

~~Ed~~ Benito
X Steve
X Stephanie
X file CARRB RED 92

03 DEC 1992

FROM: 27 SG CEV
111 Engineers Way
Cannon AFB NM 88103-5136

SUBJ: Air Force/New Mexico Environment Department Meeting of 18 Nov 92

TO: Distribution

1. Attached is a copy of the draft minutes from subject meeting for your review.
2. Please annotate any changes or comments and return to this office for final preparation and distribution of minutes. If you have any questions, please contact Mr. Jim Richards or Mrs. Marlene Weishuhn at DSN 681-2739.

Jimmie N. Richards
JIMMIE N. RICHARDS, GS-12
Chief, Environmental Management



REVISED AGENDA FOR
AIR FORCE/NEW MEXICO ENVIRONMENT DEPARTMENT
MEETING, 18 NOV 92

TIME: 0900

PLACE: East O' Club, KIRTLAND AFB

1. COFFEE: 0900

2. WELCOME: Mr. Jimmie Richards
Chief, Environmental Management - Cannon AFB, NM

3. OLD BUSINESS:

a. Request information from NMED on state implementation date for Clean Air issues and who the program managers are.

b. NMED response to Air Force contracting and funding response time for compliance actions. Request information on settlement agreements and MOUs.

c. Cannon AFB requests information on combination sites, IRP and SWMUs.

d. Request information on surface water issues, Notice of Intent to Discharge (NPDES), and NPDES permit criteria from NMED.

4. NEW BUSINESS:

a. Cannon AFB will brief the technology involved in the upgrade of their monitoring wells.

b. Holloman AFB will brief their Emergency Spill Response coordination with state agencies.

c. The impact of implementation of the Federal Facility Compliance Act.

d. Additional topics raised.

D R A F T

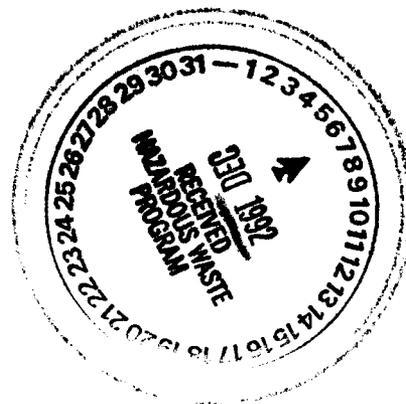
FROM: 27 SG CEV
111 Engineers Way
Cannon AFB NM 88103-5136

SUBJ: Air Force/New Mexico Environment Department Meeting, 18 Nov 92

TO: Distribution

1. PLACE: East O'Club, Kirtland AFB, Albuquerque, New Mexico
2. TIME: 0900, 18 Nov 92
3. ATTENDANCE:

Mr. Roger Wilkson	49 CES/CEV, Holloman AFB
Mr. Fred Fisher	49 CES/CEV, Holloman AFB
Mr. Steve Alexander	Hazardous & Radioactive Material Bureau, NMED
Mr. David Morgan	Groundwater Protection & Remediation Bureau, NMED
Mr. Ed Horst	Hazardous & Radioactive Material Bureau, NMED
Ms. Stephanie Stoddard	Hazardous & Radioactive Material Bureau, NMED
Mr. Peter Monahan	Surface Water Quality Bureau, NMED
Mr. Glenn Saums	Surface Water Quality Bureau, NMED
Mr. David Vackar	Env Protection Division Director, NMED
Mr. Walter Darr	542 CTW/EM, Kirtland AFB
Lt Col George Pratt	542 CTW/EM, Kirtland AFB
Mr. Harry M. Davidson	542 CTW/EM, Kirtland AFB
Maj Marcia Kurtz	542 CTW/JA, Kirtland AFB
Mr. Jim Richards	27 CES/CEV, Cannon AFB
Mr. John Ekhoft	27 CES/CEV, Cannon AFB
Ms. Marlene Weishuhn	27 CES/CEV, Cannon AFB



4. OLD BUSINESS:

a. Clean Air Issues:

(1) Mr. David Vackar, NMED, provided information on the upcoming dates for implementing the Clean Air Act Amendments and program contacts. (Atch 1). Air Quality Regulations are presented to the Environmental Improvement Board (EIB) before implementation. Kirtland requested any changes to the Clean Air Act be provided by NMED in order for the bases to adjust for funding, manpower, and other requirements.

b. Air Force Contracting and Funding Issues:

(1) Because of federal and defense contracting and funding regulations, it is not always possible for the bases to meet the state's compliance deadlines. NMED requested a summary on the Air Force contracting timeframes and restraints to better understand the restrictions which may delay the Air Force response time. Mr. John Ekhoﬀ, Cannon AFB, volunteered to put together a summary of Air Force contracting and funding procedures. NMED also requested a spokesperson from Air Force attend a NMED Bureau Chief meeting to explain these issues. Kirtland agreed to provide representation from the Environmental, Legal, and Contracting areas and will coordinate with Cannon and Holloman for input.

(2) The group discussed the Defense Priority Number System for IRP funds. Funding will be allocated to those areas considered "high risk". This will hurt projects in New Mexico since it has a low population and considered a low risk area.

(3) Air Force briefed NMED on the Environmental Compliance Assessment and Management Program (ECAMP). Stephanie Stoddard, NMED, requested a copy of the ECAMP protocols. Kirtland will supply a copy.

c. Information on combination sites, IRP and SWMUs:

(1) NMED stated they have received authority to fund a position assigned to work the DoD RFI process. NMED also stated the state does not have overall primacy of HSWA program, at this time. The state will coordinate with EPA to ensure a smooth transition when New Mexico takes over the program. NMED requested the state be sent a copy of the scope of work for study and comment the same time EPA is mailed their copy.

d. Information on surface water issues and NPDES:

(1) NPDES Permit is required for a discharge to any water of the United States. In response to Holloman's question on a discharge to Lake Holloman, NMED explained playa lakes are not always considered waters of the United States unless they are declared as such. NMED also stated the Groundwater Quality Act will be looked at in the upcoming state legislature and some revisions will be proposed. The state has been contracted by EPA to do inspections on the NPDES permits. NMED provided a summary of New Mexico regulation NMWQCC 1-203 Unauthorized Discharge Requirements, (Atch 2).

(2) The group discussed the discharge of nonhazardous test water and how that would affect the NPDES process. According to NMED, the water cannot be discharged into a water of the United States unless a NPDES permit has been obtained. If the discharge is into other than a water of the U.S., a Notice of Intent to Discharge into the groundwater must be filed with the state. the state will then determine if a discharge plan is required.

5. NEW BUSINESS:

a. Federal Facility Compliance Act:

(1) A question was raised on how involved the state is on this program. NMED has primacy now and if a Class 9 violation is found, bases may be subject to penalties. NMED is looking for penalties to take other forms than cash rather than taking money away from solving problems. NMED also stated more multimedia inspections will be taking place, including combined state and EPA inspections.

b. Cannon AFB Technology Involved in Upgrade of Monitoring Wells:

(1) Cannon briefed the group on their water quality monitoring wells for Landfill 5, (Atch 3). Holloman commented they are in the process of setting up their own monitoring system and could learn from Cannon's program.

(2) NMED, (Mr. Steve Alexander), indicated that Cannon's well monitoring system was the best they had observed and would like to see others use the same or similar systems.

c. Holloman AFB Spill Response Procedures and Facilities:

(1) Holloman briefed the group on their current spill response procedures and proposed changes, (Atch 4). The proposal would change current procedure of removing contaminated soil following approval of the temporary treatment permit to removing the heavily contaminated soil first and then notifying NMED for a temporary permit. Holloman would provide a designated area for the contaminated soil until the sampling and response plan is approved. However, NMED stated the temporary storage area may not be possible as it would not be covered under their Part B permit. Holloman agreed to submit a generic sampling and response plan to NMED for which site specific information could be added as needed. Holloman will provide Cannon and Kirtland copies of the plan.

d. Additional Topics:

(1) A question arose regarding air permit requirements on whether the bases should file for a permit for each facility on base or if the facilities should be combined. NMED stated Jim Shively, Air Quality Permit Section, tele. 827-0068, should be consulted for clarification.

