



DISTRICT I

SCOTT A. VERHINES, P.E.
STATE ENGINEER

5550 San Antonio NE
Albuquerque, NM 87109
(505) 383-4000

February 2, 2012

FILE: RG-1579 POD 221

Kirtland Air Force Base – Environmental Management
C/o Wayne Bitner
377MSG/CEANR
2050 Wyoming Blvd., SE
Albuquerque NM 87117-5270

Greetings:

Enclosed is your copy of Permit to Drill a Well with No Consumptive Use, numbered above, which has been approved subject to the Conditions of Approval, attached hereto.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffrey L. Peterson".

Jeffrey L. Peterson
Water Resource Specialist Senior

JLP:jlj
Enclosures as stated

Cc: Santa Fe

HCI-49093
\$10

File No. **RG-1579 221**



NEW MEXICO OFFICE OF THE STATE ENGINEER

**APPLICATION FOR PERMIT TO DRILL A WELL
WITH NO CONSUMPTIVE USE OF WATER**



(check applicable box):

For fees, see State Engineer website: <http://www.ose.state.nm.us/>

Purpose:	<input type="checkbox"/> Pollution Control And / Or Recovery	<input type="checkbox"/> Geo-Thermal
<input checked="" type="checkbox"/> Exploratory	<input type="checkbox"/> Construction Site De-Watering	<input checked="" type="checkbox"/> Other (Describe): Soil Vapor Extraction
<input checked="" type="checkbox"/> Monitoring	<input type="checkbox"/> Mineral De-Watering	

A separate permit will be required to apply water to beneficial use.

Temporary Request - Requested Start Date: _____ Requested End Date: _____

Plugging Plan of Operations Submitted? Yes No

2011 DEC -7 PM 3:46

1. APPLICANT(S)

Name: Kirtland Air Force Base	Name: N/A
Contact or Agent: Wayne Bitner check here if Agent <input checked="" type="checkbox"/>	Contact or Agent: N/A check here if Agent <input type="checkbox"/>
Mailing Address: Chief Environmental Restoration 377 MSG/CEANR 2050 Wyoming Blvd. SE	Mailing Address: N/A
City: Albuquerque	City: N/A
State: NM Zip Code: 87117-5270	State: _____ Zip Code: _____
Phone: N/A <input type="checkbox"/> Home <input type="checkbox"/> Cell Phone (Work): 505-853-3484	Phone: N/A <input type="checkbox"/> Home <input type="checkbox"/> Cell Phone (Work): N/A
E-mail (optional): Ludie.Bitner@kirtland.af.mil	E-mail (optional): N/A

FOR OSE INTERNAL USE

Application for Permit, Form wr-07, Rev 8/25/11

File Number: RG-1579 FOD 221	Trn Number: _____
Trans Description (optional): _____	
Sub-Basin: _____	
PCW/LOG Due Date: _____	

2. WELL(S) Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84)

NM State Plane (NAD83) (Feet)
 UTM (NAD83) (Meters)
 Lat/Long (WGS84) (to the nearest 1/10th of second)

NM West Zone
 Zone 12N
 NM East Zone
 Zone 13N
 NM Central Zone

Well Number (if known):	X or Easting or Latitude:	Y or Northing or Longitude:	Optional: Complete boxes labeled "Other" below with PLSS (Public Land Survey System, i.e. Quarters, Section, Township, Range); Hydrographic Survey Map & Tract; Lot, Block & Subdivision; OR Land Grant Name if known.
KAFB-106161	1541930.0	1473340.0	N/A

NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 - POD Descriptions)

Additional well descriptions are attached: Yes No If yes, how many _____

Other description relating well to common landmarks, streets, or other:

Well is on land owned by: **Kirtland Air Force Base**

Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. Attached? Yes No
If yes, how many _____

Approximate depth of well (feet): **530.00** Outside diameter of well casing (inches): **6.00**

Driller Name: **Water Development Corporation** Driller License Number: **WD-1210**

2011 DEC - 7 PM 3:46
 STATE ENGINEER'S OFFICE

3. ADDITIONAL STATEMENTS OR EXPLANATIONS

Please see attachments.

