



DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 49TH FIGHTER WING (ACC)  
HOLLOMAN AIR FORCE BASE, NEW MEXICO

01 MAR 1994

1994  
HAZARDOUS WASTE  
PROGRAM

MEMORANDUM FOR New Mexico Environment Department  
Hazardous & Radioactive Materials Bureau  
Attn: Mr Steve Alexander  
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Santa Fe, NM 87502

FROM: 49 CES/CEV  
550 Tabosa Ave  
Holloman AFB, NM 88330-8458

SUBJECT: 1993 Annual RCRA Groundwater Monitoring Report

1. Attached herewith is the 1993 Annual RCRA groundwater monitoring report for Holloman AFB.
2. The point of contact for this issue is Dr Fred M. Fisher or Mr Tim O'Donnell at 475-3931.

  
HOWARD E. MOFFITT  
Deputy Base Civil Engineer

Attachment:  
Annual Groundwater Report

# **NMED ANNUAL GROUNDWATER MONITORING REPORT**

**Holloman Air Force Base Lagoons - 1993  
1 March 1994**

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## CURRENT STATUS

1 March 1994

The Holloman Air Force Base (HAFB) lagoons groundwater program continues assessment monitoring as defined by 40 CFR 265 Subpart F and will be proposing to move from assessment monitoring back to detection monitoring.

Previous sampling of the groundwater monitoring network for Appendix IX parameters indicated a few Method 8080 pesticides were present in monitor wells downgradient of Ponds A and D in MW-03, MW-05, and MW-07. Therefore, further investigation was pursued in March 1993 to fulfill Phase 1 assessment monitoring requirements.

The primary objectives of Phase 1 Assessment monitoring are to define the lateral extent of Method 8080 Pesticides in the uppermost aquifer and to make recommendations for future monitoring requirements. In addition, Appendix IX parameters were collected from newly installed monitor wells to evaluate potential lateral migration of other constituents that may have gone undetected in previous sampling.

Attached Figure 1 illustrates the monitor wells in the monitoring network.

During 1992, two new upgradient wells (MW-09 and MW-10) were added to the monitoring well network to replace well MWS-2 which was abandoned because it is not representative of upgradient conditions. Three new monitor wells (MW-11, MW-12, and MW-13) were installed downgradient of Pond A and two new monitor wells (MW-14 and MW-15) were installed downgradient of Pond D. One existing piezometer (MWS-05) was added to the network downgradient of Pond D. All existing monitor wells in the network were sampled twice for Method 8080 pesticides, and the new monitor wells were sampled once for Appendix IX parameters and a second time for Method 8080 pesticides.

The presence of Method 8080 pesticides is considered to be certain only in monitor wells (MW-03 and MW-04) immediately downgradient of the sewage lagoons. Heptachlor epoxide was detected in MW-03 in Rounds 1 and 2 sampling at 0.016 and 0.011  $\mu\text{g/L}$ , respectively; 4,4'-DDD was detected in MW-04 in Rounds 1 and 2 sampling at 0.047 and 0.018  $\mu\text{g/L}$ , respectively. The lateral extent of Method 8080 pesticides has been defined downgradient of monitor wells MW-05 and MW-07 (Pond A) and MW-03 (Pond D).

The extent of Method 8080 pesticides downgradient of MW-04 (Pond G) (where 4,4'-DDD is certain) is unknown because of the lack of monitor wells located further downgradient. However, based on results from monitor wells downgradient of Ponds A and D, it is anticipated the presence of Method 8080 pesticides will be uncertain or unlikely further downgradient of MW-04.

The rationale for the appearance of the Method 8080 pesticides considered to be certain may be explained by the nature of the pesticide/porous media interactions. It is likely some of the pesticides observed in groundwater samples collected at HAFB are the consequence of the sample containing some fine soils (from groundwater sampling) from which pesticides were extracted along with those dissolved in water. The measurement is real, but reflects soil or sediment-bound analytes rather than aqueous analytes. In this sense these could be considered false positives results.

