Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

JUL 28 2004

JUL 29 2004

Mr. Clint Marshall
Mining Environmental Compliance Section
New Mexico Environmental Department
P. O. Box 26110
Santa Fe, New Mexico 87502

Subject: Semi-Annual Discharge Monitoring Report For January 2, 2004 Through June 30, 2004

Dear Mr. Marshall:

Enclosed is the Waste Isolation Pilot Plant Discharge Monitoring Report for the period of January 1, 2004 through June 30, 2004. This report is required by Discharge Plan 831.

We certify under penalty of law that this document and all enclosures were prepared under our direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on our inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Sincerely,

R. Paul Detwiler, Acting Manager
Carlsbad Field Office

S. D. Warren, Manager
Washington TRU Solutions LLC

Enclosure

cc: wo/enclosure
J. Kieling, NMED

CBFO:OEC:HLP:JGW:04-1707:UFC:5486

4.0 SUMMARY OF ACTIVITIES RELATED TO THE SHALLOW SUBSURFACE WATER (SSW) MONITORING AND SAMPLING PROGRAM

Water levels in the shallow wells (PZ-1 through PZ-12, C-2505, C-2506, and C-2507) were obtained on September 17 and December 9, 2004, and are included in Table 3. These were taken on the quarterly milestones outlined in Table 2, Ground Water Monitoring Schedule, in the December 22, 2003, DP-831 Modification. Figure 1 represents a potentiometric surface map for the December 2004 monitoring data.

WQSP-6A was sampled on May 26, 2004, and in November 2004 as part of the WIPP Hazardous Waste Facility Permit Detection Monitoring Program (DMP) (Table 3). Only WQSP-6A data for the May sampling event are provided in this report because the results for the November event were not available at the time of submittal. The November WQSP-6A analytical data will be provided in the July 31, 2005, Semi-annual Discharge Monitoring Report. The signed laboratory reports for WQSP-6A are included in Attachment 3.

Concentrations for selenium and chromium in the WQSP-6A sample were below the method detection limits of 0.0250 mg/l. Sulfate, chloride, and total dissolved solids (TDS) concentrations were detected at concentrations exceeding standards of 20.6.2.3103 NMAC, *Standards for Ground Water of 10,000 mg/l TDS Concentration or Less* for Human Health and Domestic Water Supply. Although the concentrations were higher than the standards, they are less than background concentrations established in the *Waste Isolation Pilot Plant RCRA Background Groundwater Quality Baseline Report* (DOE/WIPP 98-2285). The Dewey Lake groundwater in WQSP-6A has not been impacted by the shallow subsurface water identified at the WIPP site.

The shallow wells were sampled for field and general chemistry parameters in November 2004 as required by the December 22, 2003, modification to DP-831. Five wells were sampled on November 8, 2004, while the remaining wells were sampled on November 9, 2004. Results for the field sampling parameters and laboratory analyses are presented in Table 3. Laboratory reports for all shallow well analyses are included in Attachment 3. Chloride concentrations exceeded values listed in 20.6.2.3103 NMAC for Human Health and Domestic Water Supply in all shallow wells sampled. The maximum concentration was 92,400 mg/l in PZ-9, while the minimum concentration was 353 mg/l in PZ-10. Total dissolved solids concentrations exceeded 20.6.2.3103 NMAC values for Human Health and Domestic Water Supply in all shallow wells sampled with the maximum concentration of 144,000 mg/l in PZ-9. Nitrate concentrations exceeded 20.6.2.3103 NMAC values for Human Health and Domestic Water Supply in one well, PZ-12, with a concentration of 19.8 mg/l. Sulfate concentrations exceeded 20.6.2.3103 NMAC values for Human Health and Domestic Water Supply in nine wells sampled with a maximum concentration of 14,500 mg/l in PZ-9. Chromium concentrations were below the detection limit in all but one of the SSW wells sampled. Well C-2507 had a chromium concentration of 0.0140 mg/l. Selenium was detected in nine wells sampled, all exceeding concentrations identified in 20.6.2.3103 NMAC for Human Health and Domestic Water Supply.

Table 1: Sewage Lagoon and H-19 Semi-Annual Analytical Results								
Analyte	**Influent to Facultative Lagoon System**		**Evaporation Pond B**		**Evaporation Pond C**		**H-19 Evaporation Pond**	
Nitrate (mg/l)	<1.00	NA	<0.10		NA		NA	
TKN (mg/l)	16.5	NA	19		NA		NA	
TDS (mg/l)	444	NA	500		7,040		64,500	
	Activity	TPU 2 σ	Activity	TPU 2 σ	Activity	TPU 2 σ	Activity	TPU 2 σ
$U^{233/234}$ Bq/l)	6.40E-02	5.95E-03	1.64E-02	3.09E-03	1.80E-02	3.00E-03	1.74E-01	1.11E-02
U^{235} (Bq/l)	1.50E-03	9.67E-04	3.45E-04	1.42E-03	1.37E-04	3.17E-04	3.35E-03	1.48E-03
U^{238} (Bq/l)	2.14E-02	3.28E-03	7.49E-03	2.07E-03	5.16E-03	1.59E-03	3.71E-02	4.56E-03
Pu^{238} (Bq/l)	1.17E-04	3.82E-04	-2.48E-05	3.14E-04	1.56E-04	4.60E-04	2.81E-04	5.11E-04
$Pu^{239/240}$ (Bq/l)	6.95E-05	2.61E-04	5.36E-05	2.57E-04	-3.37E-05	1.19E-04	5.24E-05	4.33E-04
Am^{241} (Bq/l)	1.84E-04	4.31E-04	2.74E-04	4.58E-04	1.24E-04	3.75E-04	1.71E-05	3.08E-04
Sr^{90} (Bq/l)	2.68E-02	2.95E-02	1.13E-02	2.68E-02	1.89E-02	2.94E-02	5.67E-03	2.58E-02
TPU 2 σ = total propagated uncertainty at 2-sigma (95% confidence interval)								
NA: The analytical parameter is not required.								
NS: Not Sampled								

