Kieling, John, NMENV

From: Bitner, Ludie W Jr Civ USAF AFMC 377 MSG/CEANR [Ludie.Bitner@kirtland.af.mil]
Sent: Tuesday, November 29, 2011 9:40 AM
To: Kieling, John, NMENV; Moats, William, NMENV; Schoeppner, Jerry, NMENV; Reuter, Stephen, NMENV; McDonald, William, NMENV; Brandwein, Sid, NMENV; King.Laurie@epa.gov; OYELOWO, LAYI A GS-13 USAF DoD AFCEE/ERB; Migdal, Walter SPA
Cc: Pike, John S Civ USAF AFMC 377 MSG/CEAN; Bohannon, Herbert C Civ USAF AFMC 377 MSG/CE2; Carrillo, Ana R Civ USAF AFMC 377 MSG/CEA
Subject: Letter Addendum for LNAPL Containment Plan and associated extraction well
Attachments: Letter Addendum for extraction well installation.pdf

All
The attached file is an electronic version of the signed letter addendum for the LNAPL containment work plan. A hard copy of this package will be sent via mail.

Wayne Bitner
Chief, Environmental Restoration
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505-853-3484
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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 377TH AIR BASE WING (AFMC)

Mr. Thomas Berardinelli
377 ABW/DS
2000 Wyoming Blvd SE
Kirtland AFB NM 87117-5000

Mr. John Kieling
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Dr East, Bldg 1
Santa Fe NM 87505-6303

Mr. Kieling

Kirtland Air Force Base is submitting an Addendum to the Light Non-Aqueous Phase Liquid (LNAPL) Containment Interim Measures Work Plan Part 1 - Characterization, Bulk Fuels Facility Spill, Solid Waste Management Units ST-106 and SS-111. The original LNAPL Containment Work Plan was submitted to you in July 2011.

If you have any questions with regard to this submittal, please contact Mr. John S. Pike at (505) 846-8546.

Sincerely

THOMAS F. BERARDINELLI
Director of Staff

Attachment:
LNAPL Containment Workplan Addendum for the Bulk Fuels Facility Spill, SWMUs SS-111 and ST-106

cc:
NMED HWB - Mr. Moats, w/ atchs electronic and hardcopy
NMED GWQB - Mr. Schoeppner, w/ atchs electronic and hardcopy
NMED PSTB, Mr. Reuter, w/ atchs electronic and hardcopy
NMED HWB - Mr. McDonald, w/o atchs
NMED HWB – Mr. Brandwein, w/o atchs
USEPA-Region 6 (6PD-N), Ms. King, w/o atchs
AFCEE, Mr. Oyelowo, w/o atchs
USACE, Mr. Midgal, w/o atchs
Admin. Record, CNM, Montoya Campus w/atch
File

40 CFR 270.11
DOCUMENT CERTIFICATION
NOVEMBER 2011

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my 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 my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

DAVID J. HORNYAK
Colonel, U.S. Air Force

This document has been approved for public release.

KIRTLAND AIR FORCE BASE
377 ABW Public Affairs

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Shaw Environmental, Inc.

2440 Louisiana Blvd NE, Suite 300
Albuquerque, NM 87110
Phone: 505.262.8928

Shaw® Shaw Environmental, Inc.

November 18, 2011

Subject: **LNAPL Containment Well Location and Installation**
LNAPL Containment Interim Measures Work Plan Part I - Characterization, Bulk Fuels Facility Spill, Solid Waste Management Units ST-106 and SS-111
Addendum November 2011
Albuquerque, New Mexico

This letter is being submitted as an addendum to the Light Non-Aqueous Phase Liquid (LNAPL) Containment Interim Measures Work Plan, prepared by Shaw Environmental and Infrastructure, Inc. (Shaw) for the U.S. Army Corps of Engineers (USACE) under contract W912DY-10-D-0014, Delivery Order 0002. This letter describes Shaw's proposal to install a single containment well at a location approximately 180 feet east of the location proposed in Figure 4-1of the work plan. Additionally, this letter describes revisions to the well design, and installation discussed in Section 6.0 of the work plan.