FOR OSE INTERNAL USE

Application for Permit, Form wr-07

File Number: **RG-1579 POD 221**

Trn Number:

4. SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

<p>Exploratory: <input checked="" type="checkbox"/> Include a description of any proposed pump test, if applicable.</p>	<p>Pollution Control and/or Recovery: <input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following: <input type="checkbox"/> A description of the need for the pollution control or recovery operation. <input type="checkbox"/> The estimated maximum period of time for completion of the operation. <input type="checkbox"/> The annual diversion amount. <input type="checkbox"/> The annual consumptive use amount. <input type="checkbox"/> The maximum amount of water to be diverted and injected for the duration of the operation. <input type="checkbox"/> The method and place of discharge. <input type="checkbox"/> The method of measurement of water produced and discharged. <input type="checkbox"/> The source of water to be injected. <input type="checkbox"/> The method of measurement of water injected. <input type="checkbox"/> The characteristics of the aquifer. <input type="checkbox"/> The method of determining the resulting annual consumptive use of water and depletion from any related stream system. <input type="checkbox"/> Proof of any permit required from the New Mexico Environment Department. <input type="checkbox"/> An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.</p>	<p>Construction De-Watering: <input type="checkbox"/> Include a description of the proposed dewatering operation, <input type="checkbox"/> The estimated duration of the operation, <input type="checkbox"/> The maximum amount of water to be diverted, <input type="checkbox"/> A description of the need for the dewatering operation, and, <input type="checkbox"/> A description of how the diverted water will be disposed of.</p>	<p>Mine De-Watering: <input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following: <input type="checkbox"/> A description of the need for mine dewatering. <input type="checkbox"/> The estimated maximum period of time for completion of the operation. <input type="checkbox"/> The source(s) of the water to be diverted. <input type="checkbox"/> The geohydrologic characteristics of the aquifer(s). <input type="checkbox"/> The maximum amount of water to be diverted per annum. <input type="checkbox"/> The maximum amount of water to be diverted for the duration of the operation. <input type="checkbox"/> The quality of the water. <input type="checkbox"/> The method of measurement of water diverted. <input type="checkbox"/> The recharge of water to the aquifer. <input type="checkbox"/> Description of the estimated area of hydrologic effect of the project. <input type="checkbox"/> The method and place of discharge. <input type="checkbox"/> An estimation of the effects on surface water rights and underground water rights from the mine dewatering project. <input type="checkbox"/> A description of the methods employed to estimate effects on surface water rights and underground water rights. <input type="checkbox"/> Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.</p>
<p>Monitoring: <input checked="" type="checkbox"/> Include the reason for the monitoring well, and, <input type="checkbox"/> The duration of the planned monitoring.</p>	<p>Geo-Thermal: <input type="checkbox"/> Include a description of the geothermal heat exchange project, <input type="checkbox"/> The amount of water to be diverted and re-injected for the project, <input type="checkbox"/> The time frame for constructing the geothermal heat exchange project, and, <input type="checkbox"/> The duration of the project. <input type="checkbox"/> Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.</p>		

ACKNOWLEDGEMENT

I, We (name of applicant(s)), David J. Hornyak, Colonel USAF

Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief

Applicant Signature

Applicant Signature

ACTION OF THE STATE ENGINEER

This application is:

approved partially approved denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 2nd day of February 2012, for the State Engineer,

Scott A. Vehines, P.E.

State Engineer

By: Jeffrey L. Peterson
Signature

Print

Title: Water Resource Specialist Senior
Print

2011 DEC -7 AM 3:45

FOR OSE INTERNAL USE

Application for Permit, Form wr-07

File Number: <u>RG-1579 POD 221</u>	Trn Number:
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**KIRTLAND AIR FORCE BASE
BULK FUELS FACILITY SPILL
SOIL VAPOR EXTRACTION
WELL SUMMARY**

Soil Vapor Extraction Wells

Two soil vapor extraction (SVE) wells are being installed as part of the implementation of an SVE interim measures for the vadose zone, following an iterative approach discussed during the November 3, 2011 Tiger Team meeting with Shaw Environmental, Kirtland Air Force Base, U.S. Army Corps of Engineers, and the New Mexico Environment Department. Two soil borings will be advanced at Kirtland Air Force Base Bulk Fuels Facility (Figure 1). Each will be advanced to approximately 530 ft below ground surface (bgs). Each 530 ft boring at each location will be drilled from the surface into and through the water table, and completed as a permanent SVE well (Figure 2).

