. Permit ST 4511 became effective February 2005. It was preceded by ST 4509, a permit specifically for discharges of cooling water and steam condensate, which was combined with ST 4508 and ST 4510 to make ST 4511. Sampling the discharges is not required as long as compliance is maintained with an Ecology-approved Pollution Prevention and Best Management Practices Plan (DOE/RL-97-67, Rev. 5).

3.2.7 Stormwater Discharges

Industrial stormwater discharges collected in engineered structures and then discharged to engineered structures occur at numerous locations throughout the Hanford Site. Such discharges are regulated in accordance with State Waste Discharge Permit ST 4511, which also includes discharges from hydrotests, maintenance, construction, cooling water, and steam condensate. Permit ST 4511 became effective February 2005. It was preceded by ST 4510, a permit specifically for stormwater discharges and that was combined with ST 4508 and ST 4509 to make ST 4511. Sampling of discharges is not required as long as compliance is maintained with an Ecology-approved Pollution Prevention and Best Management Practices Plan (DOE/RL-97-67, Rev. 5).

The NPDES Stormwater Multi-Sector General Permit (MSGP) provides coverage for stormwater discharges associated with industrial activities as defined in 40 CFR 122.26(b)(14). Specific guidance on the requirements of the MSGP are found in 65 Federal Register 210 dated October 30, 2000, and MSGP Permit #WAR05A45F. Through evaluation of the MSGP HNF-4081, Rev. 1, *National Pollutant Discharge Elimination System Storm Water Prevention Plan for 100 K Area Outfall*, dated November 2003, and historical activities of the 100-K Area operations, a determination was made that the MSGP

regulations for Steam Electric Power Generating Facilities apply to the 100-K outfall stormwater discharges.

3.2.8 WTP Pit 30 and Concrete Batch Plant Operations

The WTP discharges process, dewatering, and storm water to the ground at two locations in the 200 East Area of the Hanford Site. Discharges occur at Pit 30 in accordance with permit number WAG 50-5181 and at the Concrete Batch Plant in accordance with permit number WAG 50-5180. Discharge permit WAG 50-5181 was active from April 1, 2005, through December 12, 2005. Discharge Permit WAG 50-5180 was active for all of 2005. Permit-specified monitoring and analytical data parameters are in Table 3-9.

3.3 SANITARY SEWAGE DISCHARGES TO SEWAGE DISPOSAL SYSTEMS

Various facilities discharged sanitary sewage during 2005. In the 100-N Area, sanitary wastewater was discharged to the 100-N Sewage Treatment Lagoon and septic systems. In the 100-B/C, 100-DR, 100-F, 100-H, and 100-K Areas, sanitary sewage was discharged to permitted temporary holding tanks and septic systems, with a portion of the sewage in the 100-K Areas collected in and delivered by tanker truck to the 100-N Sewage Treatment Lagoon.

In the 200 and 600 Areas, sanitary wastewater was discharged to a system of permitted holding tanks and septic systems. Sludge was pumped from septic tanks in the 200 and 600 Areas and taken to the 100-N Sewage Treatment Lagoon for disposal.

In the 300 Area, sanitary sewage was discharged to the City of Richland POTW. In the 400 Area, sanitary sewage was discharged to the Columbia Generating Station sewage treatment plant.

The estimated volume of sewage discharged to ground by WTP during 2005 was 5.63 E+06 gallons (2.14 E+07 liters), as shown in Table 3-10. The volume of sanitary sewage discharges are estimated by multiplying an estimated average number of people assigned to WTP (i.e., 1,500 [the size of the workforce fluctuates during throughout the year] times 15 gallons per day (57 liters per day) times 250 work days per year.

Table 3-1. National Pollutant Discharge Elimination System and State Permitted Discharge Points Active in 2005.

Designation	Description
<i>NPDES Discharge Points</i>	
001	300 Area Treated Effluent Disposal Facility (TEDF)
003	100-K Intake Screen Wash Water (no discharge in 2005)
004	1908-K Outfall
WAR05A45F	NPDES Stormwater Multi-Sector General Permit for K Basin Closure Project Activities
<i>State Permitted Discharge Points</i>	
ST 4500	200 Area Effluent Treatment Facility (ETF)
ST 4501	400 Area Secondary Cooling Water
ST 4502	200 Area Treated Effluent Disposal Facility (TEDF)
ST 4507	100-N Sewage Lagoon
ST 4511	hydrotest, maintenance, and construction discharges (formerly under ST 4508); cooling water and steam condensate discharges (formerly under ST 4509); industrial stormwater discharges (formerly under ST 4510); WTP hydrostatic discharges (formerly under ST 4508)
WAG 50-5180	WTP Concrete Batch Plant Sand and Gravel General Permit
WAG 50-5181	WTF Pit 30 Sand and Gravel General Permit

Table 3-2. Radionuclides in Liquid Effluents Discharged to the Environment in 2005.