Shaw conducted a technical evaluation of the proposed containment well location and quantity as a result of discussing with the NMED Tiger Team on 3 November 2011. As a result of that evaluation, Shaw determined that a single containment well would be sufficient for containing the LNAPL, meeting the primary objective of the containment system and work plan. The proposed change is to move KAFB-106157 approximately 180 feet southeast of the original location (Figures 1 and 2). Figure 3 shows the predicted capture zone of this containment well, using the most recent hydrogeological data and recently acquired production well data for both Kirtland Air Force Base (AFB) wells and the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) wells.

Soil cuttings will be collected and logged every 5 vertical feet from ground surface to the total depth of the well. The data that will be recorded will be as follows:

- Soil will be classified every five feet in accordance with the Unified Soil Classification System (USCS). These classifications will be applied in the field by the geologists and will be subject to revision based on laboratory tests and subsequent review by the Project Geologist.
- A full description of soil samples will be made, and will include but not be limited to, the USCS two-letter classification, consistency, soil moisture, grain size, and size distribution.
- Depth limits, and the type and number of each sample taken will be indicated. All samples will be numbered consecutively.
- Depth to water as first encountered during drilling, along with the method of determination, will be noted. Any distinct water-bearing zones below the first zone also will be noted. Other observations during drilling will be noted, such as bit chatter, rod binding, rod drops, flowing or heaving sands, bit pressure, rod rotations per minute, and water pressure.
- If drilling fluid is used, the fluid losses, the interval over which they occur, and the quantity losses, will be recorded.

- A general description of the drilling equipment used will be provided. This description, including such information as rod size, bit type, pump type, rig manufacturer, and model, may be provided in a general legend.

- Dates and times of start and completion of boring will be indicated.

- The names of the contractor, driller, and rig geologist will be noted.

- The size and length of casing or auger used in each borehole will be noted.

- Observations of visible contamination for each sample or from cuttings that appear contaminated will be made.

Field instrument readings will be noted.

In order to accommodate the documented rise in water levels in the project area, the screening interval of the LNAPL containment well has been revised from what was proposed in the work plan. Figure 4 is a schematic diagram of the proposed well construction. Below is the proposed procedure and well design for the LNAPL containment well KAFB-106157:

- The well location will be tested for utility clearance to five feet with a hand auger or a post hole digger.

- The well boring for the LNAPL containment well will be advanced using ARCH drilling method to approximately 60 feet below the water table. The well will be installed approximately 540 feet below grade at the well location.

- KAFB-106157 will be constructed with 90 feet of 8-inch diameter welded joint 0.030 slot stainless steel continuous wrap screen with double strong wires and rods, a 10-foot blank stainless steel pump sleeve section placed approximately 30 feet below the current water table, and a Schedule 40 carbon steel casing riser (Figure 2). The well will be constructed with 60 feet of screen/pump sleeve below the water table and 40 feet of screen above the water table to accommodate future water table rises. The steel well casing will extend approximately 2.5 feet above grade as a temporary completion during well development. The final depth of the pump sleeve will be decided in the field based on lithology encountered during drilling.

- Prior to start of well drilling the contractor will provide manufacturer's written documentation that the screen sections meet the design requirements, the carbon steel casing shall be marked as per design requirements, and the Contractor will confirm that the casing welder is experienced in welding of stainless steel casing.

- An engineered 10-20 sand pack filter pack will be installed in the annular space between the well casing/screen and the borehole from the bottom of the borehole to approximately 10 foot above the top of the screened interval. The filter pack will be slurried with clean potable water and tremied into place to prevent bridging and to ensure continuous placement, while the drive casing is slowly removed. A 10-foot hydrated bentonite seal will be emplaced above the sand filter pack and incrementally hydrated with potable water in 1-foot lifts.

