



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 377TH AIR BASE WING (AFMC)

DEC 5 2011

Mr. Thomas F. Berardinelli  
377 ABW/DS  
2000 Wyoming Blvd SE  
Kirtland AFB NM 87117-5606

Mr. John Kieling, Manager  
RCRA Permits Management Program  
Hazardous Waste Bureau (HWB)  
New Mexico Environment Department (NMED)  
2905 Rodeo Park Road  
Santa Fe New Mexico 87505

Dear Mr. Kieling

Per discussions on 3 Nov 2011, the attached addendum is being submitted which incorporates information concerning the installation, location and use of Soil Vapor Extraction Wells related to remedial activity associated with Solid Waste Management Units ST-106 and SS-111. As agreed, a letter addendum will be adequate to revise the planned work described in the Final Interim Measures Work Plan (Shaw 2011). In addition, we are providing a Volatile Organic Compound (VOC) plume footprint, attachment 2, and a SVE Well Construction Diagram, attachment 3.

If you have any questions with regard to this submittal, please contact Mr. Wayne Bitner at (505) 853-3484 or [ludie.bitner@kirtland.af.mil](mailto:ludie.bitner@kirtland.af.mil).

Sincerely

  
THOMAS F. BERARDINELLI  
Director of Staff

3 Attachments:

1. Addendum to Final Interim Measures Work Plan (Shaw 2011)
2. Total Vapor VOC Plume Footprints
3. SVE Well Construction Diagram

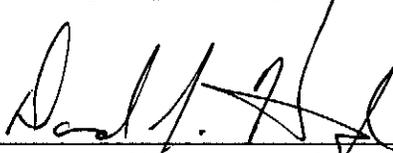
cc:

NMED HWB – Mr. Moats, Mr. McDonald, Mr. Brandwein, w Atchs  
NMED PSTB – Mr. Reuter, w Atchs  
NMED GWQB – Mr. Schoepner, w Atchs  
NMED OGC – Ms. Barnhart, w/o Atchs  
AEHD – Mr. Gallegos, w Atchs  
ABCWUA – Mr. Shean, w Atchs  
USEPA- Region 6 (6PD-N), Ms. King, w/o Atchs  
Admin Record- electronic copy  
File

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**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 fine and imprisonment for knowing violations.



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**DAVID J. HORNYAK, COLONEL**  
**Commander**



November 16, 2011

**Subject: Soil Vapor Extraction Well Design, Location, and Installation  
Interim Measures Work Plan, 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 Final 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 the technical the location, design, and installation of two soil vapor extraction (SVE) wells at the Bulk Fuels Facility (BFF) spill project site, located on Kirtland Air Force Base (KAFB). Two SVE wells are being installed as part of the implementation of an SVE interim measures for the vadose zone, following the iterative approach discussed during the November 3, 2011 Tiger Team meeting with Shaw, KAFB, USACE, and the New Mexico Environment Department (NMED).

Figure 1, attached to this letter, shows the proposed locations of the two SVE wells, KAFB-106160 and KAFB-106161. Both wells are located on the installation and are within the region showing the highest concentration of vapor based on the results of Quarter 2 (April – June) 2011 data (Figure 1). The spacing of the wells is based on the vapor results, as well as a preliminary understanding of the radius of influence for soil vapor extraction units screened in the vadose zone.

The proposed wells are designed for multi-function/applications. As such, the wells will be screened across the water table, providing the option to instrument the well with a pump for use in an extraction/containment application, if needed. Additionally, Shaw is evaluating air sparging technologies and skimmer applications and designed the wells such that they are viable for any of these technologies.

Two SVE wells with screen intervals across the water table will be installed. Each SVE well will consist of a single borehole drilling to an approximate depth of 530 feet bgs with each borehole containing a single well casing. The well casing will be 6-inches in diameter, welded, Schedule 40 steel casing. Each well will contain a 50-foot section of 0.050-inch slot, stainless steel wire-wrapped screen followed by a 10-foot section of Schedule 40 stainless steel casing connected to a 40-foot section of 0.050-inch slot, stainless steel wire-wrapped screen. Below the water table, there will be a section of 0.030-inch slot, stainless steel wire-wrapped screen. The well will be completed with a 5-foot sump at the bottom of the well. Figure 2 is a schematic diagram of SVE well construction.