Table 2: Infiltration Control Evaporation Ponds Annual Analytical Results							
Evaporation Pond	**Chloride mg/l**	**Nitrate-N mg/l**	**Sulfate mg/l**	**TDS mg/l**	**Selenium mg/l**	**Chromium mg/l**	**Water Depth (ft)/Volume (ft^3)**
SPEP	**10000**	< 20.0	220	**18400**	< 0.0500	< 0.250	NM
Salt Storage Extension Evaporation Basin	**92100**	1.26	**10400**	**128000**	< 0.0500	< 0.250	NM
Pond 1	8.70	1.09	8.86	218.0	<0.0100	< 0.0500	1.8 / 24,190
Pond 2	75.0	1.11	10.3	244.0	<0.0100	< 0.0500	5.2 / 194,671
Pond A	120	<1.00	12.1	312	< 0.0500	< 0.250	2.9 / 550,000
"Bold" concentrations exceed standards listed in 20.6.2.3103 NMAC for Human Health and Domestic Water Supply							

Table
SUMMARY OF SHALLOW SUBSURFACE WATER LEVELS, FIELD PARAMETERS, AND ANALYTICAL RESULTS

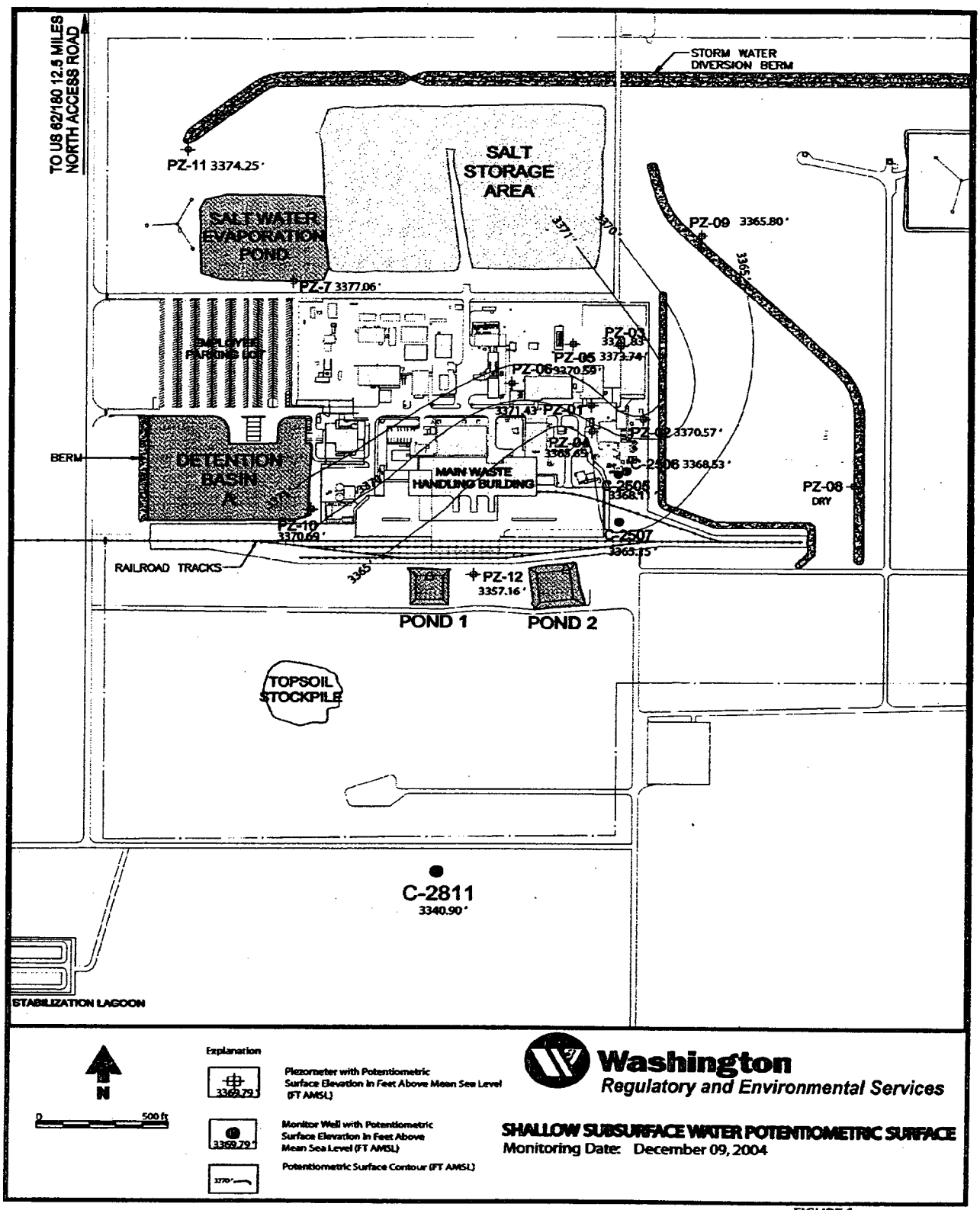
	Water Level Monitoring (Ft AMSL)		Field Parameters			General Chemistry Parameters					Trace Metals	
Monitoring Site	09/17/04	12/09/04	pH (SU)	Temp. (°C)	Electrical Conductivity @25 °C (µS/cm)	Sample Date	Nitrate (mg/l)	Sulfate (mg/l)	Chloride (mg/l)	TDS (mg/l)	Selenium (mg/l)	Chromium (mg/l)
PZ-1	3371.18	3371.43	6.20	21.2	>3999	11/09/04	1.30	**6530**	**45700**	**85800**	**0.106**	<0.0100
PZ-2	3369.99	3370.57	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS
PZ-3	3371.51	3371.83	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS
PZ-4	3364.85	3365.65	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS
PZ-5	3372.95	3373.74	6.65	21.5	>3999	11/09/04	<2.50	**1820**	**47800**	**86000**	**0.0940**	<0.0100
PZ-5 Dup.	NA	NA	6.65	21.5	>3999	11/09/04	3.59	**12000**	**58600**	**77800**	**0.0890**	<0.0100
PZ-6	3369.78	3370.59	6.65	21.5	>3999	11/09/04	4.89	**13000**	**75400**	**113000**	**0.0600**	<0.0100
PZ-7	3376.70	3377.06	6.52	21.5	>3999	11/08/04	2.89	**7460**	**43600**	**80400**	**0.0880**	<0.0100
PZ-8	DRY	DRY	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS
PZ-9	3364.95	3365.80	5.90	21.9	>3999	11/09/04	1.40	**14500**	**92400**	**144000**	**0.0660**	<0.0100