Liquid effluent stream (EDP code) ^a	Discharge location	Total flow, gal (L)	Radionuclide or type of radioactivity	Average concentration, $\mu\text{Ci/mL}$ ^b	Annual release, Ci ^b
100 Area Discharges to the Columbia River					
N Springs (Y101)	Columbia River	5.8 E+06 (2.2 E+07)	³ H	3.4 E-07	7.5 E-03
			⁹⁰ Sr	2.2 E-06	4.9 E-02
NPDES Outfall 004, 100-K 1908-K Outfall (Y130)	Columbia River	8.3 E+07 (3.2 E+08)	⁹⁰ Sr	2.0 E-09	6.3 E-04
			¹²⁵ Sb	1.5 E-08	4.7 E-03
			¹³⁷ Cs	1.3 E-08	4.1 E-03
			¹⁵² Eu	2.7 E-08	8.5 E-03
			¹⁵⁴ Eu	1.1 E-08	3.5 E-03
			²³⁸ Pu	1.7 E-11	5.3 E-06
^{239/240} Pu	8.4 E-11	2.7 E-05			
Discharges to Ground in the 600 Area					
200 Area Effluent Treatment Facility (H129)	616-A Crib (aka SALDS) ^c	6.0 E+06 (2.3 E+07)	³ H	1.0 E-04	2.3 E+00

^a EDP code = electronic data processing code, which identifies the sampler (aka "location code").

^b Ci = curie; Ci = 3.7 E+10 becquerels/sec.

^c The 616-A Crib is immediately north of the 200 West Area; SALDS = State-Approved Land Disposal Site.

Table 3-3. 1908-K Outfall (004) National Pollutant Discharge System Effluents Released to the Columbia River in 2005.

Sample Parameter/Limit	Month											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
K Area Wastewater Effluent -- 004A Discharge Number												
Temperature/80 (max.; °F)	46	45	50	54	57	64	70	69	66	62	57	47
pH/6.0 (min.)	7.84	8.2	8.4	8.2	8.3	8.1	8.5	8.14	8.32	8.2	7.7	7.4
pH/9.0 (max.)	7.84	8.2	8.4	8.2	8.3	8.1	8.5	8.14	8.32	8.2	7.7	7.4
Flow/2.0 (avg.; MGD)	0.10	0.061	0.196	0.116	0.23	0.276	0.499	0.35	0.59	0.211	0.04	0.078
Flow/4.9 (max.; MGD)	1.6	1.76	2.72	1.37	1.92	1.6	1.92	1.18	0.96	2.24	1.15	0.96
Chlorine/1.34 (avg.; lb/day)	0*	0	0	0	0	0	0	0.03	0	0.018	0	0.007
Chlorine/4.09 (max.; lb/day)	0	0	0	0	0	0	0	0.30	0	0.375	0	0.321
Chlorine/0.08 (avg.; mg/L)	0	0	0	0	0	0	0	0.01	0	0.01	0	0.01
Chlorine/0.1 (max.; mg/L)	0	0	0	0	0	0	0	0.03	0	0.01	0	0.04
Filter Plant Backwash Effluent -- 004B Discharge Number												
Total suspended solids/150 (avg.; lb/day) ^a	25.96	ND	4.77	ND	ND	ND	10.35	ND	ND	ND	ND	ND
Total suspended solids/225 (max.; lb/day) ^a	72.23	ND	4.77	ND	ND	ND	28.59	ND	ND	ND	ND	ND
Total suspended solids/30 (avg.; mg/L) ^a	5.75	ND	1.0	ND	ND	ND	2.25	ND	ND	ND	ND	ND
Total suspended solids/45 (max.; mg/L) ^a	16.0	ND	1.0	ND	ND	ND	6.0	ND	ND	ND	ND	ND
Flow/0.6 (avg.; MGD)	0.54	ND	0.57	ND	ND	ND	0.55	ND	ND	ND	ND	ND
Flow/0.6 (max.; MGD)	0.54	ND	0.57	ND	ND	ND	0.57	ND	ND	ND	ND	ND

* 0 = less than instrument detection limit; ND = no discharge; MGD = million gallons per day; °F = degrees Fahrenheit; lb/day = pounds per day; mg/L = milligrams per liter.

^a Total suspended solids measured at the filter plant backwash water (in accordance with NPDES permit) before mixing at the 004 Outfall.

