

QUARTERLY REPORT
CONSOLIDATED WATER TREATMENT FACILITY
AND
OU7 PASSIVE SEEP INTERCEPTION AND
TREATMENT SYSTEM

FOR JULY THROUGH SEPTEMBER 1997
INCLUDING DATA SUMMARY FOR
APRIL THROUGH JUNE 1997

:

Rocky Mountain Remediation Services, L.L.C.

October 1997

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY

1 0 INTRODUCTION

The CWTF went on-line February 29, 1996. The CWTF is designed as a comprehensive facility combining individual IM/IRA treatment activities in order to reduce cost, increase efficiency, and offer treatment options to the Rocky Flats Environmental Technology Site (RFETS) in support of on-going Environmental Restoration (ER) activities and remediations.

The Consolidated Water Treatment Facility (CWTF) consists of the following specific unit operations:

- Chemical precipitation (T-900A/T-900B),
- Cross-flow membrane microfiltration (T-900A/T-900B),
- Ultraviolet Light/Hydrogen Peroxide Oxidation (Building 891),
- Granular Activated Carbon (Building 891), and
- Ion Exchange (Building 891)

A portable clay absorbent media drum is also available for use at the CWTF during water transfers from tanker trucks to CWTF influent storage tanks as a pretreatment of oily wastewaters. Waters are processed through the various CWTF unit treatment operations based on knowledge of the influent water characteristics in order to maximize treatment and reduce handling costs and waste generation.

The CWTF currently treats contaminated water from the following sources:

- OU1 groundwater and OU2 surface water,
- Decontamination water from the Main Decontamination Facility (MDF) and Protected Area Decontamination Facility (PADF),
- Other ER waters (e.g., purge water, water pumped from containments, etc.), and
- Waters from ER Accelerated Action Projects

The CWTF flowpath is flexible enough to allow waters to be treated through particular unit processes as necessary, and to allow for re-treatment if necessary.

TABLE 2-1
CONSOLIDATED WATER TREATMENT FACILITY
APPROXIMATE QUANTITIES OF WATER COLLECTED AND PROCESSED a/

Month/Year	Gallons Collected from French Drain Sump b/	Gallons Collected from the OU1 Collection Well b/	Gallons Accepted at Bldg 891 from the MDF and Other Sources c/	Gallons Pumped from Bldg 891 Containments	Gallons Collected from the OU2 SW 59	Gallons Processed through T900A/T900B	Gallons Processed through GAC at Bldg 891	Gallons Processed through IX at Bldg 891
Jan 97	1 125	815	0	1 280	2 297	0	0	0
Feb 97	4 865	840	0	2 970	2 611	7 144	23 418	14 377
Mar 97	8 385	1 210	3 400	3 176	2 360	0	10 102	17 674
1st Quarter Totals	14 375	2 865	3 400	7 426	7 268	7 144	33 520	32 051
Apr 97	20 872	1 055	28 814	19 197	2 156	0	57 936	57 903
May 97	15 112	785	11 402	3 011	3 857	46 976	29 459	50 397
Jun 97	11 183	670	5 950	4 137	3 110	7 200	0	0
2nd Quarter Totals	47 167	2 510	46 166	26 345	9 123	54 176	87 395	108 300
Jul 97	4 575	2 160	9 740	5 810	5 977	20 694	40 152	37 143
Aug 97	22 314	1 240	33 159	15 378	2 709	25 075	67 164	76 452
Sep 97	7 450	1 610	10 578	5 047	4 894	12 878	23 501	14 161
3rd Quarter Totals	34 339	5 010	53 477	26 235	13 580	58 647	130 817	127 756
Oct 97								
Nov 97								
Dec 97								
4th Quarter Totals	0	0	0	0	0	0	0	0
Year to Date Totals	95 881	10 385	103 043	60 006	29 971	119 967	251 732	268 107

a/ Please note that because the CWTF is equipped with Influent Tanks the quantity of water collected will not necessarily equate to the quantity of water processed. Also note that a 15 000 gallon surge tank (T 203) is in line between the UV/GAC unit processes and IX #1 and therefore the quantity of water processed through UV/GAC will not equate to the quantity of water processed through IX.

b/ This ground water is collected each operating day (i.e. 5 days per week)

c/ Other sources may include purge water, ER Accelerated Action Project water, etc. such as the Mound Excavation, Mod Lab, or water collected in the B 750 Steam Pit.