(2) Holloman questioned NMED regarding a requirement for a vapor recovery system for their JP4 tanks since the tanks will contain JP8 in less than a year. Since JP8 has a different level requirement, Holloman would like to get a waiver for the JP4 vapor recovery system. NMED suggested Holloman submit a schedule of compliance rather than a waiver.

(3) Cannon briefed the group on Cannon being on EPA's Significant RCRA Noncomplier List. Since this is an error, Cannon spoke with EPA to request their name be removed. EPA reported it may be a computer error and to send a letter to the state to correct. However, NMED stated they are unaware of this list and requested a copy. Holloman also requested a copy. Cannon agreed to provide copies, as requested.

6. ACTION ITEMS:

- a. NMED to provide updated information on Clean Air Act.
- b. Cannon to provide summary of Air Force contracting and funding procedures.
- c. Kirtland to provide briefing at NMED Bureau Chief Meeting on contracting and funding procedures.
- d. Kirtland to provide NMED copy of ECAMP protocols.
- e. Holloman to provide generic spill sampling and response plan.
- f. Cannon to provide NMED and Holloman copies of Significant RCRA Noncomplier List.

7. The next Air Force/NMED committee meeting will be in April and will be chaired by Holloman AFB. The Wing Commanders will be asked to attend the April meeting.

MARLENE K. WEISHUHN
Recorder

- 4 Atchs
1. Clear Air Ltr from NMED
 2. Summary NMWQCC 1-203
 3. CAFB Monitoring Wells Update
 4. Holloman Spill Response Update

Approved as written:

JIMMIE N. RICHARDS
Chairperson



BRUCE KING
GOVERNOR

State of New Mexico
ENVIRONMENT DEPARTMENT

JUDITH M. ESPINOSA
SECRETARY

RON CURRY
DEPUTY SECRETARY

AIR QUALITY BUREAU

Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-0070

November 9, 1992

MEMORANDUM:

TO: David Vackar, Director, EPD
FROM: Cecilia Williams, Bureau Chief, AQB, EPD *OSW*
RE: Briefing information you requested for your meeting on 11/18 at Kirtland Air Force Base

The Agenda item reads: "a. Request information from NMED on state implementation date for Clean Air issues and who the program managers are."

Briefing Information

Upcoming dates for implementing the first steps of the 1990 Clean Air Act Amendments (90CAAA) in 1993 are:

1. Going to hearing before the EIB on a Title V permitting regulation. Expected date for hearing is summer 1993.
2. Going to hearing before the EIB on a Title V emission fees regulation. Expected date for hearing is summer 1993.
3. Submitting Title V package to EPA for review and approval. Statutory deadline is 11/15/93.

Other regulations

4. Once a year the NMED goes before the EIB to incorporate changes in the federal New Source Performance Standards (NSPS) in AQCR 750 and National Emission Standards for Hazardous Air Pollutants (NESHAP) in AQCR 751.

AQB Contacts

90CAAA issues	Cecilia Williams	827-0042
Permitting	Bruce Nicholson	827-0042
Enforcement	Debby Brinkerhoff	827-0062



Encl 1

Summary of NMWQCC §1-203 unauthorized discharge requirements

- Notification/corrective action required for any discharge of "...oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property..."

Timeline:

- Within 24 hours: verbal notification of NMED, including
 - Name, address, phone numbers of owner/operator/person in charge
 - Date,
 - Time,
 - location,
 - Duration,
 - Source and cause,
 - Description, and
 - Estimated volume of discharge
 - Remedial/mitigating actions taken.
- Within 1 week: written confirmation of verbal notification, including additions/corrections
- Corrective actions to be taken as soon as possible; in coordination with GWBRP if possible without undue delay
- Within 15 days (of discovery & initial notification): Corrective action report due; time can be extended by GWPRB Bureau Chief for good cause
 - GWPRB must review CA report within 30 days of receipt, and specify schedule for modified report if unacceptable
 - GWPRB must review modified report within 15 days of receipt
 - Disapproved modified CA report must be appealed to Division Director within 5 days of disapproval; Director must act on it within 5 days of appeal.

C. Plans and specifications required to be filed under this section must be filed prior to the commencement of construction.

1-203. NOTIFICATION OF DISCHARGE--REMOVAL.

