



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

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JUN 10 2014

RECEIVED

Mr. Isreal Tavaréz, P.E.  
Environmental Manager  
Air Quality Division  
Albuquerque Environmental Health Department  
P.O. Box 1293  
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JUN 12 2014

NMED  
Hazardous Waste Bureau

Dear Mr. Tavaréz

On March 18, 2014 Kirtland Air Force Base (KAFB) submitted a 20.11.41 New Mexico Administrative Code (NMAC) construction permit application for the soil vapor extraction (SVE) thermal oxidizer with catalyst (CATOX) system in operation at the Bulk Fuels Facility (BFF). The SVE CATOX system is currently operating under Emergency Permit #3036-EP, issued August 31, 2012. The Albuquerque Environmental Health Department (AEHD) ruled the March 18, 2014 application incomplete on April 14, 2014, and requested additional information by June 12, 2014. KAFB would like to withdraw the permit application and will continue operating the SVE CATOX system under Emergency Permit #3036-EP until it is replaced by a new system, most likely an SVE regenerative thermal oxidizer (RTO), in late 2014. The new system will significantly expand the treatment capacity for soil vapor extracted from the BFF vadose zone using five currently-operating SVE wells and four new SVE wells to be installed later this year. The new system will have the potential to destroy up to 320 pounds per hour (lbs/hr) of contaminants which is more than three times the capacity of the current SVE CATOX system. The new system will also operate at a higher air pollutant destruction efficiency.

The SVE CATOX system began operation on January 22, 2013 and was installed as an Interim Measure for Solid Waste Management Units ST-106 and SS-111. Prior to the SVE CATOX system, four SVE internal combustion engine (ICE) units were in place to remediate fuel contamination. The ICE units were permitted under 20.11.41 NMAC Authority to Construct Permit #1984-M1. The ICE units were decommissioned and Permit #1984-M1 was officially cancelled on June 25, 2013. Together, the SVE ICE and SVE CATOX systems have remediated over three million pounds of hydrocarbon contamination in the vadose zone at the BFF spill site.

In a draft letter dated April 4, 2014, the New Mexico Environment Department (NMED) has directed KAFB to expand the current SVE remediation system by installing at least four additional wells and upgrading the current treatment technology by December 31, 2014. Subject to NMED approval, KAFB proposes to enhance the remediation process by installing a new system that will extract and treat fuel contamination from a total of nine SVE wells. This includes the existing five extraction wells that are connected to the SVE CATOX system with an additional four wells that will be installed in the highly contaminated area of the vadose zone, near the Former Fuel Off-Loading Rack.

The new system will have the capability to destroy up to 320 pounds per hour (lbs/hr) of contaminants – more than three times the capacity of the current SVE CATOX system, and at a higher pollutant destruction efficiency. The estimated soil vapor recovery (lbs/hr) from the nine SVE wells that



# **ATTACHMENT 1**

## **Design Basis for Thermal Unit**

**Attachment 1 Design Basis for Thermal Unit**

	<b>Wellhead vacuum</b>	<b>Flow rate</b>	<b>Estimated TPH<sup>2</sup> Concentration (as hexane)</b>	<b>LEL</b>	<b>TPH mass flow</b>
	in- WC	SCFM	ppmv	%	lb/hr
<b>Existing East manifold leg</b>					
SVE well KAFB-106161	40	931	3,600		45.7
Pneulog well KAFB-106154 middle screen	40	136	100		0.2
Pneulog well KAFB-106150 bottom screen	40	177	8,000		19.3
Dilution air to reduce LEL		400			
<b>Combined East Manifold</b>		<b>1643</b>	<b>2,907</b>	<b>22.7%</b>	<b>65.1</b>
<b>Existing West manifold leg</b>					
SVE well KAFB-106160	40	789	3,200		34.4
Pneulog well KAFB-106149 middle screen	40	207	500		1.4
Dilution air to reduce LEL		180			
<b>Combined West Manifold</b>		<b>1177</b>	<b>2,235</b>	<b>17.5%</b>	<b>35.9</b>
<b>Combined Vapor (existing wells)</b>		<b>2820</b>	<b>2627</b>	<b>20.5%</b>	<b>101.0</b>
<b>Proposed FFOR Wells<sup>1</sup></b>					
Shallow wells (1 and 2)	40	960	5500		72.0
Middle well (3)	40	960	5600		73.3
Deep (250 ft bgs) well (4)	40	960	2900		38.0
Dilution air to reduce LEL		1800			
		<b>4680</b>	<b>2872</b>	<b>22.4%</b>	<b>183.3</b>
<b>Total of all wells</b>		<b>7500</b>	<b>2780</b>	<b>21.7%</b>	<b>284.3</b>
10% contingency factor					312.7
<b>Design basis for thermal unit</b>					<b>320.0</b>

in-WC - inches of water column

SCFM - standard cubic feet per minute

lbs/hr - pounds per hour

TPH - total petroleum hydrocarbons

LEL - lower explosive limit

ppmv - parts per million by volume

<sup>1</sup>Analytical data from the last six quarters (Fourth Quarter 2012 to First Quarter 2014) was used to estimate TPH in the new SVE wells. Data from SVEW-01 to SVEW-09 and SVMW-04, SVMW-08, SVMW-09, SVMW-10 and SVMW-11 were used as these wells are in the center of the FFOR area and historically have highest TPH concentration. The TPH data from the last 6 quarters was used to calculate an average TPH content. Based on sample depth bgs these averages were used to estimate TPH in the new wells.

<sup>2</sup> TPH concentrations in the existing wells are based on recent operating data.