PZ-10	3367.92	3370.69	7.22	20.9	2328	11/08/04	3.69	431	**353**	**1576**	<0.0500	<0.0100
PZ-11	3373.93	3374.25	6.45	22.3	>3999	11/08/04	3.15	**13000**	**84100**	**119000**	<0.0500	<0.0100
PZ-12	3355.74	3357.16	6.96	21.0	>3999	11/08/04	**19.8**	**879**	**7170**	**9540**	**0.0660**	<0.0100
C-2811	3339.69	3340.90	7.26	20.4	3371	11/08/04	7.63	305	**1030**	**1996**	**0.0540**	<0.0100
C-2505	3367.53	3368.11	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS
C-2506	3367.96	3368.53	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS
C-2507	3364.58	3365.15	6.65	18.6	>3999	11/09/04	7.58	**824**	**1380**	**3350**	**0.0800**	0.0140
WQSP-6a	3197.30 [1]	3197.14 [2]	NA	NA	NA	05/26/04	9.61	**2000**	**416**	**3698**	<0.0250	<0.0250

Explanation: [1] **Water Level Measurement Taken on 3/09/04**

[2] **Water Level Measurement Taken on 6/09/04**

NS: Not Sampled as per permit conditions

"Bold" concentrations exceed standards listed in 20.6.2.3103 NMAC for Human Health and Domestic Water Supply



D:\Hydrology\ SSW Program\Semiannual Reporting\SSW_Pot_Surf_ 121103.pdf

FIGURE 1

Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

JAN 3 1 2005

FEB 0 4 2005

Mr. Clint Marshall
Ground Water Pollution Prevention Section
New Mexico Environment Department
P.O. Box 26110
Santa Fe, NM 87502

Subject: Semi-Annual Discharge Monitoring Report for July 1, 2004 through December 31, 2004

Dear Mr. Marshall:

Enclosed is the Waste Isolation Pilot Plant Discharge Monitoring Report for the period of July 1, 2004, through December 31, 2004. This report is required by Discharge Plan 831.

It is noted in Section 3.0 of the enclosed report No. 43 that pumping of water over the banks of Evaporation Baskin A, Pond 1 and Pond 2 occurred during this reporting period. DOE has filed a Notice of Discharge for these events pursuant to 20.6.2.1203 NMAC.

If you have any questions about this report or require any additional information, please contact Mr. H. L. Plum at (505) 234-7462.