TABLE 2-2
 CONSOLIDATED WATER TREATMENT FACILITY
 CHEMICAL USAGE

Month/Year	Building 891					T-900A/T-900B				
	Hydrochloric Acid 36% (gallons)	Sodium Hydroxide 50% (gallons)	Hydrogen Peroxide 50% (gallons)	Sulfuric Acid a/ 98% (gallons)	Calcium Hydroxide (pounds)	Ferric Sulfate (pounds)	Hydrogen Peroxide 35% (gallons)	Sodium Hydroxide 50% (gallons)	Sodium Hypochlorite (gallons)	
Jan-97	00	660	20	00	00	00	00	00	00	
Feb-97	3390	1380	19	15	314	25	63	00	00	
Mar-97	00	00	57	00	00	00	00	00	00	
1st Quarter Totals	3390	2040	96	15	314	25	63	00	00	
Apr-97	1700	1200	16	00	00	00	00	00	00	
May-97	1220	690	02	35	660	88	259	41	00	
Jun-97	00	00	07	00	00	00	00	00	00	
2nd Quarter Totals	2920	1890	25	35	660	88	259	41	00	
Jul-97	00	00	03	35	780	99	60	51	00	
Aug-97	00	1050	05	43	945	120	73	00	00	
Sep-97	00	00	02	20	240	30	50	00	00	
3rd Quarter Totals	00	1050	10	98	1965	249	183	51	00	
Oct-97									00	
Nov-97									00	
Dec-97									00	
4th Quarter Totals	00	00	00	00	00	00	00	00	00	
Year-to-Date Totals	6310	4980	130	148	2939	362	505	92	00	

a/ In addition to the sulfuric acid quantity listed in this column occasionally a small amount (approximately 1 gallon per effluent tank) of sulfuric acid is used in Building 891 for effluent pH adjustment

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY

3 0 INFLUENT AND EFFLUENT SAMPLING (April, May, June 1997)

3 1 OU1 FRENCH DRAIN SUMP, COLLECTION WELL, AND BUILDING 881 FOOTING DRAIN CHARACTERISTICS

Collection Well water is now collected separately from the French Drain Sump water, and collection and treatment of water from the Building 881 Footing Drain was discontinued in September 1994. Therefore the current French Drain Sump data is representative of only those waters that seep from the groundwater table into the French Drain. For the April, May, June 1997 period, quarterly sampling was performed at the French Drain Sump, the Collection Well, and the Building 881 Footing Drain.

VOCs, Radionuclides, Metals, and Water Quality for the French Drain Sump, the Collection Well, and the Building 881 Footing Drain have been reviewed and compared to the OU1 ARARs. Note that it has historically been assumed that the OU1 ARARs for radionuclides and metals are dissolved values. Those constituents which did exceed OU1 ARARs include the following:

FRENCH DRAIN SUMP			
Compound	Exceedance Value	Units	OU1 ARAR
Selenium (dissolved)	50.2	ug/L	10
Total Dissolved Solids	741	mg/L	400
:	:	:	:

COLLECTION WELL			
Compound	Exceedance Value	Units	OU1 ARAR
Tetrachloroethene	84	ug/L	5
Trichloroethene	660	ug/L	5
Selenium	641 E	ug/L	10
TDS	1080	mg/L	400

BUILDING 881 FOOTING DRAIN			
Compound	Exceedance Value	Units	OU1 ARAR
Tetrachloroethene	28	ug/L	5
Total Dissolved Solids	584	mg/L	400

The Building 881 Footing Drain is currently being sampled for both total and dissolved radionuclides and metals (refer to DOE letter ER SRG 10199, dated September 29, 1994).

4 0 ENVIRONMENTAL COMPLIANCE

Periods of Non-Collection OU2 SW-59

There were no periods of non-collection at the OU2 SW-59 collection system

SECTION B - OU7 PASSIVE SEEP INTERCEPTION AND TREATMENT SYSTEM

6 0 INTRODUCTION, OPERATIONS, AND SAMPLING

The OU7 Passive Seep Interception and Treatment System (PSITS) is designed to collect and treat OU7 seep water and thereby eliminate, to the extent practicable, the discharge of the FO39-listed waste contained in this seep water to the East Landfill Pond. The collection and treatment system is comprised of the following items:

- A seep interception system
- A settling basin to remove total suspended solids
- A bag filtration system consisting of two filters operated in parallel (currently 25 micron bags are in use in the system)
- Two 55 gallon drums of granular activated carbon (GAC) are operated in series to remove volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs)

During the third quarter of 1997, changeout of the bag filters was not required.

The existing metal GAC drums were removed from service and replaced with two poly GAC drums. The spent carbon was packaged for disposal and the metal containers were triple rinsed and disposed of per plant procedure.