Table 3-4. 300 Area TEDF (001A) National Pollutant Discharge System Effluents Released to the Columbia River in 2005.

Sample Parameter/Limit	Month											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Temperature/95 (avg.; °F)	54.4	56.7	59.9	64.1	70.2	74.9	81.1	81.8	77.3	70.2	62.9	54.1
Temperature/105 (max.; °F)	67.9	71.4	67.5	69.7	77.4	79.8	84.1	84.8	82.5	72.7	68.0	63.7
pH/6.0 (min.)	7.0	7.1	7.2	7.1	7.0	7.0	6.9	6.8	7.0	7.0	6.9	6.8
pH/9.0 (max.)	7.4	7.4	7.4	7.5	8.5	7.6	8.5	7.6	7.5	7.6	7.4	7.3
Total suspended solids/11 (avg.; lb/day)	0.6991	0	0	0	0	0	0	0	0	0	0	0
Total suspended solids/35 (max.; lb/day)	2.7557	0	0	0	0	0	0	0	0	0	0	0
Total suspended solids/3,000 (avg.; µg/L)	1,000.0	0	0	0	0	0	0	0	0	0	0	0
Total suspended solids/9,000 (max.; µg/L)	2,000.0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen/NA (as ammonia; avg.; lb/day)	0.0542	0	0	0	0.0231	0	0.0349	0	0	0	0	0
Nitrogen/NA (max.; lb/day)	0.2136	0	0	0	0.0958	0	0.1749	0	0	0	0	0
Nitrogen/NA (as ammonia; µg/L)	77.5	0	0	0	33.90	0	48.95	0	0	0	0	0
Nitrogen/NA (max.; µg/L)	155.0	0	0	0	67.80	0	97.90	0	0	0	0	0
Arsenic/0.018 (avg.; lb/day)	0*	0.0001	0	0.0005	0.0003	0	0.0003	0	0	0	0	0
Arsenic/0.0351 (max.; lb/day)	0	0.0005	0	0.0013	0.0007	0	0.0016	0	0	0	0	0
Arsenic/5 (µg/L)	0	0.21	0	0.71	0.51	0	0.45	0	0	0	0	0
Arsenic/9 (max.; µg/L)	0	0.41	0	0.99	0.52	0	0.90	0	0	0	0	0
Iron/3.0469 (avg.; lb/day)	0	0	0	0	0.0094	0	0	0	0	0	0	0
Iron/5.6965 (max.; lb/day)	0	0	0	0	0.0389	0	0	0	0	0	0	0
Iron/846 (µg/L)	0	0	0	0	13.75	0	0	0	0	0	0	0
Iron/1,460 (max.; µg/L)	0	0	0	0	27.50	0	0	0	0	0	0	0
Selenium/0.0180 (avg.; lb/day)	0	0.0002	0.0002	0.0009	0.0007	0	0	0.0002	0	0	0	0
Selenium/0.0273 (max.; lb/day)	0	0.0008	0.0009	0.0035	0.0017	0	0	0.0009	0	0	0	0
Selenium/5 (µg/L)	0	0.33	0.27	1.37	0.97	0	0	0.21	0	0	0	0
Selenium/7 (max.; µg/L)	0	0.66	0.53	2.73	1.22	0	0	0.41	0	0	0	0
Beryllium/0.0072 (avg.; lb/day)	0	0	0	0	0	0	0	0	0	0	0	0
Beryllium/0.0156 (max.; lb/day)	0	0	0	0	0	0	0	0	0	0	0	0
Beryllium/2 (µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
Beryllium/4 (max.; µg/L)	0	0	0	0	0	0	0	0	0	0	0	0

Table 3-4. 300 Area TEDF (001A) National Pollutant Discharge System Effluents Released to the Columbia River in 2005.

