

**OFFICE OF REGULATORY  
COMPLIANCE  
CARLSBAD AREA OFFICE  
U.S. DEPARTMENT OF ENERGY  
P.O. BOX 3090  
CARLSBAD, NM 88221-3090**



NO. OF PAGES (EXCLUDING COVER) 10

DATE 7/11/96

TO:	<i>Benito Garcia</i>
LOCATION:	<i>NMED</i>
FAX #	<i>505-827-1544</i>

FROM: MIKE MCFADDEN ASSISTANT MANAGER FOR REGULATORY COMPLIANCE
LOCATION: WOIC, 3RD FLOOR
PHONE/FAX #: 505-234-7486 / 505-234-7430

MESSAGE: *Here is direct answers to your questions  
The Fact sheet will be provided tomorrow.*



July 11, 1996

**Brine Inflow data per the Request of the New Mexico Environment Department**

**1. What is the total amount of brine?**

Water infiltration into the WIPP is minimal compared to most mines, and appears to have a seasonal impact. Per the attached chart, water removed from the WIPP, either from the Waste Shaft Sump (prior to 1996) or from the Exhaust Shaft catch basin (installed in March 1996) ranges from 0 gallons to a maximum observed 4700 gallons per month.

Water accumulation occurs during periods when the mine ventilation is reduced from a typical single-fan rate of 240,000 cubic feet per minute. Normal ventilation is adequate to evaporate the small amount of water entering the Exhaust Shaft. On weekends, ventilation is reduced to approximately 60,000 cfm. This lower rate is inadequate to evaporate seepage, and also does not appear to provide enough velocity to prevent moisture in the air from precipitating as the air rises in the Exhaust Shaft.

Total water removed from the WIPP underground was 5,850 gallons in 1994, 10,980 gallons in 1995, and 6,115 gallons to date in 1996. As a basis for comparison, the WIPP Air Intake Shaft had an estimated inflow of 10,000 gallons per week prior to grouting between the host rock and the shaft liner.

**2. What is the total amount of brine per day?**

As noted above, the collected amount is zero gallons per day when normal ventilation is maintained. During a typical weekend (from Friday afternoon through Monday morning), the maximum accumulation has been 1835 gallons.

**3. What are the analytical results?**

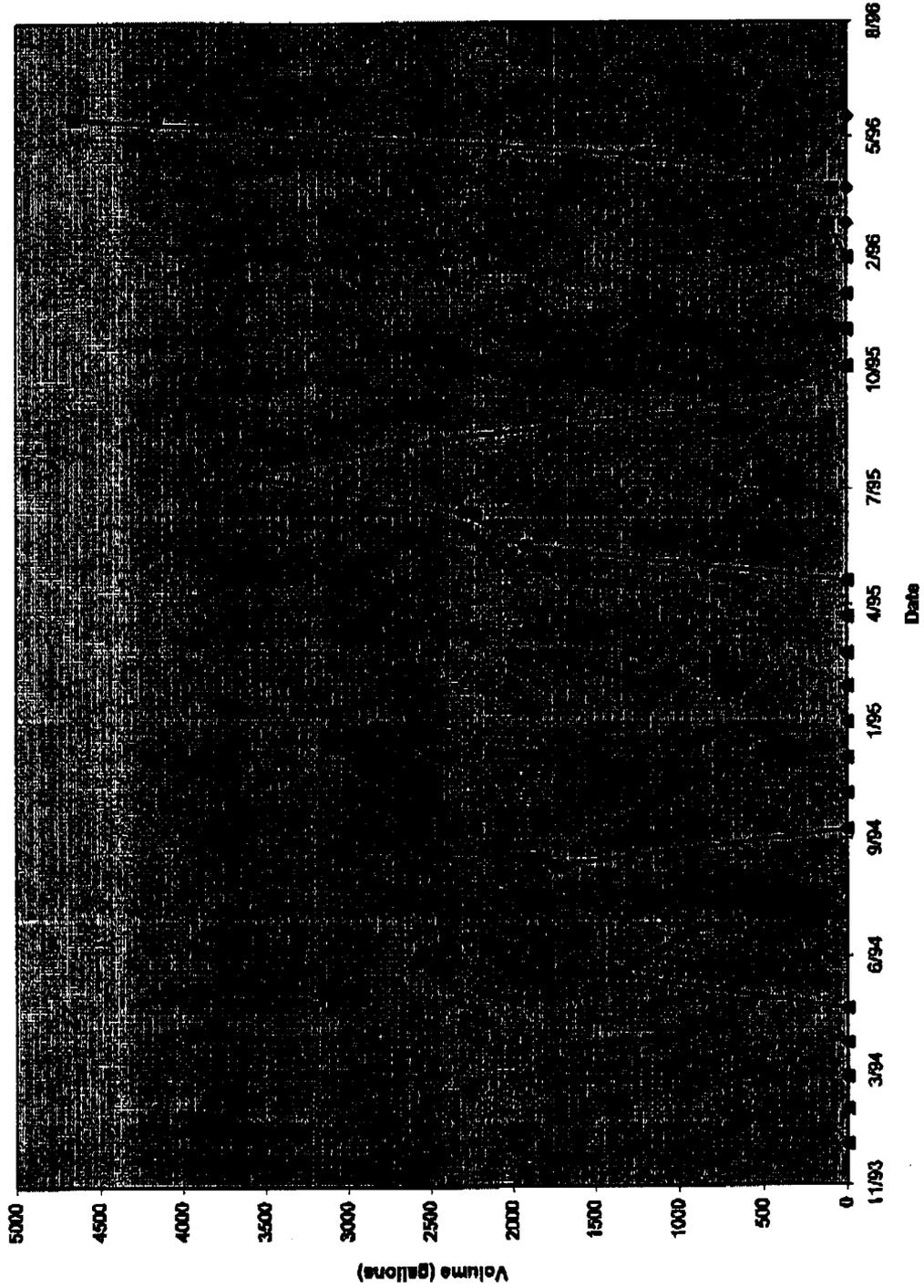
Attached are the analytical results for lead from sump and catch basin water dating back to 1990. All samples have been tested for TCLP metals and zinc, although only lead has been identified as a concern.