A GAC outfall sample was taken on June 18, 1997. The effluent showed all Volatile Organic Compounds as nondetect except chloroethane at 19 ug/L and 1,1-dichloroethane at 4.2 ug/L.

There were no periods of system bypass recorded.

The effectiveness of GAC drum series operation will continue to be monitored. A four month study is currently underway to determine the treatment effectiveness of the system. EPA will be notified immediately in any instance where by-pass continues longer than 72 hours. Periods of bypass less than 72 hours will be documented in this report.

Selected Laboratory Data Qualifiers and Descriptions

<u>Qualifier</u>	<u>Description</u>
B	< method detection limit but >= instrument detection limit (INORGANIC)
B	Analyte found in blank and sample (ORGANIC)
D	Compound identified using secondary dilution factor (ORGANIC)
E	Concentration exceeds calibration range of instrument (ORGANIC)
E	Estimated due to interference (INORGANIC)
J	Estimated value, < sample's detection limit
N	Spiked recovery not within control limits (INORGANIC)
S	Determined by MSA (INORGANIC)
U	Undetected, analyzed for but not detected
W	Post-digest sample outside of control limit (INORGANIC)

Selected Data Validation Qualifiers and Descriptions

<u>Qualifier</u>	<u>Description</u>
A	Data is acceptable, with qualifications
JA	Estimated, acceptable
R	Data is rejected
V	Data is valid
Y	Analytical results in validation process
Z	Validation was not requested or performed

Appendix A
Data Qualifiers and Descriptions

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SECTION A - CONSOLIDATED WATER TREATMENT FACILITY

5 0 ANTICIPATED OPERATIONS FOR NEXT QUARTER

Collection and treatment of water from the French Drain Sump will continue as normal. Water from the Collection Well will continue to be collected in the OUI trailer-mounted container and transported to the CWTF for off-loading and treatment. Purge, incidental, and decontamination pad waters will continue to be accepted and treated.

Collection of SW-59 weir water into T-59 (the double-walled tank located just south of the SW-59 weir box) began on September 30, 1996. This collected water is now periodically transported to the CWTF via tanker truck.

The CWTF will continue to accept and treat waters from ER Accelerated Action Projects. Projects supported during the past quarter include the Mound remediation and the Modular lab excavation. Future support will be provided to the Trench 1 remediation project.

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY

3.2 OU2 SURFACE WATER CHARACTERISTICS

Surface water is sampled on a quarterly basis from SW-59, SW-61, and SW-132. Although the Environmental Protection Agency and the Colorado Department of Public Health and the Environment authorized the discontinuation of the collection and treatment of SW-61 and SW-132 on April 24, 1994, the two surface water stations continue to be sampled to verify that no increase in contamination is occurring. Collection and treatment for SW-61 and SW-132 was discontinued on May 6, 1994. Presently only SW-59 water is collected and treated. Note that it has historically been assumed that the OU2 ARARs for radionuclides and metals are total values.

The data for OU2 surface water has been reviewed and compared to the relevant ARARs, those constituents which did exceed OU2 ARARs include the following:

SURFACE WATER STATIONS SW-59, SW-61, and SW-132

Compound	Stations	Exceedance Value	Units	OU2-ARAR
Carbon Tetrachloride	SW-59	58	ug/L	5
Chloroform	SW-59	10	ug/L	1
Chloroform	SW-61	11	ug/L	1
Tetrachloroethene	SW-59	22	ug/L	1
Tetrachloroethene	SW-61	34	ug/L	1
Trichloroethene	SW-59	24	ug/L	5
Vinyl Chloride	SW-61	39	ug/L	2

Compound	Stations	Exceedance Value	Units	OU2-ARAR
Manganese	SW-61	50.2	ug/L	50
Zinc	SW-59	167	ug/L	50
Zinc	SW-61	72.8	ug/L	50
Zinc	SW-132	112	ug/L	50

3.3 TREATED EFFLUENT CHARACTERISTICS

Treated effluent from the CWTF is stored in one of three Effluent Storage Tanks prior to discharge. An Effluent Storage Tank is sampled once it is full, and the tank is discharged if the data show that ARARs have not been exceeded.

Effluent tank T-206 (containing 124,000 gallons), was discharged to the SID in July 1997, following receipt of sample results that demonstrated the water quality was acceptable for discharge and in compliance with the ARARs. Effluent tank T-205, containing 119,000 gallons, was discharged to the SID in August 1997, following receipt of acceptable sample results.