Sincerely,

Inés Triay

Dr. Inés R. Triay
Acting Manager

Enclosure

cc: w/o enclosure
J. Bearzi, NMED *ED
J. Kieling, NMED ED

*ED denotes electronic distribution
CBFO:AMO:HLP:GS:05-0208:UFC 5487.00

WASTE ISOLATION PILOT PLANT (WIPP) SEMI-ANNUAL DISCHARGE MONITORING REPORT FOR DISCHARGE PLAN DP-831

REPORT NUMBER 43: July 1, 2004 through December 31, 2004

SPECIFIC REQUIREMENTS OF DP-831

1.0 DISCHARGE VOLUMES:

Facultative Lagoon System	(Based on Total Domestic Water Usage)	635,032 gallons
Miscellaneous Water Discharged to the Facultative Lagoon System		None
Facultative Lagoon System Evaporation Pond B		None
H-19 Evaporation Pond		172,220 gallons

2.0 WATER QUALITY ANALYSIS

Table 1 contains the water quality analytical results for the Facultative Lagoon System and the H-19 Evaporation Pond. The laboratory data sheets are included in Attachment 1. Table 2 contains the water quality analytical results for the four storm water run-off evaporation ponds and the Salt Storage Extension Evaporation Basin, which constitute the infiltration controls approved in the December 22, 2003, Discharge Plan Modification. The laboratory data sheets are included in Attachment 2.

Staff gauges have been manufactured for installation in the ponds to facilitate accurate field measurements of the water levels to one-hundredth of a foot in accordance with DP-831. The unusually high precipitation rates and volume of water in the Salt Pile Evaporation Pond and Salt Storage Extension Basin have prevented the installation of the staff gauges to date. To determine the water level and volume measurements, standard field survey techniques were used to measure the elevation of the water level to determine the volume in Pond 1, Pond 2, and Evaporation Basin A.

3.0 INFILTRATION CONTROL ACTIVITIES (DECEMBER 22, 2003, MODIFICATION)

The previous Discharge Monitoring Report for January through June 2004 reported the completion of the cap for the old salt storage area, Cell A of the Salt Storage Extension Area, and the Salt Storage Extension Evaporation Basin. The remaining work for installing the infiltration controls was anticipated to be complete by late September; however, above average rainfall has delayed construction activities. Pond 1, Pond 2, and Evaporation Basin A were de-watered by pumping water over the pond banks to facilitate meeting the construction deadlines established in DP-831; however, continued rainfall precluded completing the lining of Basin A by November 2004 and a request for an extension was submitted to NMED on November 12, 2004. The remaining work includes the lining of the salt pile run-off ditches with HDPE, the placement of native soils and vegetative cover on the old Salt Pile, and the lining of Evaporation Basin A, Pond 1, and Pond 2 with HDPE. The completion of the construction of the remaining infiltration controls are anticipated to be complete by April 2005 in accordance with the extension granted by your office in a letter dated November 18, 2004.

WASTE ISOLATION PILOT PLANT (WIPP) SEMI-ANNUAL DISCHARGE MONITORING REPORT FOR DISCHARGE PLAN DP-831

JUL 29 2004

REPORT NUMBER 42: January 1, 2004 through June 30, 2004

SPECIFIC REQUIREMENTS OF DP-831

1.0 DISCHARGE VOLUMES:

Facultative Lagoon System	(Based on Total Domestic Water Usage)	597,965 gallons
Miscellaneous Water Discharged to the Facultative Lagoon System		None
Facultative Lagoon System Evaporation Pond B		None
H-19 Evaporation Pond		269,885 gallons

2.0 WATER QUALITY ANALYSIS

Table 1, attached, contains the water quality analytical results for the Facultative Lagoon System and the H-19 Evaporation Pond.

3.0 INFILTRATION CONTROL ACTIVITIES (DECEMBER 22, 2003 MODIFICATION)

In January 2004, the Salt Storage Extension Evaporation Basin was completed and Cell A of the Salt Storage Extension Area was completed in February 2004. Construction of the new haul road was completed and mining operations began placing salt in Cell A in May 2004. The old salt pile high-density polyethylene liner installation for the cap was 70% complete at the end of this reporting period (June 2004) and the liner installation was complete on July 8, 2004.

4.0 SUMMARY OF ACTIVITIES RELATED TO THE SHALLOW SUBSURFACE WATER (SSW) MONITORING AND SAMPLING PROGRAM

Water levels in the shallow wells (PZ-1 through PZ-12, C-2505, C-2506, and C-2507) were obtained on March 10, April 14, and June 10, 2004 (Table 2). With the exception of the April measurement, these were taken on the quarterly milestones outlined in Table 2, Ground Water Monitoring Schedule, in the December 22, 2003 DP-831 Modification. April measurements were in addition to the quarterly measurements to observe the water level trends after heavy rainfall during the first week of April. For most of the site the water elevations were on a declining trend from 2003 to April 2004, even after the heavy rainfall. Water level measurements taken in June indicated a rising trend in elevation reflecting the lagging response to the early April rainfall event.

WQSP-6A was sampled on November 19, 2004 and May 24, 2004 as part of the WIPP Hazardous Waste Facility Permit Detection Monitoring Program (DMP) (Table 1). Only WQSP-6A data for the November sampling event are provided in this report because the results for the May event were not available at the time of submittal. The May WQSP-6A analytical data will be provided in the January 31, 2005 Semi-annual Discharge Monitoring Report. The signed laboratory reports for WQSP-6A are attached to this report.