**4. How often are samples taken?**

Since the installation of the catch basin in March 1996, sampling has been conducted monthly. With the indication of lead in excess of 5 mg/l in the 6/10/96 Exhaust Shaft catch basin sample, the frequency has been increased to weekly.

Sheet4 Chart 1

Underground Water Volumes



**SUMMARY OF LEAD CONCENTRATION  
WASTE HANDLING SHAFT SUMP WATER**

SAMPLE NUMBER	DATE	METHOD	Pb mg/L	SAMPLE LOCATION
WPP-243	01/16/90	TCLP	<0.05	Waste Handling Shaft Sump Brine - out of sump
WPP-478	03/17/92	TCLP	<0.05	Waste Handling Shaft Sump Brine - out of sump
HEWHS199308182.4	08/18/93	TOTAL	1.1	Waste Handling Shaft Sump Brine - out of sump
WST-95-083	05/16/95	TCLP	3.9	Sample from portable transfer container
WST-95-084	05/16/95	TCLP	4.7	Sample from portable transfer container
WST-95-103	06/18/95	TCLP	8.1	Waste Handling Shaft Sump Brine - out of sump
WST-95-104	06/16/95	TCLP	6.1	Waste Handling Shaft Sump Brine - out of sump
WST-95-116	06/28/95	TCLP	6.7	Brine sample from portable transfer container
WST-95-117	06/28/95	TCLP	7.3	Duplicate of above
WST-95-149	07/20/95	TCLP	12	Random sample of 55 gallon drums containing sump water
WST-95-150	07/20/95	TCLP	10	Random sample of 55 gallon drums containing sump water
WST-95-151	07/20/95	TCLP	11	Random sample of 55 gallon drums containing sump water
WST-95-152	07/20/95	TCLP	11	Random sample of 55 gallon drums containing sump water
WST-95-156	07/21/95	TCLP	11	Sample from portable transfer container
WST-95-157	07/21/95	TCLP	11	Sample from portable transfer container
WST-95-161	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-162	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-163	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-164	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-165	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-166	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-167	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-168	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-169	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-170	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-171	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-172	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-173	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-174	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-175	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-176	07/26/95	TCLP	12	Sample from 55 gallon drum containing sump water
WST-95-177	07/26/95	TCLP	11	Sample from 55 gallon drum containing sump water
WST-95-178	07/26/95	TCLP	11	Sample from 55 gallon drum containing sump water
WST-95-179	07/26/95	TCLP	10	Sample from 55 gallon drum containing sump water
WST-95-180	07/26/95	TCLP	11	Sample from 55 gallon drum containing sump water
WST-95-181	07/26/95	TCLP	11	Sample from 55 gallon drum containing sump water
WST-95-182	07/26/95	TCLP	10	Sample from 55 gallon drum containing sump water
WST-95-183	07/26/95	TCLP	11	Sample from 55 gallon drum containing sump water