For metals, the only statistically significant increase over base background was cadmium concentrations in the new monitor wells MW-11, MW-12 and MW-13 downgradient of Ponds A and B (average conc., 0.013 mg/L). However, concentrations were similar in the new upgradient monitor wells MW-09 and MW-10 (average conc., 0.012 mg/L). This suggests there may have been a cadmium release to groundwater upgradient from the lagoons. These data are preliminary and unconfirmed. Problems with the interpretation of metals data will be addressed in the long-term monitoring proposal.

Installation of additional monitor wells is not recommended because the overall nature and extent of contamination has been defined downgradient of the sewage lagoons. The current monitoring network is sufficient for the concerns identified in the First Determination False Positives (September 1991/February 1992) and Phase 1 groundwater assessment monitoring (March 1993). It is recommended that monitoring be conducted in coordination with the proposed long-term monitoring program at HAFB. Samples should be collected from a subset of the network monitor wells every other year for ten years and be analyzed for Method 8080 pesticides and metals.

In addition, it is recommended that site-specific risk-based data be used to establish long-term monitoring requirements.

Details of the data summarized in this report are found in the following:

Radian Corporation. December 1993. Phase 1-Groundwater Assessment Monitoring Report. Radian Corp, 8501 N. Mopac Blvd, POB 201088, Austin, TX 78720-1088.

Radian Corporation. April 1992. Assessment Monitoring Results: Appendix IX and Confirmation Sampling, Detection and Compliance Monitoring Program. Radian Corp, 8501 N. Mopac Blvd, POB 201088, Austin, TX 78720-1088.

**WELL MW-03 (downgradient)**

	<u>Sept 1991/Feb 1992</u>	<u>Mar 1993 (Rd1/Rd2)</u>
<u>GW Elev (ft.)</u>	4028.10/4031.08	4029.32/4029.14
<u>pH (-log(H+[μmole/L]))</u>	7.10/7.43	7.05/6.95
<u>Spec Cond (μmhos/cm)</u>	14150/17420	11500/11500
<u>Method 8080 - Organochlorine pesticides &amp; PCBs (μg/L)</u>		
<u>Heptachlor epoxide</u>	ND/ND	0.016/0.011*
<u>Metals (mg/L)</u>		
<u>Not Sampled</u>		

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\* Presence Certain  
ND: Not Detected

**WELL MW-04 (downgradient)**

	<u>Sept 1991/Feb 1992</u>	<u>Mar 1993 (Rd1/Rd2)</u>
GW Elev (ft.)	4024.21/4025.72	4024.40/4024.21
pH (-log(H+[ $\mu$ mole/L]))	6.84/7.12	7.03/6.79
Spec Cond ( $\mu$ mhos/cm)	14300/13700	11100/13000
<u>Method 8080 - Organochlorine pesticides &amp; PCBs (<math>\mu</math>g/L)</u>		
4,4' - DDD	ND/ND	0.047/0.018*
<u>Metals (mg/L)</u>		
Not Sampled		

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\* Presence Certain  
ND: Not Detected

**WELL MW-05 (downgradient)**

	<u>Sept 1991/Feb 1992</u>	<u>Mar 1993 (Rd1/Rd2)</u>
GW Elev (ft.)	4033.83/4034.74	4034.11/4033.94
pH (-log(H+[ $\mu$ mole/L]))	6.79/6.96	6.74/6.87
Spec Cond ( $\mu$ mhos/cm)	11560/10490	9700/11320
<u>Method 8080 - Organochlorine pesticides &amp; PCBs (<math>\mu</math>g/L)</u>		
alpha - BHC	0.034/0.023*	ND/0.018**
<u>Metals (mg/L)</u>		
Not Sampled		

\* Presence Certain

\*\* Presence Uncertain

ND: Not Detected

WELL MW-07 (downgradient)