Concentrations for nitrate and chromium in the WQSP-6A sample were below the method detection limits of 0.01 mg/l and 0.025 mg/l, respectively. Sulfate, chloride, total dissolved solids (TDS), and selenium concentrations were detected at concentrations exceeding standards of 20.6.2.3103 NMAC, *Standards for Ground Water of 10,000 mg/l TDS Concentration or Less* for Human Health and Domestic Water Supply. Although the concentrations were higher than the standards, they are less than background concentrations established in the *Waste Isolation Pilot Plant RCRA Background Groundwater Quality Baseline Report* (DOE/WIPP 98-2285). The Dewey Lake groundwater in WQSP-6A has not been impacted by the shallow subsurface water identified at the WIPP site.

The shallow wells were sampled for field and general chemistry parameters in June 2004 as required by the December 22, 2003 modification to DP-831. Three wells were sampled on June 14, 2004, while the remaining wells were sampled on June 21, 2004. Results for the field sampling parameters and laboratory analyses are presented in Table 2. Laboratory reports for all shallow well analyses are attached. Chloride concentrations exceeded values listed in 20.6.2.3103 NMAC for Human Health and Domestic Water Supply in all shallow wells sampled. The maximum concentration was 80,200 mg/l in PZ-9, while the minimum concentration was 368 mg/l in PZ-10. Total

dissolved solids (TDS) concentrations exceeded 20.6.2.3103 NMAC values for Human Health and Domestic Water Supply in all shallow wells sampled with the maximum concentration of 140,000 mg/l in PZ-9. The minimum TDS concentration was detected in PZ-10 at a concentration of 1,714 mg/l. Nitrate concentrations exceeded 20.6.2.3103 NMAC values for Human Health and Domestic Water Supply in six wells, with the highest concentration of 21.20 mg/l detected in PZ-6. The minimum concentration was below the detection limit in PZ-1 and PZ-9. Sulfate concentrations exceeded 20.6.2.3103 NMAC values for Human Health and Domestic Water Supply in nine wells sampled with a maximum concentration of 3,740 mg/l in PZ-9. Chromium concentrations were below the detection limit for all SSW wells sampled. WQSP-6A had a chromium concentration of 0.028 mg/l, but this value was well within background concentrations established for the Hazardous Waste Facility Permit. Selenium was detected in all wells sampled; however, none of the values exceeded those identified in 20.6.2.3103 NMAC for Human Health and Domestic Water Supply. WQSP-6A selenium concentrations exceeded 20.6.2.3103 NMAC values for Human Health and Domestic Water Supply; however, the value was within the background concentrations established for the HAZARDOUS WASTE FACILITY PERMIT.

Table 1: Sewage Lagoon and H-19 Semi-Annual Analytical Results

Analyte	Influent to Facultative Lagoon System		Evaporation Pond B		Evaporation Pond C		H-19 Evaporation Pond	
Nitrate (mg/l)	<0.10	NA	NA		NA		NA	
TKN (mg/l)	19	NA	NA		NA		NA	
TDS (mg/l)	500	NA	12,080		13,860		114,000	
	Activity	TPU 2 σ	Activity	TPU 2 σ	Activity	TPU 2 σ	Activity	TPU 2 σ
$U^{233/234}$ Bq/l)	1.48E-02	3.85E-03	4.65E-02	9.92E-03	4.00E-02	8.57E-03	2.61E-01	5.44E-02
U^{235} (Bq/l)	6.89E-04	6.99E-04	2.34E-03	1.42E-03	2.18E-03	1.37E-03	1.57E-02	5.27E-03
U^{238} (Bq/l)	4.45E-03	1.79E-03	1.84E-03	1.42E-03	1.63E-02	4.29E-03	8.20E-02	1.86E-02
Pu^{238} (Bq/l)	1.10E-04	2.21E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-04	4.84E-04
$Pu^{239/240}$ (Bq/l)	1.10E-04	3.82E-04	-2.15E-04	3.05E-04	1.06E-04	2.14E-04	3.39E-04	4.83E-04
Am^{241} (Bq/l)	0.00E+00	0.00E+00	1.07E-04	4.81E-04	3.47E-04	6.14E-04	0.00E+00	0.00E+00
Sr^{90} (Bq/l)	1.77E-02	3.84-02	-1.06E-02	4.62E-02	2.91E-02	3.77E-02	5.01E-02	4.76E-02
TPU 2 σ = total propagated uncertainty at 2-sigma (95% confidence interval)								
NA: The analytical parameter is not required.								
NS: Not Sampled								