Each well will be developed as described below:

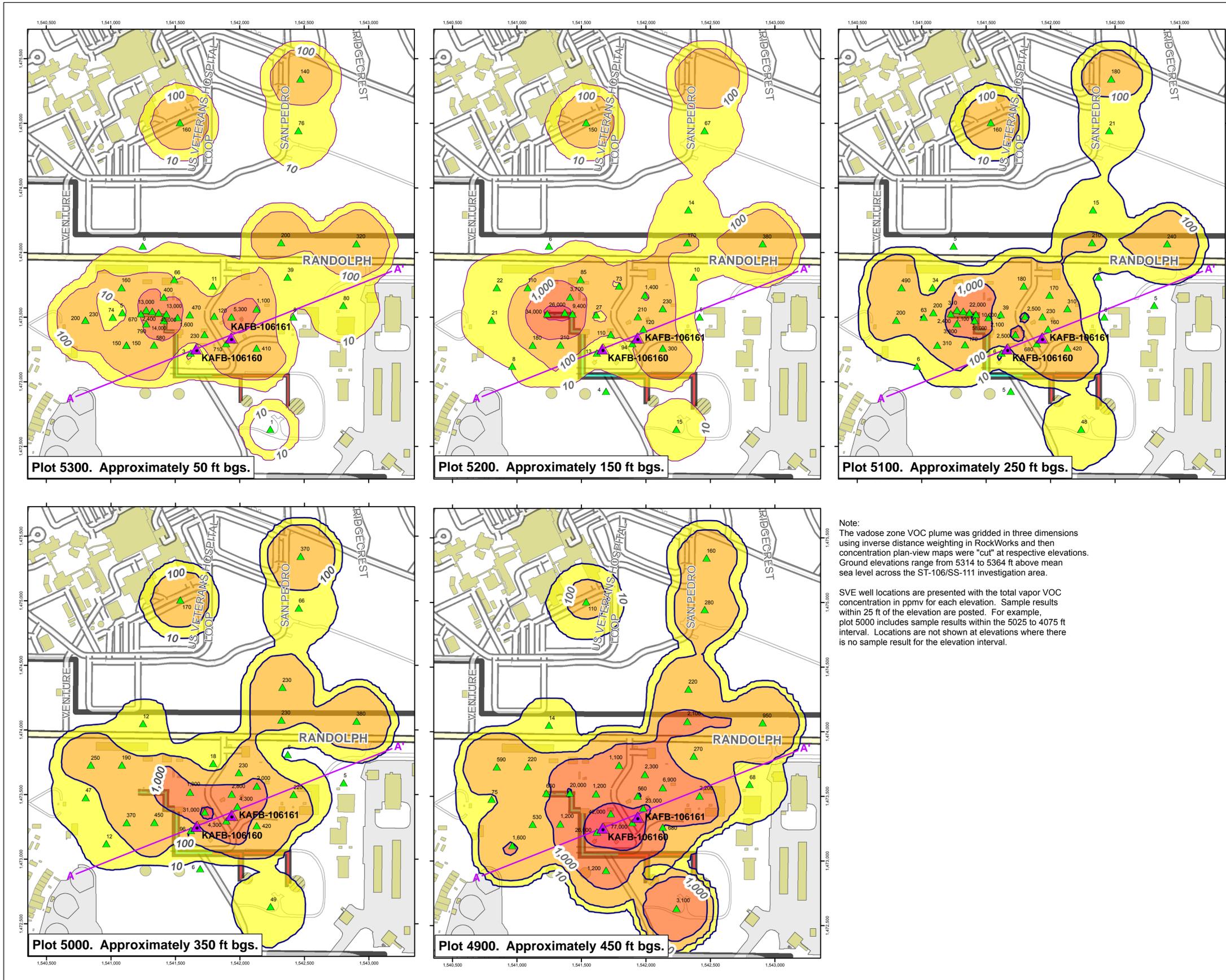
- Initial development will consist of swabbing, bailing, and pumping until little or no sediment enters the well (approximately 2 hours). Contain the development and purge water in a temporary tank placed at each wellhead.
- Following initial development, the well will be continuously pumped using an electric submersible, or pneumatic drive positive displacement or bladder pump. Temperature, pH, specific conductivity and turbidity will be monitored during pumping, and readings will be