Sample Parameter/Limit	Month											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Nickel/0.126 (avg.; lb/day)	0.0003	0.0007	0.0005	0.0006	0.0008	0.0005	0.0004	0.0010	0.0007	0.0005	0.0007	0.0007
Nickel/0.2341 (max.; lb/day)	0.0013	0.0012	0.0015	0.0015	0.0023	0.0011	0.0012	0.0022	0.0020	0.0010	0.0015	0.0010
Nickel/35 (µg/L)	0.47	0.95	0.78	0.95	1.17	0.80	0.58	0.94	0.65	0.55	0.69	0.78
Nickel/60 (max.; µg/L)	0.93	0.98	0.85	1.18	1.64	0.90	0.68	0.96	0.60	0.60	0.72	0.79
Silver/0.0216 (avg.; lb/day)	0.0001	0	0	0	0	0	0	0	0	0	0	0
Silver/0.0390 (max.; lb/day)	0.0003	0	0	0	0	0	0	0	0	0	0	0
Silver/6 (µg/L)	0.11	0	0	0	0	0	0	0	0	0	0	0
Silver/10 (max.; µg/L)	0.21	0	0	0	0	0	0	0	0	0	0	0
Zinc/0.09 (avg.; lb/day)	0	0	0	0	0	0	0	0	0.0010	0.0010	0.0007	0.0006
Zinc/0.1677 (max.; lb/day)	0	0	0	0	0	0	0	0	0.0039	0.0039	0.0015	0.0009
Zinc/25 (µg/L)	0	0	0	0	0	0	0	0	1.13	1.13	0.62	0.69
Zinc/43 (max.; µg/L)	0	0	0	0	0	0	0	0	2.25	2.25	0.73	0.72
Aluminum/0.7743 (avg.; lb/day)	0	0.00035	0.0193	0	0	0.0036	0.0098	0.0084	0.0162	0.0162	0.0078	0.0047
Aluminum/1.4514 (max.; lb/day)	0	0.0126	0.0973	0	0	0.0149	0.0493	0.0369	0.0380	0.0380	0.0313	0.0096
Aluminum/215 (µg/L)	0	5.05	28.21	0	0	5.90	13.80	8.15	17.60	17.60	7.40	5.38
Aluminum/372 (max.; µg/L)	0	10.10	56.41	0	0	11.80	27.60	16.30	21.80	21.80	14.80	7.40
Cadmium/0.0072 (avg.; lb/day)	0	0	0	0	0	0	0	0	0	0	0	0
Cadmium/0.0156 (max.; lb/day)	0	0	0	0	0	0	0	0	0	0	0	0
Cadmium/2 (µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
Cadmium/4 (max.; µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
Lead/0.0144 (avg.; lb/day)	0	0	0	0	0	0	0	0	0.0000	0.0000	0.0000	0.0000
Lead/0.0312 (max.; lb/day)	0	0	0	0	0	0	0	0	0.0002	0.0002	0.0002	0.0001
Lead/4 (µg/L)	0	0	0	0	0	0	0	0	0.05	0.05	0.04	0.03
Lead/8 (max.; µg/L)	0	0	0	0	0	0	0	0	0.09	0.09	0.08	0.06
Copper/0.036 (avg.; lb/day)	0.0017	0.0024	0.0016	0.0019	0.0023	0.0020	0.0035	0.0039	0.0047	0.0047	0.0069	0.0061
Copper/0.0585 (max.; lb/day)	0.0035	0.0044	0.0045	0.0051	0.0050	0.0053	0.0088	0.0093	0.0120	0.0120	0.0179	0.0123
Copper/10 (µg/L)	2.46	3.44	2.35	2.93	3.45	3.33	4.91	3.85	5.11	5.11	6.54	7.08
Copper/15 (max.; µg/L)	2.54	3.53	2.63	3.96	3.52	4.22	4.91	4.13	6.88	6.88	8.47	9.46

Table 3-4. 300 Area TEDF (001A) National Pollutant Discharge System Effluents Released to the Columbia River in 2005.