	Sept 1991/Feb 1992	Mar 1993 (Rd1/Rd2)
GW Elev (ft.)	4033.40/4034.95	4034.14/4034.00
pH (-log(H+[ $\mu$ mole/L]))	6.90/7.00	NA/6.94
Spec Cond ( $\mu$ mhos/cm)	10480/9730	NA/7700
<u>Method 8080 - Organochlorine pesticides &amp; PCBs (<math>\mu</math>g/L)</u>		
delta - BHC	0.023/0.038*	ND/0.014**
<u>Metals (mg/L)</u>		
Not Sampled		

\* Presence Certain

\*\* Presence Uncertain

ND: Not Detected

NA: Analysis Not Available

**WELL MW-09 (upgradient)**

	<u>March 1993 (Rd1/Rd2)</u>
<u>GW Elev (ft.)</u>	4034.59/4034.53
pH (-log(H+[ $\mu$ mole/L]))	6.98/7.01
Spec Cond ( $\mu$ mhos/cm)	40500/39800
<u>Metals (mg/L)</u>	
Cadmium	0.013/NA

NA: Analysis Not Available

**WELL MW-10 (upgradient)**

	<u>March 1993 (Rd1/Rd2)</u>
<u>GW Elev (ft.)</u>	4035.45/NA
pH (-log(H+[ $\mu$ mole/L]))	6.67/6.92
Spec Cond ( $\mu$ mhos/cm)	49100/48300
<u>Metals (mg/L)</u>	
Cadmium	0.010/NA

NA: Analysis Not Available

**WELL MW-11 (upgradient)**

	March 1993 (Rd1/Rd2)
GW Elev (ft.)	4031.81/4031.70
pH (-log(H+[ $\mu$ mole/L]))	6.74/6.87
Spec Cond ( $\mu$ mhos/cm)	39800/11320
<u>Metals (mg/L)</u>	
Cadmium	0.012/NA

NA: Analysis Not Available

**WELL MW-12 (downgradient)**

	<u>March 1993 (Rd1/Rd2)</u>
<u>GW Elev (ft.)</u>	4030.40/4030.29
pH (-log(H+[ $\mu$ mole/L]))	6.86/7.05
Spec Cond ( $\mu$ mhos/cm)	37700/44400
<u>Metals (mg/L)</u>	
Cadmium	0.013/NA

NA: Analysis Not Available

**WELL MW-13 (downgradient)**

	<u>March 1993 (Rd1/Rd2)</u>
<u>GW Elev (ft.)</u>	4030.39/4030.23
pH (-log(H+[ $\mu$ mole/L]))	7.06/7.11
Spec Cond ( $\mu$ mhos/cm)	38600/45500
<u>Metals (mg/L)</u>	
Cadmium	0.014/NA

NA: Analysis Not Available

**WELL MWS-05 (downgradient)**

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	March 1993 (Rd1/Rd2)
GW Elev (ft.)	4024.32/4024.26
pH (-log(H+[ $\mu$ mole/L]))	6.93/6.92
Spec Cond ( $\mu$ mhos/cm)	52500/49100
<u>Metals (mg/L)</u>	
Cadmium	0.014/NA

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NA: Analysis Not Available

**WELL MW-14 (downgradient)**

	<u>March 1993 (Rd1/Rd2)</u>
<u>GW Elev (ft.)</u>	4026.43/4026.31
pH (-log(H+[ $\mu$ mole/L]))	6.63/6.87
Spec Cond ( $\mu$ mhos/cm)	36200/40400
<u>Metals (mg/L)</u>	
Cadmium	0.005/NA

NA: Analysis Not Available

**WELL MW-15 (downgradient)**

	March 1993 (Rd1/Rd2)
<u>GW Elev (ft.)</u>	4025.04/4024.90
pH (-log(H+[ $\mu$ mole/L]))	6.21/6.80
Spec Cond ( $\mu$ mhos/cm)	42600/48800
<u>Metals (mg/L)</u>	
Cadmium	0.011/NA