Each well boring will be tested for utility clearance to 5 ft with a hand-auger or post-hole digger. Borehole advancement (drilling) will be performed using the air-rotary casing hammer (ARCH) method. The ARCH method uses steel insulator casing, advanced with drill bit/rod, to prevent borehole collapse. For 6-inch wells, 13-3/4 inch O.D drive casing to 200 ft bgs and 11-3/8 O.D inch casing to the final depth will be used. Wells will have centralizers at 100-foot spacing in the blank sections and 50-spacing in the screen interval(s).

The SVE wells will be constructed using 6-inch diameter welded or standard threaded and collared Schedule 40 steel casing. One 50-foot section of stainless steel, wire-wrap screen with 0.050-inch slots, double-strong wires, and rods will be followed by a 10-foot section of Schedule 40 steel casing, welded. The blank section will be followed by a 40-foot section of stainless steel, wire-wrap screen with 0.050-inch slots, double-strong wires, and rods. Thirty-five feet of stainless steel wire-wrap screen with 0.030 inch slots will be placed at the base of the well with a 5-foot sump. Centralizers will be placed at 100-foot spacing in blank sections and 50-foot spacing in the screen interval.

An 8-12 engineered filter pack (sand) will be installed in the annular space between the well casing/screen and the borehole from the bottom of the borehole to an approximate depth of 485 feet below ground surface. The filter pack will be slurried with clean potable water and tremied (the annular space between the well and drive casings can serve as a tremie pipe) into place to prevent bridging and to ensure continuous placement, while the casing is slowly removed. From an approximate depth of 485 feet bgs to roughly 447 feet bgs, a Tacna 0.25/8 sand pack will be emplaced in the annular space. A 5-foot hydrated bentonite pellet seal will be emplaced 457 feet to 452 feet incrementally hydrated with potable water in 1-foot lifts. After the final lift has been allowed to hydrate for a minimum of 2 hours, the Tacna 0.25/8 sand filter pack will be tremied to a depth 10-feet above the topmost screen interval, followed by cement grout with 6% bentonite. The grout will be emplaced by tremie pipe to within 1.5 feet of the surface. Geologic logs will be prepared for each borehole showing relative to borehole depth the rock types, thickness of rock units, and water-bearing zones (including that at and below the water table). The name of the borehole, location of the borehole, the date(s) that the borehole was completed, the drilling method, and the elevation of the top of the borehole will also be noted on the boring log. The data will be provided the NMED in both hard copy and in digital format.

The following elements regarding soil borings will be followed:

2011 DEC -7 PM 3:45

- All drilling will conform to state and local regulations. Permits, applications, and other documents required by state and local authorities will be obtained.
- Locations of all borings will be approved in writing by the NMED before drilling begins.
- The drill rig will be decontaminated in accordance with SOP B1.11 (Equipment Decontamination). Use of disposable equipment is preferred. If disposable equipment is unavailable, use of decontaminated equipment is allowed. Equipment will be decontaminated per the requirements of SOP B1.11.
- No fluids will be used to advance soil borings.
- Surface water and extraneous materials will not enter the boring.
- All trash and drill cuttings will be disposed.
- Before digging begins a digging permit, the Base Civil Engineering Work Clearance Request form will be completed and approved by the Chief of Operations or Chief of Engineering and Environmental Planning at the base. The work clearance request is processed just before the start of work and is valid for 30 days. If delays are encountered and the conditions at the job site change (or may have to be changed) or the project extends past 30 days, this work clearance request must be reprocessed.
- The type of information that must accompany this permit includes:
 - Location
 - Work order/job number
 - Contract number
 - If the area has been staked/clearly marked or not
 - A sketch of the excavation
 - Type of facility work involved, i.e., pavements, drainage systems, railroad tracks, overhead or underground utility or communications, aircraft or vehicular traffic flow, security, etc.
 - Date clearance requested and terminated
 - Requesting official, phone number, and organization

Activities associated with borehole advancement (drilling), equipment decontamination, handling of investigative-derived waste (IDW), and borehole abandonment (if required) will be performed in accordance with the Base-Wide Work Plans for Investigation under the Environmental Restoration Program (Tetra Tech, 2004).

Well construction diagrams will be completed for all installed wells.

Borehole Abandonment

If needed, all borehole abandonment procedures will be performed in accordance with all federal, state, and local regulations. Well abandonment will be supervised by a qualified geologist or hydrogeologist.