Table 2
SUMMARY OF SHALLOW SUBSURFACE WATER LEVELS, FIELD PARAMETERS, AND ANALYTICAL RESULTS

	Water Level Monitoring (Ft AMSL)			Field Parameters			General Chemistry Parameters					Trace Metals	
Monitoring Site	3/10/04	4/14/04	6/10/04	pH (SU)	Temp. (^{0}C)	Electrical Conductivity @25 ^{0}C (µS/cm)	Sample Date	Nitrate (mg/l)	Sulfate (mg/l)	Chloride (mg/l)	TDS (mg/l)	Selenium (mg/l)	Chromium (mg/l)
PZ-1	3371.21	3371.13	3371.18	6.32	27.8	3999	6/21/04	<10.0	**1530**	**36300**	**79600**	0.0440	<0.00500
PZ-2	3370.00	3369.91	3370.04	NS	NS	NS	6/21/04	NS	NS	NS	NS	NS	NS
PZ-3	3371.32	3371.29	3371.45	NS	NS	NS	6/21/04	NS	NS	NS	NS	NS	NS
PZ-4	3364.65	3364.65	3364.91	NS	NS	NS	6/21/04	NS	NS	NS	NS	NS	NS
PZ-5	3372.78	3372.71	3372.85	6.50	25.0	3999	6/21/04	**20.7**	**1340**	**28800**	**55200**	**0.0670**	<0.00500
PZ-5 Dup.	3372.78	3372.71	3372.85	6.50	25.0	3999	6/21/04	**20.7**	**1370**	**32300**	**66000**	**0.0630**	<0.00500
PZ-6	3369.69	3369.61	3369.79	6.09	29.3	3999	6/21/04	**21.2**	**2860**	**70500**	**134000**	0.0170	<0.00500
PZ-7	3376.40	3376.32	3376.60	6.23	22.1	3999	6/21/04	**20.7**	**2620**	**53000**	**109000**	0.041	<0.00500
PZ-8	Dry	Dry	Dry	NS	NS	NS	6/21/04	NS	NS	NS	NS	NS	NS
PZ-9	3364.57	3364.56	3364.78	6.04	25.7	3999	6/21/04	<20.0	**3740**	**80200**	**140000**	<0.0100	<0.00500
PZ-10	3367.28	3367.22	3368.01	6.99	25.9	2515	6/14/04	3.81	469	**368**	**1714**	0.02000	<0.00500
PZ-11	3373.77	3373.72	3373.97	6.23	22.8	3999	6/21/04	**20.8**	**2220**	**58100**	**123000**	<0.0100	<0.00500
PZ-12	3355.18	3355.26	3356.34	6.54	24.7	3999	6/14/04	**11.2**	**773**	**5320**	**9700**	**0.0770**	<0.00500
C-2811	3339.07	3339.03	3339.43	7.15	22.9	3147	6/14/04	6.06	299	**769**	**2022**	0.0470	<0.00500
C-2505	3367.50	3367.44	3367.79	NS	NS	NS	6/21/04	NS	NS	NS	NS	NS	NS
C-2506	3367.98	3367.91	3368.23	NS	NS	NS	6/21/04	NS	NS	NS	NS	NS	NS
C-2507	3364.37	3364.30	3364.71	6.72	25.9	3999	6/21/04	7.55	**717**	**1300**	**3830**	0.029	0.028
WQSP-6a	3197.93 [1]	3198.07	3197.15 [2]	7.20	23.4	4060	11/19/04	<0.01	**1950**	**391**	**3955**	**0.219**	<0.025

Explanation: [1] **Water Level Measurement Taken on 3/09/04**

[2] **Water Level Measurement Taken on 6/09/04**

NS: Not Sampled as per permit conditions

"Bold" laboratory concentrations exceed standards listed in 20.6.2.3103 NMAC for Human Health and Domestic Water Supply

Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

JUL 2 9 2005

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AUG 0 1 2005

Mr. Clint Marshall
Ground Water Pollution Prevention Section
New Mexico Environment Department
P.O. Box 26110
Santa Fe, NM 87502

Subject: Semi-Annual Discharge Monitoring Report for January 1, 2005, Through June 30, 2005

Dear Mr. Marshall:

The purpose of this letter is to transmit to you the Waste Isolation Pilot Plant Discharge Monitoring Report for the period of January 1, 2005, through June 30, 2005. This report is required by Discharge Plan 831.

If you have any questions about this report or require any additional information, please contact Mr. H. L. Plum at (505) 234-7462.

Sincerely,

Lloyd L. Piper,
Acting Manager

Enclosure

cc: w/enclosure
S. Zappe, NMED

cc: w/o enclosure
C. Padilla, NMED *ED
J. Bearzi, NMED ED
J. Kieling, NMED ED
*ED denotes electronic distribution

CBFO:OCT:HJP:KJB:05-1501:UFC5486

JUL 29 2005

bcc: w/o enclosure

V. Daub, CBFO	*ED
G Basabilvazo, CBFO	ED
M. Rose, CBFO	ED
J. Plum, CBFO	ED
H. Johnson, CBFO	ED
D. Mercer, CBFO	ED
L. Steven, WTS	ED
G. Johnson, WTS	ED
D. Bignell, WRES	ED
M. Crawley, WRES	ED
R. Kehrman, WRES	ED
J. Siegel, WRES	ED

RCRA Chronology
CBFO M & RC
*ED denotes electronic distribution

CBFO:OCT:HJP:KJB:05-1501:UFC5486

WASTE ISOLATION PILOT PLANT (WIPP) SEMI-ANNUAL DISCHARGE MONITORING REPORT FOR DISCHARGE PLAN DP-831

REPORT NUMBER 44: January 1, 2005 through June 30, 2005

SPECIFIC REQUIREMENTS OF DP-831

1.0 DISCHARGE VOLUMES:

Facultative Lagoon System	664,411 gallons
Miscellaneous Water Discharged to the Facultative Lagoon System	None
Facultative Lagoon System Evaporation Pond B	None
H-19 Evaporation Pond	20,797 gallons

2.0 SURFACE WATER QUALITY ANALYSIS

Table 1 contains the water quality analytical results for the Facultative Lagoon System and the H-19 Evaporation Pond. The laboratory data sheets are included in Attachment 1.