Sample Parameter/Limit	Month											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Radium/02 (avg.; pCi/L)	0	0	0	0	0.08	0.12	0	0	0	0	0.05	0
Radium/0.4 (max.; pCi/L)	0	0	0	0	0.16	0.23	0	0	0	0	0.10	0
Manganese/0.0360 (avg.; lb/day)	0	0.0002	0.0001	0.0001	0.0003	0.0001	0.0000	0.0002	0.0001	0.0001	0.0001	0.0002
Manganese/0.0663 (max.; lb/day)	0	0.0004	0.0003	0.0003	0.0008	0.0002	0.0002	0.0005	0.0002	0.0002	0.0003	0.0003
Manganese/10 (µg/L)	0	0.23	0.18	0.23	0.47	0.19	0.07	0.19	0.14	0.14	0.12	0.21
Manganese/17 (max.; µg/L)	0	0.32	0.19	0.24	0.60	0.19	0.13	0.22	0.14	0.14	0.12	0.25
Dichlorobromomethane/0.0079 (avg.; lb/day)	0	0	0	0.0001	0.0004	0.0003	0.0000	0	0.0002	0.0002	0.0002	0.0001
Dichlorobromomethane/0.0156 (max.; lb/day)	0	0	0	0.0003	0.0010	0.0008	0.0002	0	0.0006	0.0006	0.0008	0.0003
Dichlorobromomethane/2.2 (µg/L)	0	0	0	0.13	0.55	0.51	0.05	0	0.19	0.19	0.19	0.12
Dichlorobromomethane/4 (max.; µg/L)	0	0	0	0.25	0.70	0.67	0.09	0	0.37	0.37	0.38	0.23
Chloroform/0.0468 (avg.; lb/day)	0.0030	0.0036	0.0040	0.0048	0.0050	0.0040	0.0046	0.0078	0.0075	0.0075	0.0057	0.0043
Chloroform/0.0858 (max.; lb/day)	0.0068	0.0069	0.0105	0.0106	0.0107	0.0096	0.0120	0.0190	0.0148	0.0148	0.0123	0.0067
Chloroform/15 (µg/L)	4.30	5.15	5.90	7.25	7.30	6.55	6.50	7.60	8.15	8.15	5.35	4.90
Chloroform/26 (max.; µg/L)	4.90	5.50	6.10	8.30	7.60	7.60	6.70	8.40	8.50	8.50	5.80	5.20
Toluene/0.0216 (avg.; lb/day)	0	0	0	0	0	0	0	0	0	0	0	0
Toluene/0.0351 (max.; lb/day)	0	0	0	0	0	0	0	0	0	0	0	0
Toluene/6 (µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
Toluene/9 (max.; µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
Methylene chloride/0.018 (avg.; lb/day)	0	0.0017	0.0022	0	0	0	0	0	0	0	0	0.0043
Methylene chloride/0.036 (max.; lb/day)	0	0.0060	0.0112	0	0	0	0	0	0	0	0	0.0130
Methylene chloride/5 (µg/L)	0	2.40	3.25	0	0	0	0	0	0	0	0	5.00
Methylene chloride/10 (max.; µg/L)	0	4.80	6.50	0	0	0	0	0	0	0	0	10.00
Tetrachloroethylene/0.0180 (avg.; lb/day)	0	0	0	0	0	0	0	0	0	0	0	0
Tetrachloroethylene/0.0351 (max.; lb/day)	0	0	0	0	0	0	0	0	0	0	0	0
Tetrachloroethylene/5 (µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
Tetrachloroethylene/9 (max.; µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
1,1-Dichloroethane/0.0169 (avg.; lb/day)	0	0	0	0	0	0	0	0	0	0	0	0
1,1-Dichloroethane/0.0273 (max.; lb/day)	0	0	0	0	0	0	0	0	0	0	0	0

Table 3-4. 300 Area TEDF (001A) National Pollutant Discharge System Effluents Released to the Columbia River in 2005.

Sample Parameter/Limit	Month											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
1,1-Dichloroethane/4.7 (µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
1,1-Dichloroethane/7 (max.; µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
1,1,1-Trichloroethane/0.0180 (avg.; lb/day)	0	0.0012	0	0	0	0	0	0	0	0	0	0
1,1,1-Trichloroethane/0.0351 (max.; lb/day)	0	0.0041	0	0	0	0	0	0	0	0	0	0
1,1,1-Trichloroethane/5 (µg/L)	0	1.65	0	0	0	0	0	0	0	0	0	0
1,1,1-Trichloroethane/9 (max.; µg/L)	0	3.30	0	0	0	0	0	0	0	0	0	0
Bis (2-ethylhexyl) phthalate/0.036 (avg.; lb/day)	0	0	0	0	0	0	0	0	0	0	0	0
Bis (2-ethylhexyl) phthalate/0.072 (max.; lb/day)	0	0	0	0	0	0	0	0	0	0	0	0
Bis (2-ethylhexyl) phthalate/10 (µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
Bis (2-ethylhexyl) phthalate/20 (max.; µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
Trichloroethylene/0.0068 (avg.; lb/day)	0	0.0007	0	0	0	0	0	0	0	0	0	0
Trichloroethylene/0.0117 (max.; lb/day)	0	0.0025	0	0	0	0	0	0	0	0	0	0
Trichloroethylene/1.9 (µg/L)	0	1.00	0	0	0	0	0	0	0	0	0	0
Trichloroethylene/3 (max.; µg/L)	0	2.00	0	0	0	0	0	0	0	0	0	0
Flow/NA (max., MGD)	0.165	0.148	0.207	0.153	0.169	0.151	0.214	0.271	0.209	0.170	0.253	0.155
Nitrite (NO ₂)/0.2161 (avg.; lb/day)	0	0.0176	0	0	0.0195	0	0.0355	0	0	0	0	0
Nitrite (NO ₂)/0.4058 (max.; lb/day)	0	0.0625	0	0	0.0810	0	0.1781	0	0	0	0	0
Nitrite (NO ₂)/60 (µg/L)	0	25.00	0	0	28.65	0	49.85	0	0	0	0	0
Nitrite (NO ₂)/104 (max.; µg/L)	0	50.00	0	0	57.30	0	99.70	0	0	0	0	0
Mercury/0.0032 (avg.; lb/day)	0	0	0.0002	0	0	0.0000	0.0000	0	0	0	0	0
Mercury/0.0059 (max.; lb/day)	0	0	0.0009	0	0	0.0002	0.0001	0	0	0	0	0
Mercury/0.9 (µg/L)	0	0	0.25	0	0	0.06	0.03	0	0	0	0	0
Mercury/1.5 (max.; µg/L)	0	0	0.50	0	0	0.12	0.05	0	0	0	0	0
Cyanide/0.0216 (avg.; lb/day)	0	0	0	0	0	0	0	0	0	0	0	0
Cyanide/0.0390 (max.; lb/day)	0	0	0	0	0	0	0	0	0	0	0	0
Cyanide/6 (µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
Cyanide/10 (max.; µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
Gross alpha/NA (avg.; pCi/L)	0.82	2.10	0	0.74	0.8	5.56	0	0	0	0	0	0