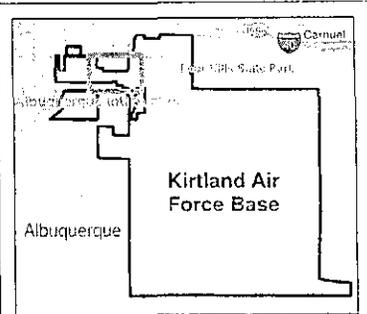
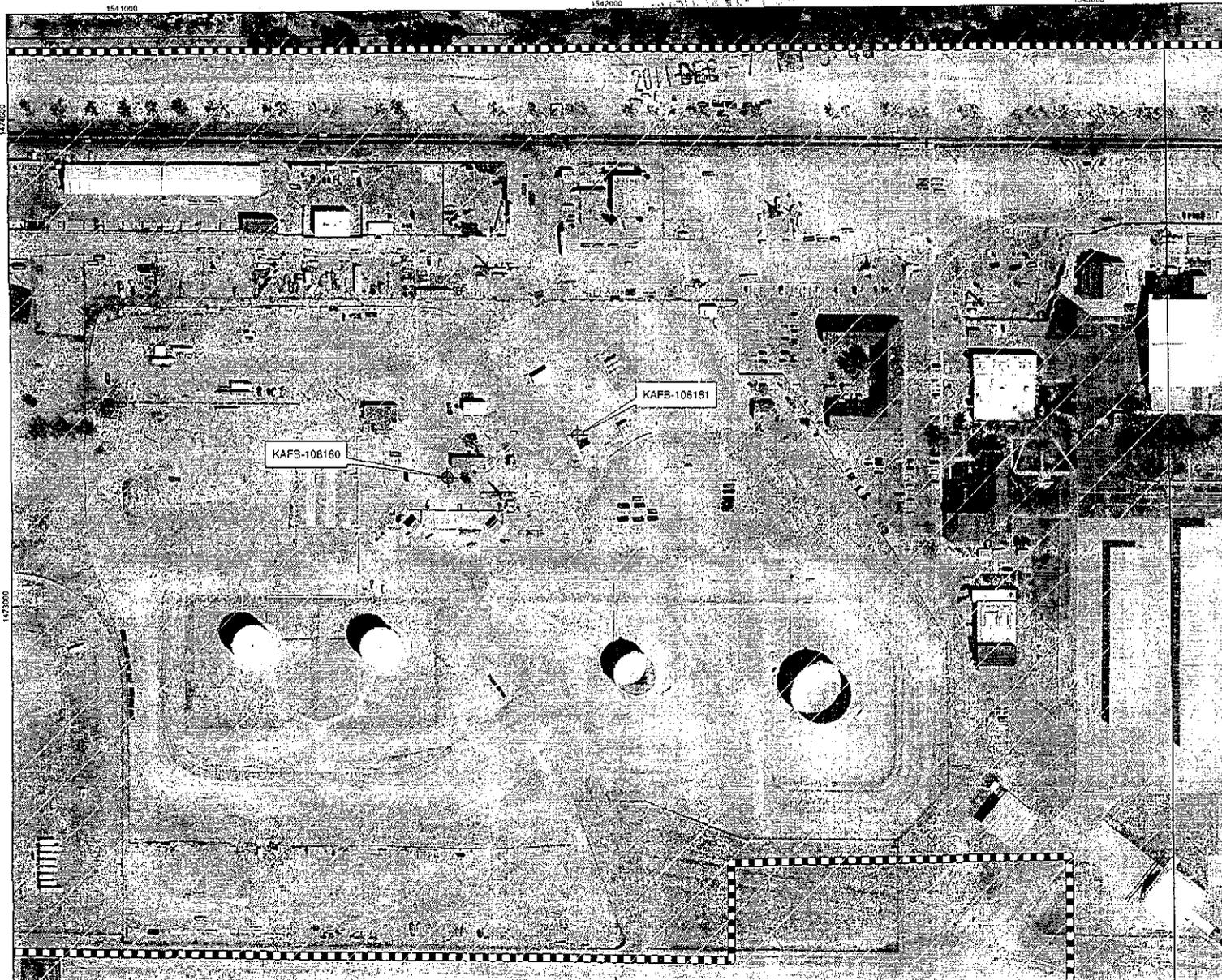
Unless otherwise specified, monitoring wells will be abandoned as described below:

- Prior to abandonment, the borehole or well will be probed to determine the total open depth of the hole or well casing, respectively. Water level measurements will also be measured and recorded.
- All stainless steel or steel existing well casings will be completely removed or drilled out to the total depth of the well to avoid groundwater contamination due to corrosion. PVC casings may remain in place.
- A plugging material consisting of one or a combination of the following materials will be used:
 - Neat cement with not more than 5 percent by weight of bentonite;
 - Bentonite slurry (which can include polymers designed to retard swelling);
 - High solids grout ; or
 - Pelletized medium grade or crushed bentonite.
- Cement and bentonite slurries will be pumped into place in a continuous operation with a grout pipe introducing the plugging material at the bottom of the well and moving the pipe progressively upward as the well is filled. This method will be repeated to within 2 ft bgs unless otherwise specified.
- The well casing will be severed at least 2-ft bgs, if not required to be completely removed, and a cement plug larger in diameter than the well bore will be constructed over the well bore and completed flush with the ground surface.
- When using pelletized or crushed bentonite, the bentonite will be poured down the hole in 3- to 5-ft lifts and hydration using clean potable water between lifts. This method will be repeated to within 2 ft bgs unless otherwise noted.

2011 DEC -7 PM 3:46

AMERICAN OVERSEAS

R6-157D POD 021



-  Proposed SVE Location
 -  Installation Boundary
 -  Bulk Fuels Facility
 - KAFB Kirtland Air Force Base
 - SVE Soil Vapor Extraction
- Inset: City Areas**
-  Roads
 -  Runway
 -  Airport Area
 -  State Park
 -  City Area
 -  Bulk Fuels Facility