**TABLE 2-3
CONSOLIDATED WATER TREATMENT FACILITY
WASTE GENERATION**

Month/Year	Building 891			T-900A/T-900B			Bldg 891/T-900A/T-900B	
	Filter Socks (55-gal drum)	Neutralized Regenerant to 374 (gallons)	Spent Media (drums)	Sludge Production (55-gal drum)	Spent GAC (pounds)	Used Filter Membranes (55-gal drum)	Personal Protective Equip (55-gal drum) a/	
Jan-97	--	4 136	0	0	0	0	--	
Feb-97	-	4 737	0	0	0	0	--	
Mar-97	--	4 550	0	0	0	0	--	
1st Quarter Totals	0	13 423	0	0	0	0	2 drums	b/c/
Apr-97		0	0	0	0	0	--	
May-97		9 099	0	0	0	0	--	
Jun-97	--	0	0	0	0	0	--	
2nd Quarter Totals	0	9 099	0	0	0	0	--	
Jul-97	--	0	0	0	0	0	--	
Aug-97	--	0	0	0	0	0	--	
Sep-97	--	0	0	0	0	0	--	
3rd Quarter Totals	0	0	0	0	0	0	--	
Oct-97	--	0	0	0	0	0	--	
Nov-97	--	0	0	0	0	0	--	
Dec-97	--	0	0	0	0	0	--	
4th Quarter Totals	0	0	0	0	0	0	--	
Year-to-Date Totals	0	22 522	0	0	0	0	2	

- a/ PPE is monitored for radiological contaminants and if determined to be acceptable for unrestricted release is sent to the Rocky Flats landfill for disposal
- Until the acceptance water from an ER Accelerated Action Project in February 1996, no PPE from Building 891 or the T-900A/T-900B trailers had been found to be radiologically contaminated
- b/ PPE is collected from water treatment operations MDF decontamination operations etc and is drummed collectively
- c/ These drums are filled gradually and therefore only quarterly totals are reported

- T-900A/T-900B trailers
 - Sulfuric acid (pH adjustment TK-1 and effluent)
 - Calcium hydroxide (precipitation)
 - Ferric sulfate (precipitation)
 - Hydrogen peroxide (chemical cleaning of filter modules)
 - Sodium hydroxide (pH adjustment TK-2)

Table 2-2 summarizes the quantities of chemicals utilized during the period of July through September 1997

2.3 WASTE GENERATION

The following types of waste are generated during normal wastewater treatment operations at Building 891 and the T-900A/T-900B trailers

- Building 891
 - used filter socks
 - neutralized ion exchange regenerant
 - personnel protective equipment
- T-900A/T-900B trailers
 - filter press sludge cake
 - personnel protective equipment
 - used filter membranes

Table 2-3 summarizes the types and quantities of the waste generated during wastewater treatment operations at Building 891 and the T-900A/T-900B trailers for the third quarter of 1997. No neutralized regenerant water from Tank T-210 was sent to the 374 evaporator for processing during the July through September 1997 period.

2 0 CWTF OPERATIONS (July, August, September 1997)

2 1 QUANTITIES OF WATER COLLECTED AND TREATED

Table 2-1 summarizes the quantities of water treated at the CWTF for the period July through September 1997. During this period the CWTF accepted water from the following sources:

- OU1 French Drain Sump
- OU1 Collection Well
- OU2 Surface Water Station SW-59
- Snow melt/rain water pumped from CWTF containments
- MDF and PADF Water
- Groundwater/snow melt from the Mound excavation
- ER water from the Mod Lab

As can be seen from Table 2-1, a total of approximately 127,756 gallons of water were treated through the Building 891 Ion Exchange Columns during the July through September period. Approximately 58,647 gallons of the total water volume were treated through the chemical precipitation/microfiltration trailers.

Please note that because the CWTF is equipped with three Influent Tanks, the amount of water treated may be less than or greater than the amount of water collected for any given period.

During the period from July through September 1997, treated water was released to the South Interceptor Ditch (SID) from two effluent tanks. During July 1997, 124,000 gallons of treated water was discharged from T-206 and during August 1997, 119,000 gallons of treated water was released.

As of the end of September, 1997, approximately 3,931,029 gallons of water has been processed through the Building 891 Ion Exchange Columns.

2 2 CHEMICAL USAGE

The following chemicals are utilized during wastewater treatment operations at the CWTF:

- Building 891
 - Hydrogen peroxide (UV oxidation)
 - Hydrochloric acid (ion exchange regeneration and pH adjustment)
 - Sodium hydroxide (ion exchange regeneration)

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