

From: [wayne price](#)
To: [Bratcher, Mike, EMNRD](#); [Billings, Bradford, EMNRD](#); [Griswold, Jim, EMNRD](#)
Cc: [Bobby Sisson](#); [Brad Stauffer](#)
Subject: Key Carlsbad BKE 2RP-2618-0 Proposed Plan of Action
Date: Thursday, July 09, 2015 9:53:28 PM
Attachments: [Hydrocarbons.pdf](#)
[Key_Energy_Bke_Summary.pdf](#)
[Key_Energy_Bke_Report.pdf](#)

Key Energy BKE SWD API # 30-015-23493 UL H-13-23S-27E

Dear Mike,

Please find attached the results of the sampling event where we collected background samples per your request, approximately 100 yards to the northwest in the vacant field. Also included are the vertical extent taken in at the noted worst case (oil & water pool) of the spill footprint and a stratified composite of the spill area. The following are the results:

Field Background Samples (FBS)

0-1'	CL	1590 ppm	ND on all Hydrocarbons
2-3'	Cl	1590 ppm	ND on all Hydrocarbons
5-6'	Cl	1750 ppm	ND on all Hydrocarbons
8-10'	Cl	832 ppm	ND on all Hydrocarbons

Spill area Vertical Extent:

The Mid 0-1' Hydrocarbons: Had some hydrocarbons as would be expected, however not as bad as I would have thought.

Chlorides: 11,700 ppm

The Mid 2-3' Hydrocarbons: Pretty low.

Chlorides: 8680 ppm

The Mid 5-6' Hydrocarbons: Elevated somewhat.

Chlorides: 11,800 ppm * At this point water began to seep into excavated hole.

The Mid 6' Water Sample Hydrocarbons: See water vile above: BTEX was present in low parameters.

Note: A vacuum truck was used and every time water would collect, it would be sucked out. Hole and area dried up after about two days. This profile has a grey-brown clay layer which held the spill contents and rainwater.

The spill footprint was stratified sampled by compositing the four corners and mid-point 0-4 ft with samples collected every foot, approximately 20 samples. The composite revealed the entire area is high in chlorides with some minor hydrocarbons. The Mid point (i.e worst case area) vertical extent was stopped so as not to cross contaminate the bottom hole.

Starting on this coming Tuesday July 14, 2015, Key Energy is planning on removing the bulk of the contamination in the spill footprint area which will consist of removing approximately

350 yards of contaminated material down to a clay layer found at about 4-5 ft deep. Once that material has been removed, the vertical extent will be continued to determine if contaminants breached the natural clay barrier. Our protocol will be to collect samples every 2-3 ft using a field chloride test kit and compare the results with the background samples. Vertical extent will stop, when or if the we reach the numerical background samples values, or the extent of the backhoe is reached, or if we encounter water. Bottom hole samples (either soil or water) will be collected and analyzed for BTEX, TPH and Chlorides for lab submittal.

Once the above work is completed, we plan to install an additional infiltration barrier, a Triassic Red Bed Clay liner which will meet a 90% proctor compaction ratio. The site will then be backfilled with clean local caliche.

If the vertical bottom hole sample is acceptable, then Key will submit a Final C-141 for OCD approval, If not, then Key will discuss with OCD additional investigation issues.

Wayne Price-Price LLC