Table 3-4. 300 Area TEDF (001A) National Pollutant Discharge System Effluents Released to the Columbia River in 2005.

Sample Parameter/Limit	Month											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Gross alpha/NA (max.; pCi/L)	1.63	4.20	0	1.47	1.6	6.32	0	0	0	0	0	0
Gross beta/NA (avg.; pCi/L)	4.20	4.14	1.03	1.91	3.12	4.32	3.90	0	0	0	0.75	0
Gross beta/NA (max.; pCi/L)	4.60	5.2	2.05	2.10	3.57	5.41	6.35	0	0	0	1.50	0

* 0 = less than detection limit

Table 3-5. 200 Area Effluent Treatment Facility Discharge Monitoring Report (ST 4500) for 2005.

Sample parameter	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Conductivity (µmhos/cm)	1.28	0.97	*	1.04	ND	ND	1.08	1.87	ND	ND	ND	ND
Total suspended solids (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Nitrate (as N; µg/L)	<DL	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Total organic carbon (µg/L)	<DL	167	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Chloride (µg/L)	<DL	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Sulfate (µg/L)	<DL	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Arsenic (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Beryllium (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Cadmium (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Chromium (µg/L)	*	<DL	*	0.20	ND	ND	<DL	<DL	ND	ND	ND	ND
Copper (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Lead (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Gross beta (pCi/L)	<DL	0.60	*	<DL	ND	ND	0.60	1.2	ND	ND	ND	ND
Strontium-90 (pCi/L)	*	<DL	*	0.85	ND	ND	<DL	<DL	ND	ND	ND	ND
Carbon tetrachloride (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Chloroform (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Benzene (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Methylene chloride (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Tetrachloroethylene (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Effluent flow rate (gal/mo)	522,000	1,120,000	*	1,190,000	ND	ND	1,210,000	2,020,000	ND	ND	ND	ND

Table 3-5. 200 Area Effluent Treatment Facility Discharge Monitoring Report (ST 4500) for 2005.

Sample parameter	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total dissolved solids (µg/L)	*	<DL	*	<DL	ND	ND	<DL	9,000	ND	ND	ND	ND
Nitrite (as N; µg/L)	<DL	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Mercury (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
N-nitrosodimethylamine (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Acetophenone (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Tetrahydrofuran (µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Gross alpha (pCi/L)	0.81	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Tritium (pCi/L)	*	3,300	*	254,000	ND	ND	42,000	6,500	ND	ND	ND	ND
Ammonia (as N; µg/L)	*	<DL	*	2.0	ND	ND	<DL	<DL	ND	ND	ND	ND
Uranium (total; µg/L)	*	<DL	*	<DL	ND	ND	<DL	<DL	ND	ND	ND	ND
Technetium-99 (pCi/L)	*	<DL	*	1.3	ND	ND	<DL	<DL	ND	ND	ND	ND

<DL = less than detection limit; ND = no discharge; gal/mo = gallons per month; µmhos/cm = micro-mho per centimeter; µg/L = micro grams per liter.

* One verification tank was sampled for the required monthly analyses but discharged during the subsequent month as well as reported in the Discharge Monitoring Report for that subsequent month.

Table 3-6. 400 Area Secondary Cooling Water Discharge Monitoring Report (ST 4501) for 2005.