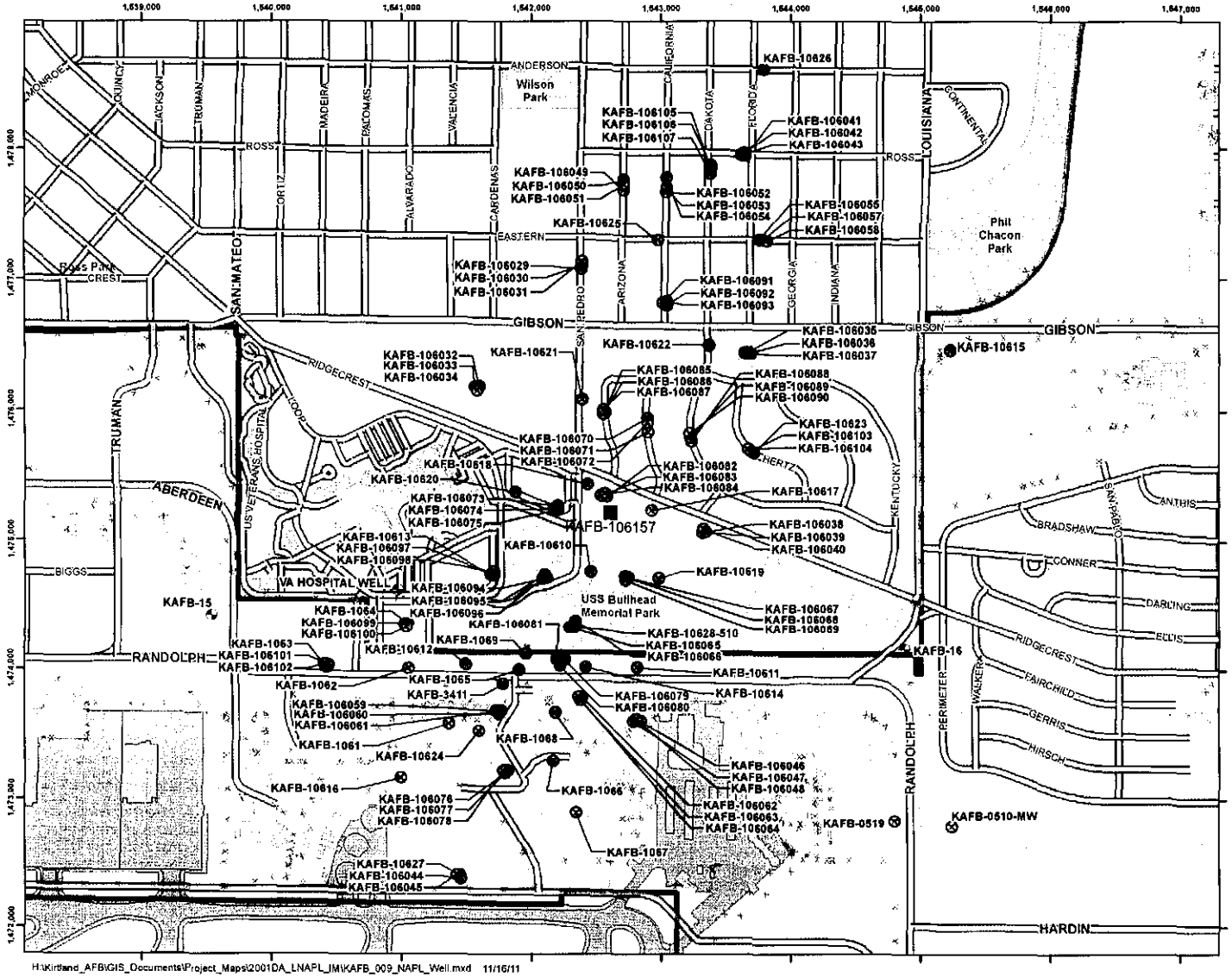
- After the last lift has hydrated for 2-hours, a cement grout with 6 percent bentonite and 2 percent calcium chloride by weight mixed at a weight density not less than 12.5 pounds per gallon will be

emplaced by tremie pipe to approximately 1.5 foot below the ground surface. The contractor will provide a mud balance and measure the grout weight density twice during placement to certify the grout specification.