A. With respect to any discharge from any facility of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, the following notifications and corrective actions are required;

1. As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, any person in charge of the facility shall orally notify the Chief, Ground Water Bureau, Environmental Improvement Division, or his counterpart in any constituent agency delegated responsibility for enforcement of these rules as to any facility subject to such delegation. To the best of that person's knowledge, the following items of information shall be provided:

a. the name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;

b. the name and address of the facility;

c. the date, time, location, and duration of the discharge;

d. the source and cause of discharge;

e. a description of the discharge, including its chemical composition;

f. the estimated volume of discharge; and

g. any actions taken to mitigate immediate damage from the discharge.

2. When in doubt as to which agency to notify, the person in charge of the facility shall notify the Chief,

Ground Water Bureau, Environmental Improvement Division. If that division does not have authority pursuant to Commission delegation, the division shall notify the appropriate constituent agency.

3. Within one week after the discharger has learned of the discharge, the facility owner and/or operator shall send written notification to the same division official, verifying the prior oral notification as to each of the foregoing items and providing any appropriate additions or corrections to the information contained in the prior oral notification.

4. The oral and written notification and reporting requirements contained in the three preceding paragraphs and the paragraphs below are not intended to be duplicative of discharge notification and reporting requirements promulgated by the Oil Conservation Commission (OCC) or by the Oil Conservation Division (OCD); therefore, any facility which is subject to OCC or OCD discharge notification and reporting requirements need not additionally comply with the notification and reporting requirements herein.

5. As soon as possible after learning of such a discharge, the owner/operator of the facility shall take such corrective actions as are necessary or appropriate to contain and remove or mitigate the damage caused by the discharge.

6. If it is possible to do so without unduly delaying needed corrective actions, the facility owner/operator shall endeavor to contact and consult with the Chief, Ground Water Bureau, Environmental Improvement Division or appropriate counterpart in a delegated agency, in an effort to determine the division's views as to what further corrective actions may be necessary or appropriate to the discharge in question. In any event, no later than fifteen (15) days after the discharger learns of the discharge, the facility owner/operator shall send to said Bureau Chief a written report describing any corrective actions taken and/or to be taken relative to the discharge. Upon a written request and for good cause shown, the Bureau Chief may extend the time limit beyond fifteen (15) days.

7. The Bureau Chief shall approve or disapprove in writing the foregoing corrective action report within thirty (30) days of its receipt by the division. In the event that the report is not satisfactory to the division, the Bureau Chief shall specify in writing to the facility owner/operator any shortcomings in the report or in the corrective actions already taken or proposed to be taken relative to the discharge, and shall give the facility owner/operator a reasonable and clearly specified time within which to submit a modified corrective action report. The Bureau Chief shall

approve or disapprove in writing the modified corrective action report within fifteen (15) days of its receipt by the division.

8. In the event that the modified corrective action report also is unsatisfactory to the division, the facility owner/operator has five (5) days from the notification by the Bureau Chief that it is unsatisfactory to appeal to the division director. The division director shall approve or disapprove the modified corrective action report within five (5) days of receipt of the appeal from the Bureau Chief's decision. In the absence of either corrective action consistent with the approved corrective action report or with the decision of the director concerning the shortcomings of the modified corrective action report, the division may take whatever enforcement or legal action it deems necessary or appropriate.

B. Exempt from the requirements of this section are continuous or periodic discharges which are made:

1. in conformance with water quality control commission regulations and rules, regulations or orders of other state or federal agencies; or

2. in violation of water quality control commission regulations but pursuant to an assurance of discontinuance or schedule of compliance approved by the commission or one of its duly authorized constituent agencies.

C. As used in this section:

1. "discharge" means spilling, leaking, pumping, pouring, emitting, emptying, or dumping into water or in a location and manner where there is a reasonable probability that the discharged substance will reach surface or subsurface water;

2. "facility" means any structure, installation, operation, storage tank, transmission line, motor vehicle, rolling stock, or activity of any kind, whether stationary or mobile;

3. "oil" means oil of any kind or in any form including petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes.

4. "operator" means the person or persons responsible for the overall operation of a facility; and

5. "owner" means the person or persons who own a facility, or part of a facility.

