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05/21/2006 05:12 PM

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Subject KNC-DC RCRA Field Investigation Update 052106

Hello, All,

Here is the project update for the week of May 15.

Field Investigation Update 052106

Field Work and Agency Visits - Sonic Drilling 2nd Phase (May 16 - 19): Borings AO5-SB09, -10, and -11 at AOC 5 (former UAN tank) were completed on May 17 using the crane mat for safe access. Groundwater at AOC 5 was encountered at 116 feet bls.

Based on field conditions observed up to this point, (see "Findings" below), the field team agreed to the following guidelines going forward:

- extend all borings to the top of the Graneros to ensure that all saturated zones in the unconsolidated deposits are identified for sampling. The FSP called for terminating some borings at groundwater or within 30 feet of groundwater;
- pending discussions with the EPA and KDHE, the field team would not attempt further "vertical profile" water samples since it has not been possible to get valid samples in accordance with the original plan in the FSP; and
- use multiple wells (clusters), or multiple isolated screened sections where appropriate to ensure good quality GW samples from saturated zones at varying depths.

The initial boring associated with the drilling of the Dakota well, SIT-RG07 at SWMU 4, was relocated slightly to ensure that it and the associated deep well would be directly downgradient (in the Dakota) of the abandoned disposal well. This boring was drilled on May 18-19 to coincide with the visits by Andrea Stone and Randy Rohrman of EPA Region 7 and Everett Spellman of KDHE.

Prior to the start of drilling at this location, the KNC field team recommended to the Agency personnel that this boring be converted into a monitoring well. It was agreed in onsite discussions that KNC would complete the shallower portion of the investigation of this SWMU as two Ogallala wells, one screened at first groundwater, and one just above the Graneros, to enable discrete sampling from both depths..

At SIT-RG07, however, the field team drilled past the Graneros, and encountered only

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one saturated zone, from 121 to 136 feet bls. Therefore, a second well was not needed.

During onsite discussions between Agency personnel and the KNC field team, it was agreed that the nature of the formation precluded obtaining representative and valid vertical profiling samples. Where it is possible to obtain clear vertical profile samples in other borings, the field team will make every effort to accomplish this. In particular, during the deeper phase of the work at this SWMU, the team will attempt to obtain water samples within the intervals that the abandonment report indicates as obstruction locations (possible loss of casing integrity).

It was also agreed that there was no need for geotechnical sampling for monitoring wells. Well construction will be based on 20/40 sand filter pack, 0.010" slot screen, and minimal screen interval (5-10 feet where possible). In the event that multiple saturated zones are encountered (e. g., at 120 and top of Graneros), two (or more) wells would be installed, consistent with the depth of those zones.

Where multiple zones are to be sampled, well clusters (multiple separate wells) will be installed, rather than multiple screens within the same well or multiple casings within the same borehole. This will eliminate potential problems that could arise from inadequate isolation of zones

Where feasible, samples will be submitted for geotechnical analysis to support proper design of new recovery wells.

Agency representatives and KNC project team members met after the day's field operations on May 18 to review the progress of the project, to discuss upcoming work, and to optimize methodologies for the field investigation and operation of the recovery system.

During further discussions with Agency representatives, it was also agreed that additional sonic borings are advisable for further lithologic characterization across the site.

Field Work - Sonic Drilling 2nd Phase continued (May 19 through 24): The plan for this period, depending on weather and site conditions, is to complete the three borings on the Maxwell property (SIT-RG03, -04 and -05) and, if possible, to start the Crane property boring (SIT-RG06). The Crane access agreement is expected to be fully executed on May 22. Also during this period, the wells that have recently been installed will be developed and sampled.

It is also planned to begin the GeoProbe (direct-push) borings during the week of May 22. The order of completing those borings has not yet been set, pending final arrangements with the contractor (BGS of Lawrence, KS).

The lithology is being incorporated into the project database, and KNC plans within the

next few weeks to complete drawings that will display graphically the consolidated data from the recent work with the geological, hydrogeological and analytical data previously entered into the project database.

Findings: As noted in the previous report, the sonic drilling operations are providing more detailed information on the lithology of the site. The literature and the few detailed complete site well installation logs describe relatively complex lithology in the area, such as interbedding and perched water. The recent sonic borings on the site have indicated tighter soils and a thinner saturated zone than expected. There is little sand in the subsurface. Most of the saturated zones consist of silts with some clay.

The findings on the saturated zones likely reflect the rapid drop in the level of the Ogallala aquifer in the immediate vicinity. The borings completed to date have shown tight zones (interbedded silts, clays and caliche) and a saturated zone with an extent of only 10 to 20 feet. No saturated zone has been found on top of the Graneros. In places, the Graneros does not appear as a consolidated layer, but rather is weathered, reworked or decomposed. As noted previously, these findings are consistent with observations of changes in the recovery well system.

Recommended Modifications: As noted above, KNC recommends additional sonic borings to characterize the lithology along the north-south and east-west alignments over the Facility. KNC will propose details of the borings and submit those to EPA and KDHE during the week of May 22.

Other Project Issues. The revised RFI WorkPlan and Responses to Agency comments will be sent to EPA and KDHE by May 26 as planned.

Andrea Stone, Catherine Wooster Brown (EPA's ecological risk assessor) and AnnieLaurie Burke (KNC) discussed the impact of changed site conditions on the elements that should be incorporated into any future ecological assessment of the Facility. KNC understands that EPA will be reviewing site information recently provided, along with information gathered by Agency representatives during the site visit of May 18-19. Following this review, there will be additional discussions to finalize these elements.

KNC appreciates the efforts of Andrea, Randy and Everett in taking the time to visit the Facility and share their input and insights with KNC. In particular, the meeting of May 18 was helpful in generating approaches that will optimize the field investigation and ensure the best use of project resources. KNC looks forward to similar joint meetings in the near future to continue this process.

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