Sample parameter	Month											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Conductivity (µmhos/cm)	530	540	560	570	600	600	630	610	580	550	470	420
pH (maximum)	8.59	8.84	8.87	8.86	8.67	8.64	8.69	8.65	9.39	9.46	8.81	8.96
pH (minimum)	7.63	8.07	8.07	8.44	8.36	8.15	6.94	7.58	7.91	7.48	7.25	7.52
Flow rate (gpm)	6.17	5.47	6.12	8.83	11.23	13.3	18.78	16.07	11.73	6.65	4.18	3.76

µmhos/cm = micro-mho per centimeter; gpm = gallons per minute; µg/L = micro grams per liter.

Table 3-7. 200 Area TEDF Discharge Monitoring Report (ST 4502) for 2005.

Sample parameter	Month											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Conductivity (µhoms/cm)	187	174	150	200	169	177	169	180	168	158	203	206
pH (minimum)	6.64	6.89	7.05	6.71	7.08	7.25	7.28	7.29	7.27	7.29	6.37	6.11
pH (maximum)	7.86	7.94	8.40	7.94	8.05	8.09	8.09	8.09	8.06	7.89	7.91	7.92
Nitrate (as N; ug/L)	184	187	99	195	101	123	79	68	130	272	74	142
Chloride (ug/L)	4,200	2,500	2,420	6,410	2,500	3,220	4,220	3,530	1,360	7,590	5,240	26,800
Sulfate (ug/L)	21,700	20,000	18,700	18,700	15,100	18,200	19,600	18,700	9,950	34,000	22,100	22,000
Arsenic (ug/L)	<DL	0.45	<DL	<DL	0.54	0.58	0.60	<DL	0.58	<DL	<DL	<DL
Cadmium (ug/L)	<DL	<DL	<DL	<DL	<DL	0.11	<DL	<DL	<DL	<DL	<DL	<DL
Chromium (ug/L)	0.63	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Iron (ug/L)	211	108	62.6	146	55	119	238	71	21	134	63	46.3
Lead (ug/L)	<DL	0.28	<DL	0.34	<DL	1.1	1.1	0.28	<DL	0.34	<DL	<DL
Manganese (ug/L)	15.5	5.0	1.1	9.0	1.0	23	28	12	1.0	7.0	3.0	4.0
Gross beta (pCi/L)	1.3	2.9	4.2	2.6	1.7	1.3	<DL	2.5	3.5	4.8	1.5	<DL
Flow rate, monthly avg. (gpm)	44	62	2,070	36	41	55	49	94	43	38	37	49
Total dissolved solids (ug/L)	93,000	97,000	73,000	30,000	98,000	102,000	102,000	105,000	98,000	163,000	123,000	128,000
Mercury (ug/L)	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	0.092
Gross alpha (pCi/L)	<DL	<DL	<DL	1.4	<DL	<DL	1.2	<DL	3.0	1.6	<DL	1.5
Oil and grease (ug/L)	<DL		<DL		<DL		<DL		<DL		<DL	
Carbon tetrachloride (ug/L)	<DL		<DL		<DL		<DL		<DL		<DL	
Chloroform (ug/L)	1.9		3.8		1.4		1.7		1.7		1.7	
Methylene chloride (ug/L)	<DL		<DL		<DL		<DL		<DL		<DL	
Bis (2-ethylhexyl) phthalate (ug/L)	<DL		<DL		<DL		<DL		<DL		<DL	
Total trihalomethanes (ug/L)	1.3		1.8		<DL		1.7		1.7		1.7	
Tritium (pCi/L)	<DL		<DL		<DL		<DL		<DL		<DL	

<DL = less than detection limit; µhoms/cm = micro-mhos per centimeter; ug/L = microgram per liter; pCi/L = picocuries per liter; gpm = gallons per minute.

Table 3-8. 100-N Sewage Treatment Lagoon Discharge Monitoring Report (ST 4507) for 2005.

Sample Parameter	Month											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Influent (gal/day)	8,185	9,223	10,566	9,509	9,634	9,879	9,644	12,046	8,578	8,006	8,576	9,360
Effluent (gal/day)	4,422	802	ND	ND	17,407	ND	ND*	ND	ND	ND	25,865	ND
Total suspended solids (mg/L)	10	16	ND	ND	12	ND	ND	ND	ND	ND	15.8	ND
Total dissolved solids (mg/L)	378	370	ND	ND	328	ND	ND	ND	ND	ND	374.0	426
BOD (mg/L)	8.3	10.1	ND	ND	3.0	ND	ND	ND	ND	ND	3.0	ND
pH (average)	7.73	7.80	ND	ND	7.785	ND	ND	ND	ND	ND	7.74	ND
Nitrate (mg/L)	1.9	1.6	ND	ND	0.7	ND	ND	ND	ND	ND	1.1	ND
Ammonia (mg/L)	8.6	9.9	ND	ND	1.65	ND	ND	ND	ND	ND	2.6	ND
Fecal coliform (colony per 100 ml)	1,600	>2,400	ND	ND	78	ND	ND	ND	ND	ND	4,255	ND

ND = no discharge; gal/day = gallons per day; mg/L = milligrams per liter; BOD = biochemical oxygen demand.