D. Notification of discharge received pursuant to this regulation or information obtained by the exploitation of such notification shall not be used against any such person in any criminal case, except for perjury or for giving a false statement.

1-210. VARIANCE PETITIONS.

A. Any person seeking a variance from a regulation of the commission pursuant to Section 74-6-4 (G) NMSA 1978, shall do so by filing a written petition with the commission. The petitioner may submit with his petition any relevant documents or material which the petitioner believes would support his petition. Petitions shall:

1. state the petitioner's name and address;
2. state the date of the petition;
3. describe the facility or activity for which the variance is sought;
4. state the address or description of the property upon which the facility is located;
5. describe the water body or watercourse affected by the discharge;
6. identify the regulation of the commission from which the variance is sought;
7. state in detail the extent to which the petitioner wishes to vary from the regulation;
8. state why the petitioner believes that compliance with the regulation will impose an unreasonable burden upon his activity; and
9. state the period of time for which the variance is desired.

CANNON AFB, CLOVIS NEW MEXICO
WATER QUALITY MONITORING WELLS

LANDELL 5

<u>WELL</u>	<u>LOCATION</u>	<u>WELL SIZE</u>	<u>COMMENTS</u>
A	Up gradient	4 inch	1st well group.
B	Down gradient	4 inch	1st well group.
C	Down gradient	4 inch	1st well group.
D	Down gradient	4 inch	1st well group.
I	Down gradient	6 inch	
J	Down gradient	6 inch	Did not meet turbidity standards caused by hole in screening.
L	Down gradient	4 inch	Installed by USGS in 1992. The six inch casing cracked, therefore well was relined to four inches.
M	Down gradient	6 inch	Installed by USGS in 1992.

SEWAGE LAGOON

<u>WELL</u>	<u>LOCATION</u>	<u>WELL SIZE</u>	<u>COMMENTS</u>
E	Up gradient	4 inch	2nd well group.
F	Down gradient	4 inch	2nd well group.
G	Down gradient	4 inch	2nd well group.
H	Down gradient	4 inch	2nd well group.

ENTOMOLOGY RINSE AREA

<u>WELL</u>	<u>LOCATION</u>	<u>WELL SIZE</u>	<u>COMMENTS</u>
K	Down gradient	4 inch	No dedicated sampling equipment.

- NOTES:
1. Wells were lettered in the sequence they were drilled.
 2. Location refers to the placement of either up gradient or down gradient of the site to be studied.
 3. The 1st well group was installed by the RADIANT corporation during the IRP phase II Confirmation/Quantification Stage 1 in 1985.
 4. The 2nd well group was installed by COE using a local contractor.

CANNON AFB WATER QUALITY MONITORING WELL SYSTEMS

- WELL DEPTH:** The depth to the aquifer averages around 270 ft.
- WELL CASING:** PVC pipe.
- PUMP SYSTEMS:** All wells, except for well K, have permanently installed, dedicated submerged pump systems. Each pump system consists of two pumps, one pump for purging and one pump for sampling. The pumps are placed side by side. Both pumps are air powered. A portable air compressor mounted on a trailer is used to run the pumps.
- WATER LEVEL METERS:** Model 6010-E digital electronic meter manufactured by Well Wizard. The meter is connected to a Well Wizard 6111 probe. The probe is stainless steel tube .54 inches in diameter and 13 .04 inches long, attached to a flat polyethylene tape. You will notice that the probe system has to slip down a four inch pipe filled with air tubing for two separate pumps.
- CONTROLLERS:** The pumps are controlled by a Well Wizard, Standard and High-Pressure Controller, model number 3013-H. The logic of the controller is controlled pneumatically.
- PURGING PUMPS:** Double acting reciprocating piston motor pumps manufactured by Bennet Sample Pumps, Inc. The air is supplied through polypropylene tubes.
- SAMPLING PUMPS:** Model number P-1101H bladder pump, manufactured by Well Wizard. The body material is PVC, the bladder material is teflon and the tube fittings are 316 stainless steel. The pumps are 40.75 inches long and 1.66 inches in diameter. The pumps are laboratory certified to be free of all EPA 601, 602, base neutral and extractable contaminants.
- SAMPLING TUBING:** The air is supplied through a Twin-Line bonded polyethylene tube manufactured by QED. For sampling purposes the water discharge side of the tube is Teflon lined. To avoid contamination this tubing is made from 100% virgin polymers and is certified to be clean.