- The well will be developed no sooner than 48 hours after the grout has cured and no later than 7 days. Initial development will consist of a combination of swabbing, jetting, bailing, and/or pumping until little or no sediment enters the well across the entire screened interval below the water table. The contractor will not be required to develop the screen interval above the water table.

The drive casing will be pulled from the borehole periodically during construction. Well construction diagrams will be completed for each installed well.

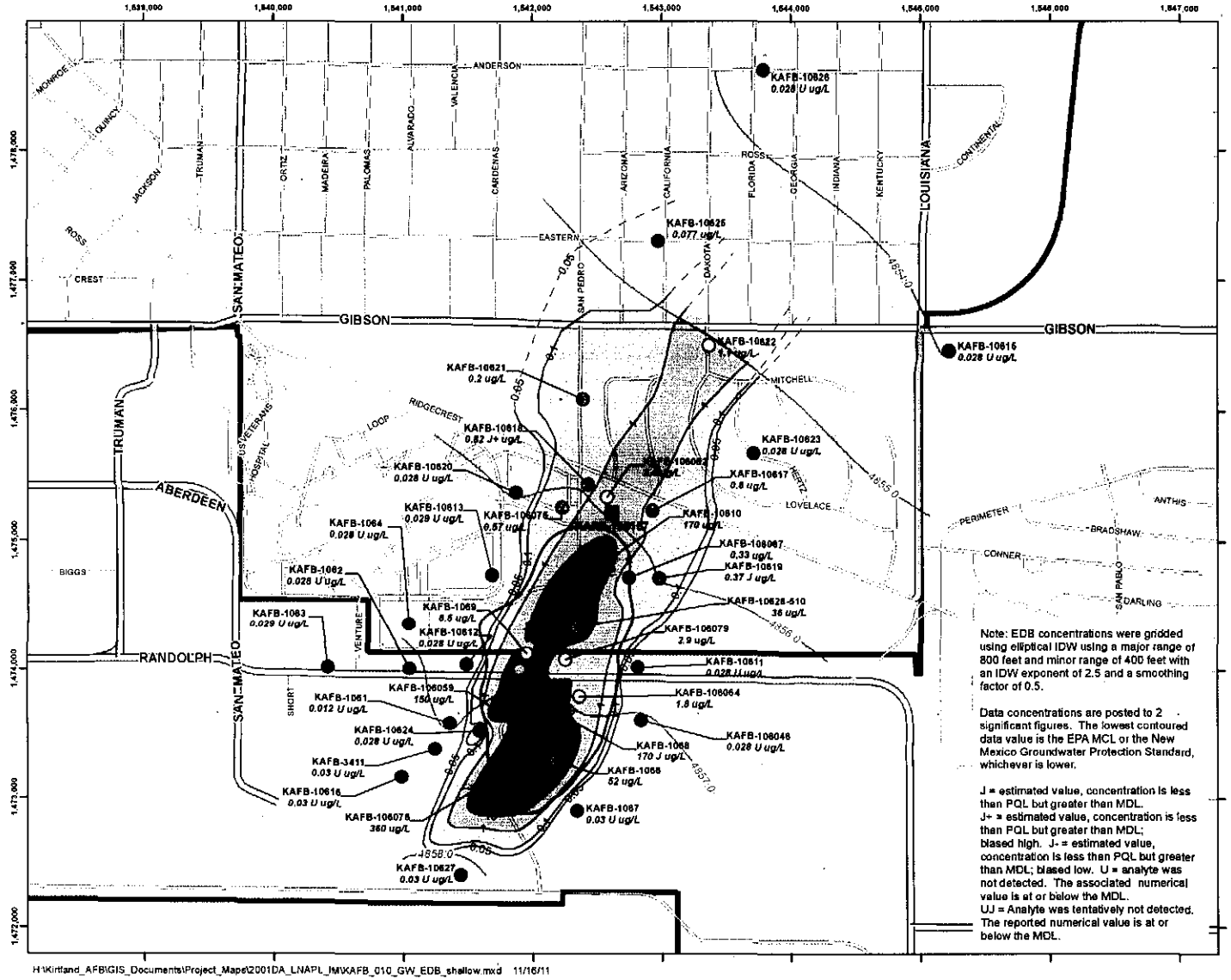
Section 5.1.3 describes a series of pumping tests that would be performed on the containment well(s). Shaw proposes replacing the proposed pumping tests with an enhanced well development at KAFB-106157 in order to collect the data required to complete the design of the full containment system. This will involve the installation and monitoring of a pressure transducer in KAFB-106157 during well development to measure drawdown and recovery. A full pumping test would be conducted once the full containment system including treatment system is installed and ready for operation. The well development will produce approximately 40,000 gallons of wastewater that can be containerized for disposal, thereby reducing the volume of water requiring handling as part of the discharge process.