* An anomalous instrument reading resulted in the recording of 104 gallons, but the reading was determined to be false; hence, no discharge.

Table 3-9. WTP Concrete Batch Plant (WAG 50-5180) and Pit 30 (WAG 50-5181) Discharge Monitoring Report Effluents in 2005.

Sample Parameter	Month												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
WAG 50-5180													
Process or Mine Dewatering water													
pH minimum								8.41 ^a					
pH maximum								8.41 ^a					
Total dissolved solids													
No discharge	X	X	X	X	X	X	X		X	X	X	X	
Stormwater													
pH minimum			7.62			7.98						7.58	
pH maximum			8.36			8.07						8.20	
No discharge							X	X	X				
WAG 50-5181													
Process Pond #1	Inactive in accordance with Activity Status Change Form – Permit Number WAG 50-5181 (inactive effective 3/25/04; active effective 4/1/05)												
pH minimum						7.69	7.90	7.59	8.34	7.95	7.82	7.81	
pH maximum						7.92	7.90	8.35	8.40	7.95	7.82	7.81	
No discharge				X	X								
Stormwater	Inactive in accordance with Activity Status Change Form – Permit Number WAG 50-5181 (inactive effective 3/25/04; active effective 4/1/05)												
pH minimum						8.14							7.58
pH maximum						8.15							7.81
No discharge									X	X	X		

^a Two unplanned releases of process water (i.e., raw water) occurred on August 3, 2005, and August 4, 2005, reported to the Washington State Department of Ecology under a separate letter. Both releases were due to failure of equipment that subsequently was replaced and updated. A water sample from the release on August 3, 2005, was collected and the result of the pH test was 8.41. No sample from the release of August 4, 2005, was collected for testing.

Table 3-10. Sanitary Sewage Discharged to Sewage Disposal Systems in 2005.

Area	Population ^a	Discharge, ^b gal/yr (L/yr)
100-DR	varies	12,500 (47,000) ^c
100-K	800	3,000,000 (11,400,000) ^d
100-N	200	750,000 (2,840,000) ^e
200 East	2,000	7,500,000 (28,400,000) ^d
200 West	1,480	5,550,000 (21,000,000) ^d
300	1,200	0 ^f
400	200	0 ^g
600	350	1,312,500 (4,970,000)
WTP Construction	1,500	5,630,000 (21,400,000)

gal/yr = gallons per year; L/yr = liters per year.

^a Calendar year 2005 estimates.

^b Discharges were estimated by multiplying an average number of people assigned to each area (worker populations fluctuate throughout the year), 15 gal/day (57 L/day) sanitary sewage per person per day for 250 working days per year.

^c Calculated based on average flows.

^d A portion of this discharge was transported via tanker truck to the 100-N Sewage Treatment Lagoon, where it was treated and released to the soil. The remaining sanitary sewage is assumed to have been discharged to treatment systems, such as septic tanks and drain fields in each respective area.

^e Measured discharge value, including contributions from 100-K and 200 Areas.

^f Discharges from the 300 Area (except discharges from 300-FF-1 Remedial Action Project to a septic tank) were routed to the city of Richland POTW.

^g Discharges from the 400 Area were routed to the Columbia Generating Station sanitary sewer system.

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4.0 HAZARDOUS SUBSTANCE RELEASES

Hazardous substances, whether radioactive or nonradioactive, released to the environment must be evaluated to determine if they are reportable to federal, state, or local regulatory agencies. Agency notification is required when a released amount exceeds reporting thresholds. Reportable releases of hazardous substances are classified as one of the following two types:

- Nonroutine releases
- Continuous, routine releases.

Each type of release is discussed in the following sections.

4.1 NONROUTINE RELEASES

During 2005, no known nonroutine releases of a regulated substance of a reportable quantity occurred.

4.2 ROUTINE CONTINUOUS RELEASES

Releases of hazardous substances that exceed CERCLA reportable quantities (RQ) need not be reported immediately to the National Response Center when both of the following conditions are met:

- An initial notification has been completed
- The routine releases are continuous and stable in quantity and rate.

Historically at the Hanford Site, only the continuous, routine releases of ammonia, ammonium hydroxide, and carbon tetrachloride have posed operational difficulties in staying beneath RQs. During 2005, releases of ammonia, ammonium hydroxide, and carbon tetrachloride were below reportable quantities.

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