CANNON AIR FORCE BASE - WELL

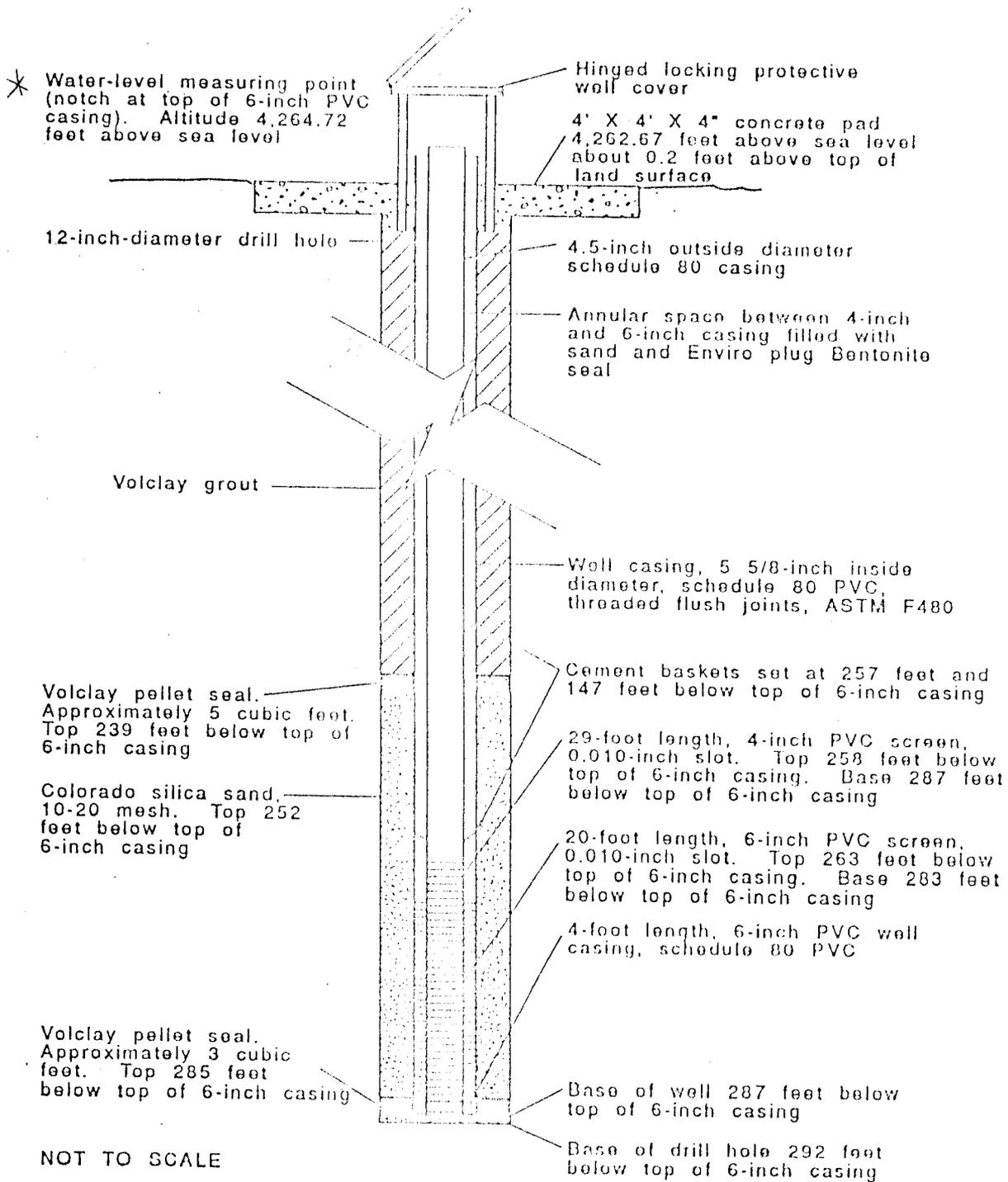


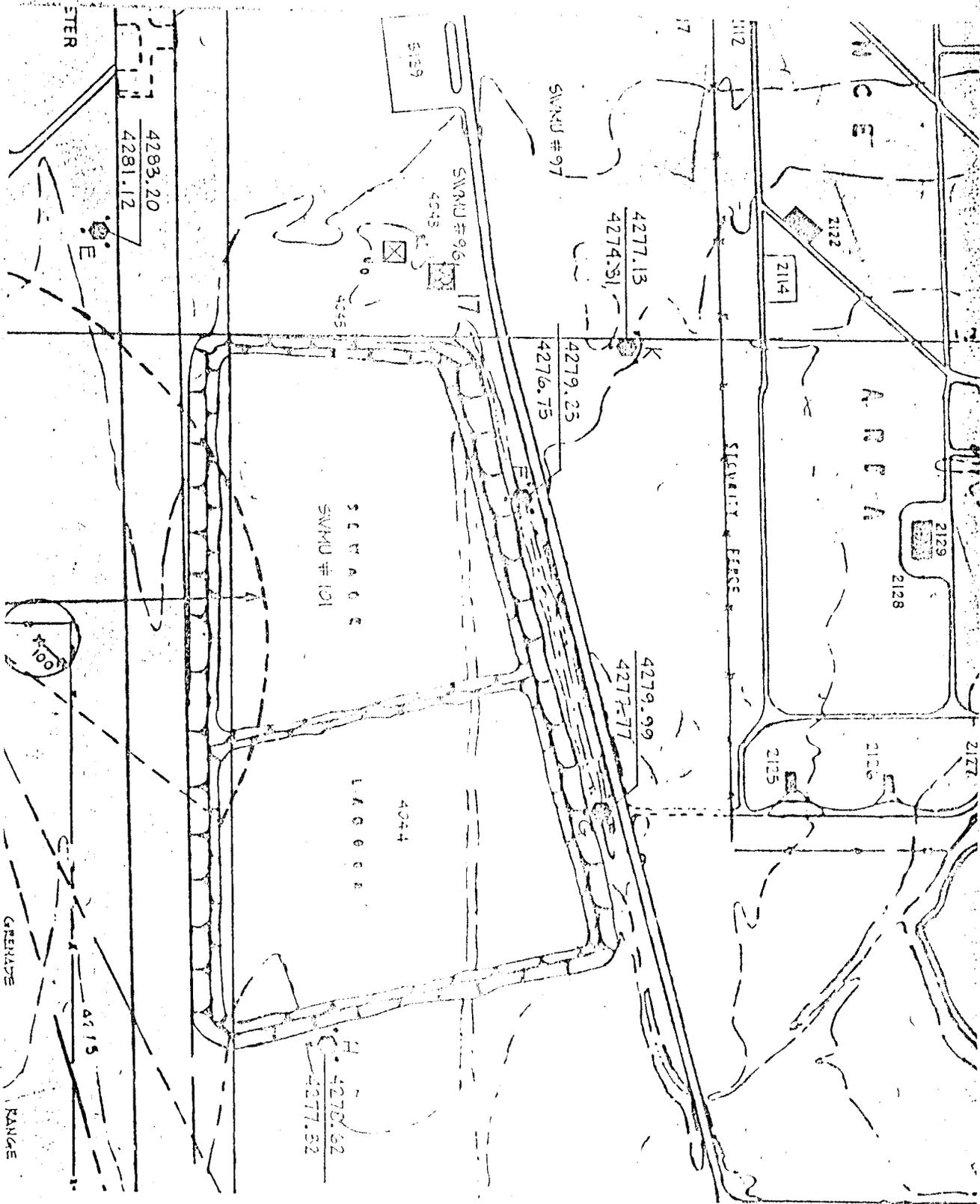
Figure 1.--Well-completion diagram for monitoring well CAFB-L drilled and completed by U.S. Geological Survey, Coal Branch, Denver, Colo. Started on 01-18-92. Completed on 06-02-92. Well drilled using mud-rotary method and Wyoming sodium bentonite drilling fluid.

This figure accurately represents the construction of well L at Cannon Air Force Base.