LNAPL CONTAINMENT INTERIM MEASURE
BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 1

EXTRACTION AND
MONITORING WELL LOCATIONS



Note: EDB concentrations were gridded using elliptical IDW using a major range of 800 feet and minor range of 400 feet with an IDW exponent of 2.5 and a smoothing factor of 0.5.

Data concentrations are posted to 2 significant figures. The lowest contoured data value is the EPA MCL or the New Mexico Groundwater Protection Standard, whichever is lower.

J = estimated value, concentration is less than PQL but greater than MDL.
J+ = estimated value, concentration is less than PQL but greater than MDL; biased high. J- = estimated value, concentration is less than PQL but greater than MDL; biased low. U = analyte was not detected. The associated numerical value is at or below the MDL.
UJ = Analyte was tentatively not detected. The reported numerical value is at or below the MDL.

Legend

Location Type
- Containment Well

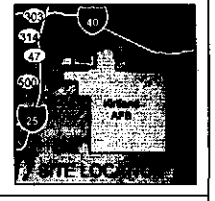
EDB Result (ug/L)
- 0.012 - 0.050
- 0.051 - 0.10
- 0.11 - 1.0
- 1.1 - 10
- 11 - 100
- 110 - 360

Historical Area of Observed NAPL (July 2009)

Groundwater Level Contour (ft msl)

EDB Concentration (ug/L)
- 0.012 - 0.10
- 0.11 - 1.0
- 1.1 - 10
- 11 - 100
- 110 - 360