3.0 INFILTRATION CONTROL ACTIVITIES (DECEMBER 22, 2003, MODIFICATION)

The July 1, 2004, through December 31, 2004, Discharge Monitoring Report discussed the status of the remaining construction work on the infiltration controls to include the lining of the salt pile run-off ditches with HDPE, the placement of native soils and vegetative cover on the old Salt Pile, and the lining of Storm Water Infiltration Control (SWIC) Pond A, Pond 1, and Pond 2 with HDPE.

The salt pile run-off ditches, Pond 1 and Pond 2 were lined in January 2005. The placement of native soils, including repairs from excessive precipitation events in the fall of 2004, was completed in March of 2005. The hydro-mulch and seed mix was applied in April of 2005. As reported to the Ground Water Quality Bureau in several letters between March and July 2005, continued precipitation has prevented the installation of the HDPE liner in SWIC Pond A. Efforts to dewater the pond and dry the soils enough to resume construction are ongoing.

Additionally, heavy rains in May and June of 2005 resulted in additional erosion on the side slopes of the salt pile cover before seed germination occurred. Various options for repairing the erosion, establishing vegetation and minimizing long-term maintenance for the salt pile are being evaluated for effectiveness.

4.0 SUMMARY OF ACTIVITIES RELATED TO THE SHALLOW SUBSURFACE WATER (SSW) MONITORING AND SAMPLING PROGRAM

Water levels in the shallow wells (PZ-1 through PZ-12, C-2505, C-2506, and C-2507) were obtained on March 16 and June 21, 2005, and are included in Table 2. These were taken on the quarterly milestones outlined in Table 2, Ground Water Monitoring Schedule, in the December 22, 2003, DP-831 Modification.

The Water Quality Sampling Program, Well 6A (WQSP-6A) was sampled on November 17, 2004, and April 2005 as part of the WIPP Hazardous Waste Facility Permit Detection Monitoring Program (DMP) (Table 2). Only WQSP-6A data for the November sampling event are provided in this report because the results for the April event were not available at the time of submittal. The April WQSP-6A analytical

data will be provided in the July 1, 2005, through December 31, 2005, Semi-annual Discharge Monitoring Report due by January 31, 2006. The signed laboratory reports for WQSP-6A are included in Attachment 2.

Concentrations for selenium and chromium in the WQSP-6A sample were below the method detection limits of 0.0250 milligrams per liter (mg/l). Sulfate, chloride, and total dissolved solids (TDS) concentrations were detected at concentrations exceeding standards of 20.6.2.3103 NMAC, *Standards for Ground Water of 10,000 mg/l TDS Concentration or Less for Human Health and Domestic Water Supply*. Although the concentrations were higher than the standards, they are less than the naturally occurring background concentrations established in the *Waste Isolation Pilot Plant RCRA Background Groundwater Quality Baseline Report* (DOE/WIPP 98-2285). The shallow subsurface water identified at the WIPP site has not impacted the Dewey Lake groundwater in WQSP-6A.

The ten shallow wells were sampled for field and general chemistry parameters in May 2005 as required by the December 22, 2003, modification to DP-831. Five wells were sampled on May 16, 2005, while the remaining five wells were sampled on May 17, 2005. Results for the field sampling parameters and laboratory analyses are presented in Table 2. Laboratory reports for all shallow well analyses are included in Attachment 3. Chloride concentrations exceeded the value of 250.0 mg/l listed in 20.6.2.3103 NMAC for human health and domestic water supply in all shallow wells sampled. The maximum concentration was 182,000 mg/l in PZ-9, while the minimum concentration was 416 mg/l in PZ-10. Total dissolved solids concentrations exceeded the 20.6.2.3103 NMAC value of 1,000 mg/l for human health and domestic water supply in all shallow wells sampled with the maximum concentration of 164,000 mg/l in PZ-9. Nitrate concentrations did not exceeded the 20.6.2.3103 NMAC value of 10 mg/l for human health and domestic water supply. Sulfate concentrations exceeded the 20.6.2.3103 NMAC value of 600.0 mg/l for human health and domestic water supply in nine wells sampled with a maximum concentration of 5,090 mg/l in PZ-9. Chromium concentrations exceeded the 20.6.2.3103 NMAC value of 0.05 mg/l for human health and domestic water supply in eight of the shallow wells sampled, with a maximum concentration of 0.0940 mg/l. Selenium was detected in nine wells sampled. Seven of these wells exceeded the concentration of 0.05 mg/l identified in 20.6.2.3103 NMAC for human health and domestic water supply.