Source: Microsoft Virtual Earth

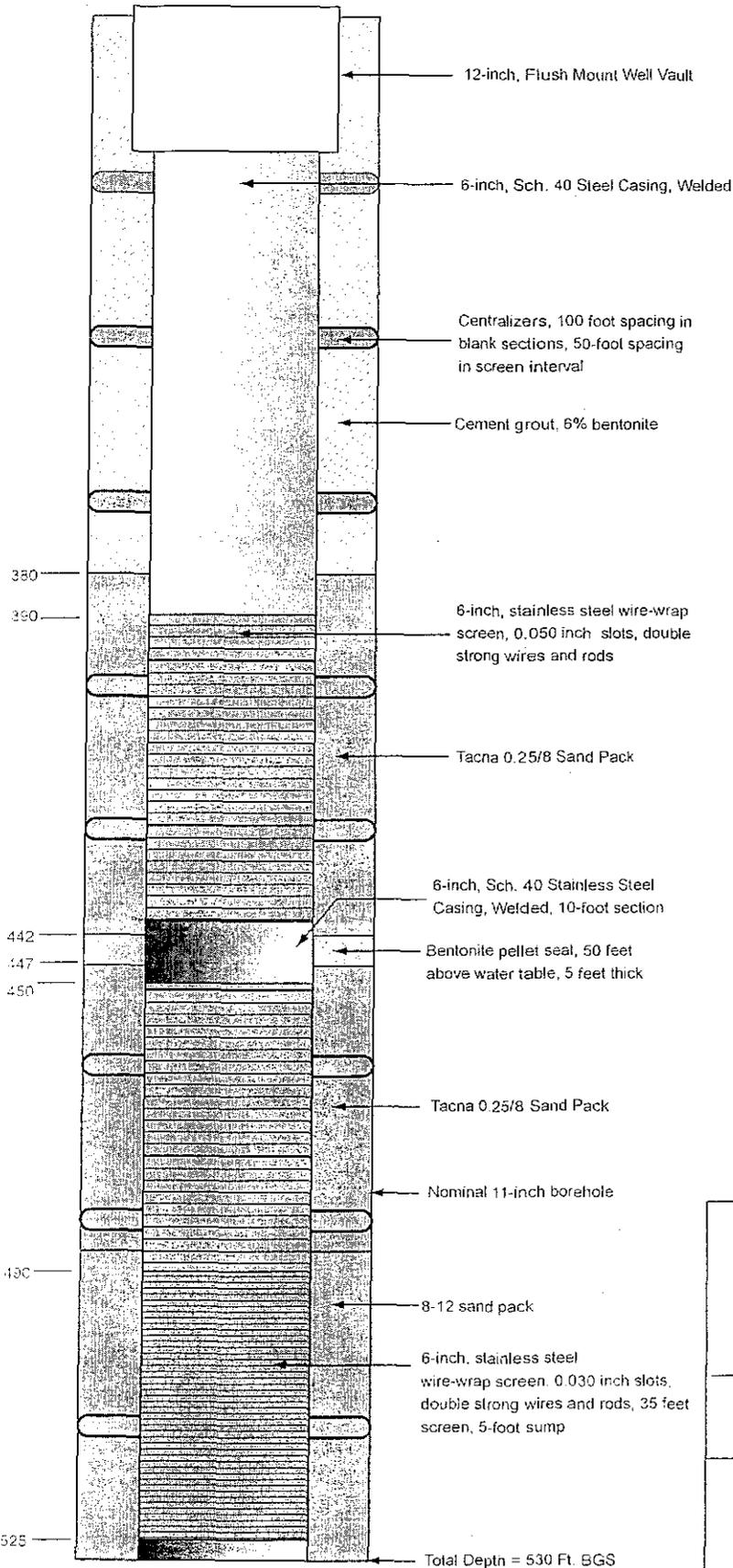


INTERIM WORK PLAN
 BULK FUELS FACILITY
 KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 1
 PROPOSED SOIL VAPOR EXTRACTION WELL LOCATIONS
 KIRTLAND BULK FUELS FACILITY
 WELL INSTALLATION PERMIT

Generated by: EJC Date: 11/25/11 File Path: I:\KAFB_BFF\GIS\Documents\Project\Maps\SVE_Previewing\WellLocs_SVE_Excavation_Wells.mxd

Nominal
Depths



2011 DEC -7 PM 3:46

Not to Scale
BGS = Below Ground Surface

ADDENDUM
FINAL INTERIM MEASURES WORK PLAN
BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 2

SOIL VAPOR EXTRACTION WELL
DIAGRAM

**NEW MEXICO OFFICE OF THE STATE ENGINEER
PERMIT TO DRILL A WELL WITH NO CONSUMPTIVE USE OF WATER
CONDITIONS OF APPROVAL**

1. This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the following conditions of approval:

Permittee: Kirtland Air Force Base – Environmental Management
C/o Wayne Bitner - 377MSG/CEANR
2050 Wyoming Blvd., SE
Albuquerque NM 87117-5270

Permit Number: RG-1579 POD 221

Application File Date: December 7, 2011

Priority: N/A

Source: Ground water

Points of Diversion: RG-1579 POD 221 (KAFB-106161), located where X=1,541,930 feet and Y=1,473,340 feet, NMCS Central Zone, NAD 83, on land owned by Kirtland Air Force Base.

Purpose of Use: Soil Vapor Extraction, monitoring, exploratory

Place of Use: N/A

Amount of Water: N/A

2. No water shall be appropriated and beneficially used under this permit.
3. RG-1579 POD 221 shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.
4. RG-1579 POD 221 shall be constructed in accordance with 19.27.4 NMAC (8/31/2005), and in accordance with proposed well completion diagram, and attached as Figure 2.
5. Completed and properly executed Well Records shall be filed in accordance with Subsection K of 19.27.4.29 NMAC. Test data shall be filed not later than ten (20) days after completion of the aquifer/pump test(s).
6. No water shall be diverted from RG-1579 POD 221 except for testing purposes which shall not exceed ten (10) cumulative days, and the well shall be plugged in accordance with Subsection C of 19.27.4.30 NMAC, unless a permit to use water from RG-1579 POD 221 is acquired from the Office of the State Engineer, or RG-1579 POD 221 will be used as ground-water monitoring well as part of a monitoring program, or vapor extraction well.

**NEW MEXICO OFFICE OF THE STATE ENGINEER
PERMIT TO DRILL A WELL WITH NO CONSUMPTIVE USE OF WATER
CONDITIONS OF APPROVAL**

Permit No.: RG-1579 POD 221

Permittee: Kirtland Air Force Base Environmental Management

Page 2 of 2

7. Permission for access shall be obtained prior to any wells drilled under this permit on lands of other ownership, which includes all private, public and municipal lands.
8. The State Engineer recognizes the regulatory authority of the New Mexico Environmental Department Hazardous Waste Bureau, and that NMEDHWB may impose stricter regulations regarding well siting, drilling, construction, development and reporting.
9. If artesian water is encountered, the Permittee and driller shall comply with Subsection C of 19.27.4.31 NMAC.
10. RG-1579 POD 221 shall be drilled and completed within one year of the approval of this permit.

Witness my hand and seal this 2nd day of February A.D. 2012.

Scott A. Verhines, P.E., State Engineer

By:



Jeffrey L. Peterson

Water Resource Specialist Senior