taken after every well volume is purged. Pumping will continue until these parameters have stabilized (less than 0.2 pH units or a 10 percent change for the other parameters between 4 consecutive readings) and the water is clear and free of fines. The main goal of well development is to reduce the turbidity to less than 10 NTUs (however, under 100 NTUs is acceptable). If these parameters have not stabilized after 4 hours of continuous pumping, the well will be allowed to sit overnight and development will continue the following day for a maximum of two hours. If the turbidity still does not fall below 100 NTUs, the client project geologist will be contacted and further direction will be sought.

- If the addition of water is necessary to facilitate surging and bailing, only formation water previously pumped from that well into the purge tank may be used. At the completion of the well development activities at each well, a sample from the well will be collected and immediately photographed to document the results of the procedure.
- The site geologist will monitor and record on the well development record form, depicted in Figure B4.1-1, and in the field log book all field parameters such as pumping rates, pH, temperature, specific conductance and pertinent information.

Each well will be logged in accordance with Sections 4.6.2.2 and 5.1 of the final Interim Measures Work Plan (KAFB, 2011). Due to the close proximity of the proposed well locations to existing wells that were sampled and logged, no soil samples or geophysical logs will be collected at either of the wells. The Waste Management Plan of the final Interim Measures Plan will be applied to the drilling and installing of the two SVE wells.

Shaw is in the process of procuring a contractor to drill and install the proposed SVE wells. The NMED will be notified once the contractor has been secured and a schedule of well installation will be provided. The NMED will be notified a minimum of 7 days prior to the start of drilling. A second letter work plan addendum will be submitted regarding the design/build of the SVE system.

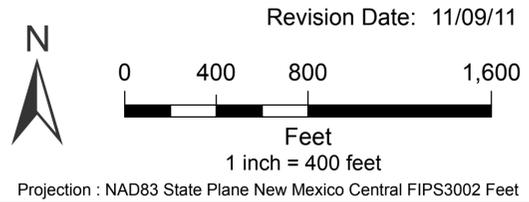


- Legend**
- ▲ Proposed SVE well
  - ▲ SVE Well with Vapor VOC Concentration (ppmv)
  - Cross-Section Line
  - VOC Concentration Contour (ppmv)
- VOC Concentration (ppmv)
- 10 - 99
  - 100 - 999
  - 1,000 - 9999
  - ≥ 10,000
- ▭ Installation Boundary
  - Aboveground Fuel Transfer Lines
  - Underground Fuel Transfer Lines
  - Highway
  - Major Road
  - Road
  - ▭ Structure
  - ▭ Runway



**Note:**  
 The vadose zone VOC plume was gridded in three dimensions using inverse distance weighting in RockWorks and then concentration plan-view maps were "cut" at respective elevations. Ground elevations range from 5314 to 5364 ft above mean sea level across the ST-106/SS-111 investigation area.

SVE well locations are presented with the total vapor VOC concentration in ppmv for each elevation. Sample results within 25 ft of the elevation are posted. For example, plot 5000 includes sample results within the 5025 to 4075 ft interval. Locations are not shown at elevations where there is no sample result for the elevation interval.



**BULK FUELS FACILITY  
 KIRTLAND AIR FORCE BASE, NEW MEXICO**

**FIGURE 1  
 LAB TOTAL VAPOR VOC PLUME  
 FOOTPRINTS BY ELEVATION  
 JUNE 2011**

Nominal  
Depths