**SUMMARY OF LEAD CONCENTRATION  
WASTE HANDLING SHAFT SUMP WATER (cont'd)**

SAMPLE NUMBER	DATE	METHOD	Pb mg/L	SAMPLE LOCATION
WST-95-184	07/28/95	TCLP	10	Sample from 55 gallon drum containing sump water
WST-95-185	07/26/95	TCLP	10	Sample from 55 gallon drum containing sump water
WST-95-186	07/26/95	TCLP	10	Sample from 55 gallon drum containing sump water
WST-95-187	07/26/95	TCLP	9.6	Sample from 55 gallon drum containing sump water
WST-95-188	07/26/95	TCLP	10	Sample from 55 gallon drum containing sump water
WST-95-189	07/26/95	TCLP	10	Sample from 55 gallon drum containing sump water
WST-95-190	07/26/95	TCLP	10	Sample from 55 gallon drum containing sump water
WST-95-191	07/26/95	TCLP	10	Sample from 55 gallon drum containing sump water
WST-95-237	08/30/95	Total	10.4	Waste Handling Shaft Sump Brine - from sump (preserved with HNO3)
WST-95-238	08/30/95	Total	12.0	Waste Handling Shaft Sump Brine - from sump (preserved with HNO3)
WST-95-239	08/30/95	Total	1.3	Waste Handling Shaft Sump Brine - from sump (unpreserved) NUS Labs
WST-95-240	08/30/95	Total	9.4	Waste Handling Shaft Sump Brine - from sump (unpreserved) DATA CHEM
WST-95-267	09/15/95	TCLP	0.93	Waste Handling Shaft Sump Brine - Composite of 3 containers 95-267-269
WST-96-010	01/22/96	TCLP	12.0	Waste Handling Shaft Sump Brine - out of sump
WST-96-060	02/07/96	TCLP	5.0	Sample from 55 gallon drums containing sump water
WST-96-067	02/20/96	TCLP	6.0	Sample from 55 gallon drums containing sump water
WST-96-068	02/20/96	TCLP	0.7	Sample from 55 gallon drums containing sump water
WST-96-070	02/20/96	TCLP	11.0	Sample from 55 gallon drums containing sump water
WST-96-071	02/20/96	TCLP	8.0	Sample from 55 gallon drums containing sump water
WST-96-010	02/22/96	TCLP	12.0	Waste Handling Shaft Sump Brine - out of sump
WST-96-135	04/23/96	TCLP	1.4	Waste Handling Shaft Sump Brine - out of sump
WST-96-142	05/02/96	TCLP	1.8	Sample from 55 gallon drums containing sump water
WST-96-143	05/02/96	TCLP	2.3	Sample from 55 gallon drums containing sump water
WST-96-160	05/21/96	TCLP	0.02	Waste Handling Shaft Sump Brine - out of sump

Average concentration of 1995-1996                      9.4 +/-                      3.4

**SUMMARY OF LEAD CONCENTRATION  
S400/E300 BOREHOLE WATER**

SAMPLE NUMBER	DATE	METHOD	Pb mg/L	SAMPLE LOCATION
WST-95-118	06/28/95	TCLP	11.0	S400/E300 Borehole Brine Hole nearest exhaust shaft
WST-95-119	06/28/95	TCLP	7.1	S400/E300 Borehole Brine Hole closest to WHS
WST-95-241	08/30/95	Total	30.0	S400/E130 Borehole Brine Hole nearest WHS - NUS Labs
WST-95-242	08/30/95	Total	27.0	S400/E130 Borehole Brine Hole nearest WHS - DATA CHEM
WST-95-243	08/30/95	Total	31.0	S400/E130 Borehole Brine Hole nearest WHS - DATA CHEM
WST-95-287	12/11/95	TCLP	23.0	S400/E300 Borehole Brine Hole closest to WHS