Table 1: Sewage Lagoon and H-19 Semi-Annual Analytical Results								
Analyte	**Influent to Facultative Lagoon System**		**Evaporation Pond B**		**Evaporation Pond C**		**H-19 Evaporation Pond**	
Nitrate (mg/l)	<0.435		<0.10		NA		NA	
TKN (mg/l)	59.1		19		NA		NA	
TDS (mg/l)	522		**6,840**		**8,970**		**285,000**	
	Activity	TPU 2 σ	Activity	TPU 2 σ	Activity	TPU 2 σ	Activity	TPU 2 σ
$U^{233/234}$ (Bq/l)	5.32E-02	6.72E-03	1.16E-02	3.45E-03	1.81E-02	3.86E-03	7.37E-01	3.85E-02
U^{235} (Bq/l)	6.61E-04	8.61E-04	5.18E-04	9.13E-04	2.25E-04	5.19E-04	9.95E-03	3.05E-03
U^{238} (Bq/l)	2.26E-02	4.25E-03	5.03E-03	2.27E-03	6.43E-03	2.28E-03	1.75E-01	1.35E-02
Pu^{238} (Bq/l)	-1.28E-04	2.55E-04	0.00E+00	3.93E-04	-4.50E-05	3.53E-04	7.35E-04	1.60E-03
$Pu^{239/240}$ (Bq/l)	-4.90E-05	1.58E-04	6.54E-05	3.44E-04	3.14E-04	4.16E-04	-3.21E-04	7.92E-04
Am^{241} (Bq/l)	5.95E-04	7.82E-04	2.30E-04	5.05E-04	1.28E-04	4.53E-04	1.85E-04	5.48E-04
Sr^{90} (Bq/l)	3.32E-04	4.02E-02	1.01E-03	2.97E-02	-4.08E-03	2.85E-02	6.14E-03	4.32E-02
TPU 2 σ = total propagated uncertainty at 2-sigma (95% confidence interval)								
NA: The analytical parameter is not required.								
NS: Not Sampled								
TKN: Total Kjeldahl Nitrate								
TDS: Total Dissolved Solids								
Bq/l: Becquerel per liter								
"Bold" concentrations exceed standards listed in 20.6.2.3103 NMAC for Human Health and Domestic Water Supply								

Table 2
SUMMARY OF SHALLOW SUBSURFACE WATER LEVELS, FIELD PARAMETERS, AND ANALYTICAL RESULTS

	Water Level Monitoring (Ft AMSL)		Field Parameters			General Chemistry Parameters					Trace Metals	
Monitoring Site	03/16/05	06/21/05	pH (SU)	Temp. (^{0}C)	Electrical Conductivity @25 ^{0}C (µS/cm)	Sample Date	Nitrate (mg/l)	Sulfate (mg/l)	Chloride (mg/l)	TDS (mg/l)	Selenium (mg/l)	Chromium (mg/l)
PZ-1	3371.97	3372.40	6.32	23.8	>3999	5/17/05	1.47	**2640**	**62300**	**100500**	**0.0600**	**0.0770**
PZ-2	3371.31	3371.70	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS
PZ-3	3372.17	3372.64	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS
PZ-4	3366.78	3367.17	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS
PZ-5	3374.73	3375.05	6.45	21.9	>3999	5/17/05	2.96	**3260**	**46000**	**65400**	**0.0930**	**0.0670**
PZ-6	3371.35	3371.61	6.00	22.6	>3999	5/17/05	4.25	**3610**	**109000**	**160500**	**0.0500**	**0.0540**
PZ-7	3377.79	3377.95	6.36	21.4	>3999	5/16/05	4.02	**2530**	**42100**	**65900**	**0.0820**	**0.0940**
PZ-8	Dry	Dry	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS
PZ-9	3366.47	3366.17	5.93	20.40	>3999	5/17/05	2.82	**5090**	**182000**	**164000**	0.0500	**0.0710**
PZ-10	3372.26	3372.12	7.01	20.1	1618	5/16/05	3.63	572	**416**	**1756**	0.0440	0.0370
PZ-11	3374.58	3374.66	6.26	21.8	>3999	5/16/05	4.63	**2890**	**66000**	**100000**	<0.0100	<0.0100
PZ-12	3358.89	3358.69	6.77	20.7	>3999	5/16/05	8.85	**679**	**3730**	**5890**	**0.0510**	**0.0540**
C-2811	3342.54	3342.70	6.98	20.1	>3999	5/16/05	6.02	524	**1930**	**3740**	**0.0580**	**0.0530**
C-2505	3369.01	3369.26	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS
C-2506	3369.41	3369.66	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS
C-2507	3366.16	3366.41	6.81	20.8	>3999	5/17/05	7.94	**860**	**1370**	**3340**	**0.0780**	**0.0630**
WQSP-6a	3197.16 [1]	3196.83 [2]	7.3	23.2	4070	11/17/05	6.72	**1960**	**487**	**3655**	<0.0250	<0.0250

Explanation: [1] **Water Level Measurement Taken on 3/08/05**

[2] **Water Level Measurement Taken on 6/20/05**

NS: Not Sampled as per permit conditions

"Bold" concentrations exceed standards listed in 20.6.2.3103 NMAC for Human Health and Domestic Water Supply