- Major Road
- Road
- Installation Boundary



N

0 400 800 1,600

Feet
1 inch = 800 feet

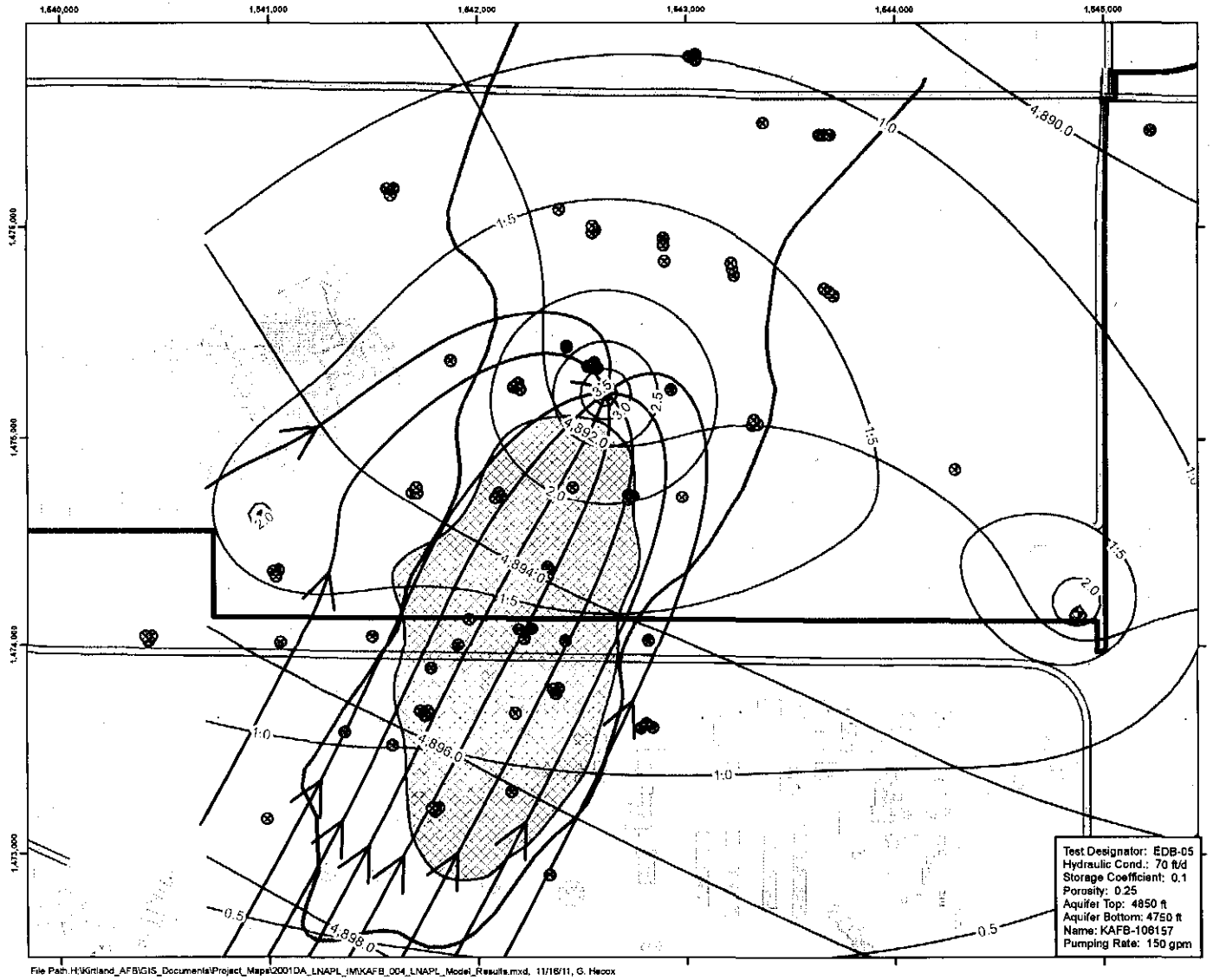
Revision Date: 11/16/11

Projection: NAD83 State Plane New Mexico Central FIPS3002 Feet

LNAPL CONTAINMENT INTERIM MEASURE
BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 2

1,2-DIBROMOETHANE CONCENTRATIONS IN SHALLOW GROUNDWATER



File Path:H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001DA_LNAPL_IM\KAFB_004_LNAPL_Model_Results.mxd, 11/16/11, G. Hecox

Legend

Well Locations

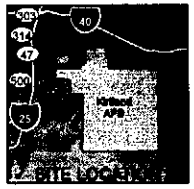
Location Type

- Monitor Well
- Containment Well
- Water Supply Well

Model Results

Type

- Drawdown (ft)
- Groundwater Elev. (ft)
- Particle Track
- 10-Year Time Arrow
- Historical Area of Observed NAPL (July 2009)
- Installation Boundary



Revision Date: 11/16/11

N

0 250 500 1,000

Feet

1 inch = 500 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

LNAPL CONTAINMENT INTERIM MEASURE
BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 3