WST-95-288	12/11/95	TCLP	22	S400/E300 Borehole Brine Hole closest to WHS
WST-95-289	12/11/95	TCLP	21	S400/E300 Borehole Brine Hole closest to WHS
WST-96-012	02/22/96	TCLP	11	OH224
WST-96-014	02/22/96	TCLP	12	OH224
WST-96-016	02/22/96	TCLP	12	OH224
WST-96-018	02/22/96	TCLP	20	OH225
WST-96-022	02/22/96	TCLP	13	OH226
WST-96-069	02/20/96	TCLP	14.0	Sample from 55 gallon drums containing borehole water
WST-96-133	04/22/96	TCLP	19	OH225
WST-96-161	05/21/96	TCLP	0.69	OH225

Average concentration of 1995 1996                      18.2 mg/L +/-                      7.5

SENT BY: CAO

7-12-96 7:46AM

CAO

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**SUMMARY OF LEAD CONCENTRATION  
WASTE SHAFT SUMP SOLIDS**

SAMPLE NUMBER	DATE	METHOD	Pb mg/L	SAMPLE LOCATION
WST-96-059	02/07/96	TCLP	0.1	Waste Handling Shaft Sump Salt - Composite of pile in S550 Alcove
WST-96-073	02/21/96	TCLP	0.1	Waste Handling Shaft Sump Salt - N Salt Pile (N Side)
WST-96-076	02/21/96	TCLP	0.1	Waste Handling Shaft Sump Salt - N Salt Pile (S Side)
WST-96-078	02/22/96	TCLP	0.1	Waste Handling Shaft Sump Salt-Sump Sludge
WST-96-059	02/07/96	TCLP	0.1	Waste Handling Shaft Sump Salt-Sump Sludge
WST-96-073	02/21/96	TCLP	0.12	Waste Handling Shaft Sump Salt Muck
WST-96-076	02/21/96	TCLP	0.1	Waste Handling Shaft Sump Salt Muck
WST-96-078	02/22/96	TCLP	0.1	Waste Handling Shaft Sump Muck/Insitu
Average concentration of 1996			0.1 mg/L +/-	0.0

**SUMMARY OF LEAD CONCENTRATION  
EXHAUST SHAFT SUMP SOLIDS**

SAMPLE NUMBER	DATE	METHOD	Pb mg/L	SAMPLE LOCATION
WST-96-007	01/19/96	TCLP	1.9	Exhaust Shaft Muck In Situ
WST-96-008	01/19/96	TCLP	0.72	Exhaust Shaft Muck In Situ
WST-96-091	03/01/96	TCLP	0.33	Exhaust Shaft Muck - removed
WST-96-092	03/01/96	TCLP	0.1	Exhaust Shaft Muck - removed
WST-96-093	03/01/96	TCLP	0.1	Exhaust Shaft Muck - removed
WST-96-094	03/01/96	TCLP	0.2	Exhaust Shaft Muck - removed
WST-96-097	03/01/96	TCLP	0.1	Exhaust Shaft Muck - removed
Average concentration of 1996			0.5 mg/L +/-	0.6

**WEST VIRGINIA STATE UNIVERSITY/PLATEAU REGIONAL WATER QUALITY CONTROL DISTRICT  
West Virginia, 2006**

**Sample Number: WST-96-185**  
**Date Sampled: 6-10-96**  
**Location: Waste Shaft Sump Insitu**  
**Concentrations: Pb - <0.3 mg/l, Zn - 240 mg/l**  
**Methods used: Graphite Furnace Atomic Absorption (GFAA)-TCLP Metals,  
Inductively Coupled Plasma Routine (ICP)-Zinc**

**Sample Number: WST-96-186**  
**Date Sampled: 6-10-96**  
**Location: Waste Shaft Sump Insitu**  
**Concentrations: Pb - 0.5 mg/l, Zn - 270 mg/l**  
**Methods used: Graphite Furnace Atomic Absorption (GFAA)-TCLP Metals,  
Inductively Coupled Plasma Routine (ICP)-Zinc**

**Sample Number: WST-96-193**  
**Date Sampled: 6-10-96**  
**Location: S400 Borehole OH 225**  
**Concentrations: Pb - 9 mg/l, Zn - 1100 mg/l**  
**Methods used: Graphite Furnace Atomic Absorption (GFAA)-TCLP Metals,  
Inductively Coupled Plasma Routine (ICP)-Zinc**

**Sample Number: WST-96-194**  
**Date Sampled: 6-10-96**  
**Location: S400 Borehole OH 225**  
**Concentrations: Pb - 10 mg/l, Zn - 1100 mg/l**  
**Methods used: Graphite Furnace Atomic Absorption (GFAA)-TCLP Metals,  
Inductively Coupled Plasma Routine (ICP)-Zinc**