Peter F. Frenzel *Peter F. Frenzel* Professional Engineer,
Certificate Number 9989

CANNON AFB SEWAGE LAGOONS

MONITORING WELLS



FOURTH ROUND SAMPLING EVENT
JAN 93 ESTIMATED COSTS

1. GROUND WATER SAMPLING COSTS: Analysis from landfill 5 wells (to include QA, QC & equipment blanks) for chromium, lead and Ground water quality/contamination Indicator parameters. Analysis from Sewage Lagoon, nitrates, sulfates and total dissolved solids as stated in the RI Report for 18 SWMU at Cannon AFB dated 19 Oct, 1992. Travel blanks are analyzed for volatile organics only.

<u>Landfill 5 well sampling</u>	=	<u>Estimated Costs</u>
4 wells x 1 sample/well x \$1200/sample	=	\$ 4,800
1 QA sample x \$1200/sample	=	\$ 1,200
1 QC sample x \$1200/sample	=	\$ 1,200
1 Equipment blank sample x \$1200/sample	=	\$ 1,200
3 travel blanks x \$ 300/sample	=	\$ 900
<u>Sewage Lagoon sampling</u>	=	<u>Estimated Costs</u>
4 wells x 1 sample/well x \$1300/sample	=	\$ 5,200
1 QA sample x \$1300/sample	=	\$ 1,300
1 QC sample x \$1300/sample	=	\$ 1,300
1 Equipment blank sample x \$1300/sample	=	\$ 1,300
2 travel blanks x \$ 300/sample	=	\$ 600
Total sample analysts costs	=	\$19,000

2. LABOR COSTS:

<u>Hired Labor Costs</u>	=	<u>Estimated Costs</u>
Project Manager \$76/hour x 8 hours/day x 3 days	=	\$ 1,824
Sample & Equipment Prep. \$440/day x 4 days	=	\$ 1,760
Sampler \$55/hour x 10 hours/day x 12 days	=	\$ 6,600
Assistant \$46/hour x 10 hours/day x 12 days	=	\$ 5,520
Total labor costs	=	\$15,704

3. EQUIPMENT AND TRANSPORTATION COSTS:

<u>Equipment and Transportation Costs</u>	=	<u>Estimated Costs</u>
Glassware, chemicals, safety supplies and other	=	\$ 800
Transportation of samples \$	=	\$ 550
Vans x 1000 miles/van x \$.30/mile	=	\$ 600
Total equipment and transportation costs	=	\$ 1,950

4. ASSOCIATED PER DIEM COSTS:

<u>Per Diem Costs</u>	=	<u>Estimated Costs</u>
Per diem for 2 x \$70/day x 12 days	=	\$ 1,680

TOTAL FOR ALL COSTS = \$38,334

Spill Response Procedures and Facilities
Holloman AFB - AF/NMED Meeting - 18 Nov 92

- Current Procedure

- Interim measures
 - Containment
 - Removal of free product
- Call NMED
 - Ed Horst available 24 hours/day
 - Approval of temporary treatment permit
- Submit sampling and response plan
 - Determine horizontal and vertical extent of contamination
 - Remove contaminated soil
 - Remediate contaminated soil
- Plan approval
- Sampling and final cleanup

- Proposed Procedure (underlined text indicates changed procedures)

- Interim measures
 - Containment
 - Removal of free product
 - Removal of heavily contaminated soil
- Call NMED
 - Call during work hours or on weekend, if necessary
 - Approval of temporary treatment permit
- Submit sampling and response plan
 - Determine horizontal and vertical extent of remaining contamination
 - Remove remaining contaminated soil
 - Remediate contaminated soil
- Plan approval
- Sampling and final cleanup
- Advantages
 - Faster response minimizes harm to environment
 - More convenient for NMED
 - No late-night phone calls
 - Plan approval is less time sensitive

- Proposed Soil Remediation Facility

- Three land farming areas
 - JP-4
 - Diesel
 - Gasoline
- Each area will consist of:
 - Sand
 - Concrete liner
 - Plastic secondary liner
- Treated soil used for fill
- Permits
 - Temporary treatment permit
 - Air emission permit
 - Closure plan