KAFB-106157 CAPTURE ZONE

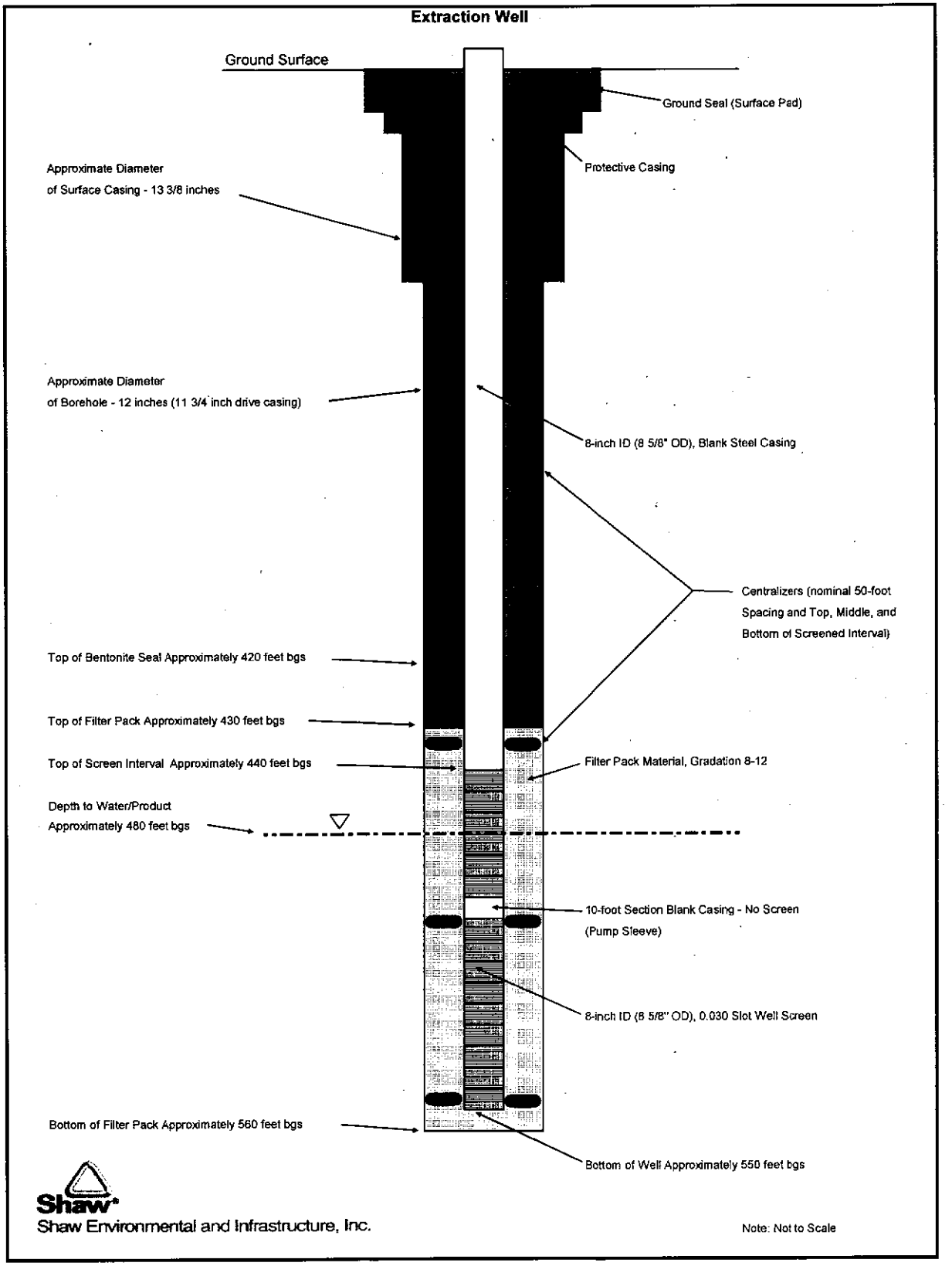


Figure 4. Extraction Well Construction