**Quantitative Water Collection**

**Catch Basin (weekly catch amount): 1,485 gallons brine**  
**Borehole OH225: None**  
**Waste Handling Shaft Sump: None**

<b>WEEKLY STATUS OF UNDERGROUNDWATER MONITORING WEEK ENDING 6-28-96</b>
<b>Sampling Activities (cont'd)</b>
<b>Description of samples taken:</b> Exhaust Shaft Salt Debris <b>Location:</b> Debris from catch basin after clean out on 6-21-96. <b>Sample Date:</b> 6-28-96 <b>Number of Samples:</b> 1 composite <b>Constituents analyzed:</b> TCLP Metals and Zinc
<b>Description of samples taken:</b> Exhaust Shaft Brine <b>Location:</b> Pumped from catch basin on 6-24-96. <b>Sample Date:</b> 6-28-96 <b>Number of Samples:</b> 1 composite <b>Constituents analyzed:</b> TCLP Metals and Zinc
<b>Description of samples taken:</b> Exhaust Shaft Brine <b>Location:</b> Pumped from catch basin on 6-28-96. <b>Sample Date:</b> 6-28-96 <b>Number of Samples:</b> 1 composite <b>Constituents analyzed:</b> TCLP Metals and Zinc
<b>Analysis Results:</b>
<b>Sample Number:</b> WST-96-177 <b>Date Sampled:</b> 6-10-96 <b>Location:</b> Exhaust Shaft Catch Basin Insitu <b>Concentrations:</b> Pb - 5.0 mg/l, Zn - 310 mg/l <b>Methods used:</b> Graphite Furnace Atomic Absorption (GFAA)-TCLP Metals, Inductively Coupled Plasma Routine (ICP)-Zinc
<b>Sample Number:</b> WST-96-178 <b>Date Sampled:</b> 6-10-96 <b>Location:</b> Exhaust Shaft Catch Basin Insitu <b>Concentrations:</b> Pb - 6.6 mg/l, Zn - 340 mg/l <b>Methods used:</b> Graphite Furnace Atomic Absorption (GFAA)-TCLP Metals, Inductively Coupled Plasma Routine (ICP)-Zinc

<b>WEEKLY STATUS OF UNDERGROUND WATER QUALITY Week ending 6-28-96</b>
<b>Sampling Activities</b>
<b>Description of samples taken:</b> Exhaust Shaft Brine <b>Location:</b> Pumped from catch basin on 5-6-96. <b>Sample Date:</b> 6-28-96 <b>Number of Samples:</b> 1 composite <b>Constituents analyzed:</b> TCLP Metals and Zinc
<b>Description of samples taken:</b> Exhaust Shaft Brine <b>Location:</b> Pumped from catch basin on 5-13-96. <b>Sample Date:</b> 6-28-96 <b>Number of Samples:</b> 1 composite <b>Constituents analyzed:</b> TCLP Metals and Zinc
<b>Description of samples taken:</b> Exhaust Shaft Brine <b>Location:</b> Pumped from catch basin on 5-20-96. <b>Sample Date:</b> 6-28-96 <b>Number of Samples:</b> 1 composite <b>Constituents analyzed:</b> TCLP Metals and Zinc
<b>Description of samples taken:</b> Exhaust Shaft Brine <b>Location:</b> Pumped from catch basin on 5-29-96. <b>Sample Date:</b> 6-28-96 <b>Number of Samples:</b> 1 composite <b>Constituents analyzed:</b> TCLP Metals and Zinc
<b>Description of samples taken:</b> Exhaust Shaft Brine <b>Location:</b> Pumped from catch basin on 6-3-96. <b>Sample Date:</b> 6-28-96 <b>Number of Samples:</b> 1 composite <b>Constituents analyzed:</b> TCLP Metals and Zinc
<b>Description of samples taken:</b> Exhaust Shaft Brine <b>Location:</b> Pumped from catch basin on 6-18-96. <b>Sample Date:</b> 6-28-96 <b>Number of Samples:</b> 1 composite <b>Constituents analyzed:</b> TCLP Metals and Zinc

WEEKLY MONITORING OF UNDERGROUND WATER STORES WELL LOGS 6-28-96	
<b>Water Levels</b>	
<b>Boreholes</b>	OH226: 3'8" OH222: 4'0"
Waste Handling Shaft Sump "Pit": 28" From Pipe Collar	
<b>Other Information</b>	
None	