NA: Analysis Not Available

Sewage Lagoons & Lakes Investigation  
 Holloman Air Force Base

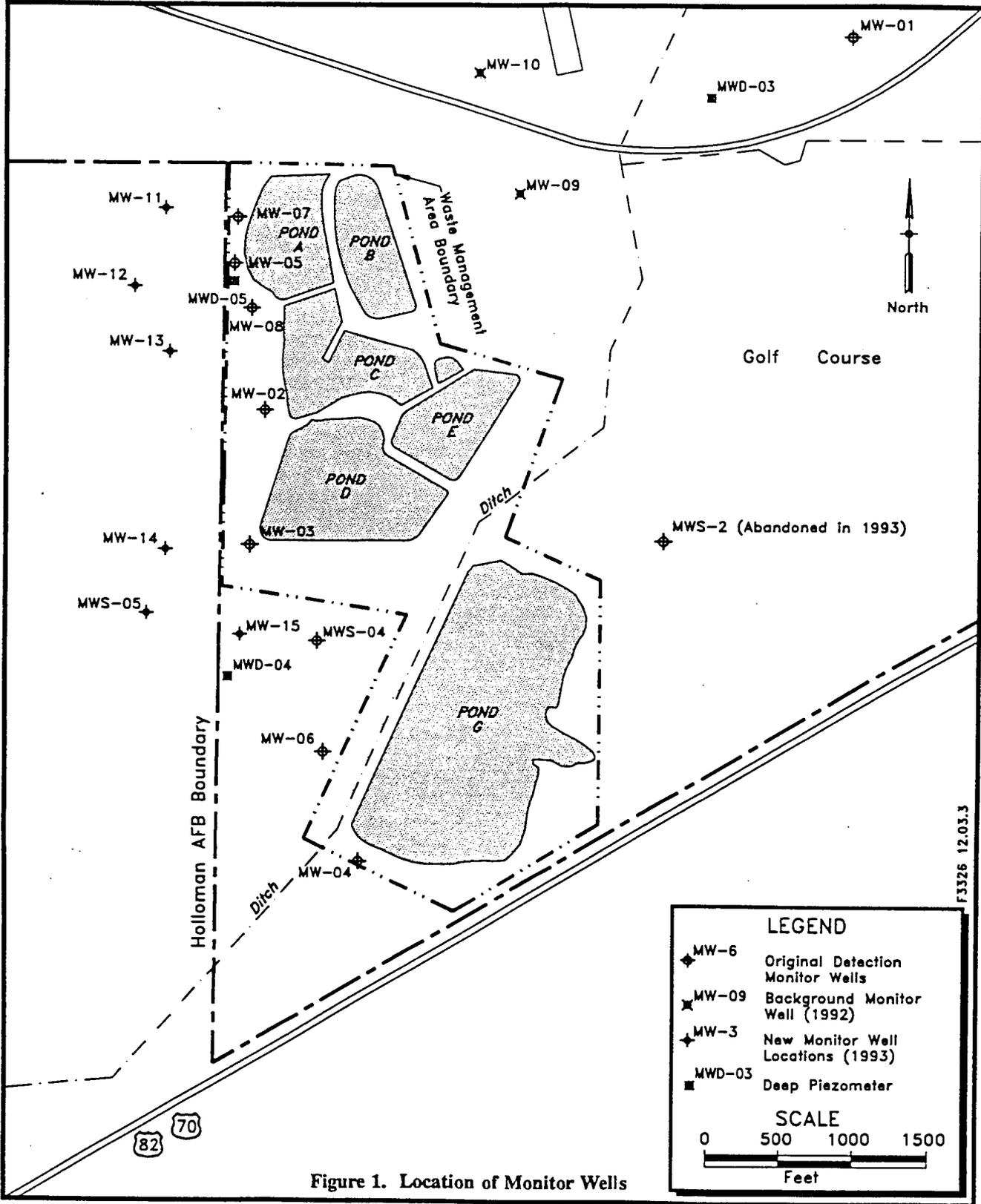


Figure 1. Location of Monitor Wells