Gainesville Regional Utilities
Comments to Koppers Design Track 2
Pre Design Investigation Work Plan
June 26, 2015

GRU has the following comments to the May 13, 2015 "Pre-Design Investigation Work Plan: Design Track 2 for the Cabot/Koppers Superfund Site in Gainesville, Alachua County, Florida."

1. Section 1.4.1 (p. 7) - The work plan states "The cutoff wall will completely encircle the four principal DNAPL source areas at the Property and adjacent areas with the highest groundwater concentrations, creating a groundwater containment zone." The currently mapped source area boundaries are based on incomplete characterization. For example, after additional characterization at the Former Process Area, DNAPL was confirmed outside the originally mapped source area boundary to the north, east, and west (see TetraTech Figure 3-2 from the Pre Final Design Report dated April 20, 2015 and presented on the last page of these comments). GRU believes the location of the cutoff wall, as currently envisioned, will likely leave high COC concentrations in groundwater – and quite possibly DNAPL - outside the cutoff wall enclosure. GRU believes that all source areas boundaries should be fully characterized before slurry wall design is conducted in those areas where the proposed cutoff wall alignment approaches the currently depicted source area boundary.

2. Section 1.4.1 (p. 7) - The work plan states "Until the final cover/cap is constructed, the existing system of groundwater collection drains will be operated to keep the water table below the top of the cutoff wall." GRU believes that – not only should the groundwater level inside the containment never approach the top of the cutoff wall - an inward horizontal gradient should be maintained at all times. The horizontal drains or other groundwater extraction devices inside the containment area will need to operate continuously to maintain that inward gradient.

   Once the cap is complete, maintaining an inward gradient in the surficial aquifer should be readily achievable. This should also lead to an inward horizontal gradient in the UHG within the slurry wall. However, we recognize that it will not be possible to achieve an upward vertical hydraulic gradient across the middle Hawthorn clay.

3. Section 2.1 (p. 9) - Irrespective of the type of cutoff wall – soil/bentonite or cement/bentonite – it is critical that three performance criteria be met:
    a. The cutoff wall must be continuous with no 'windows', i.e., zones in the UHG that were not suitably mixed with the low-permeability materials;
    b. The wall must be effectively impermeable to creosote DNAPL and dissolved contaminants already present in the UHG; and
    c. The wall must be properly terminated on to the middle HG clay, i.e., full contact along the interface between the vertical wall and the semi-horizontal MHG clay along the 4,850 ft of the wall's length.

    As part of the slurry wall design Tetra Tech should provide a discussion of how Beazer will ensure that each of these criteria will be met. Tetra Tech should provide the stakeholders with a contour map of the upper surface of the MHG clay cross-sections along the wall alignment.

4. Section 2.2 (p. 12) - The contingent soil borings are a significant and beneficial provision of the Work Plan. However, it appears that directly east of the Process Area and the Drip Tracks there has been significant contamination in the upper Hawthorn that has migrated beneath the railroad tracks. The high naphthalene concentrations (i.e., > 1,000 μg/L) in HG-15S, HG-26S, WS-32 and HG-4S as of June 2014 (see attached Figure) all suggest that DNAPL has migrated beneath the railroad tracks. How will Beazer act on the evidence of migration to the east of the site beneath the railroad tracks?

5. Section 2.1.4.1 (p. 11) - The work plan describes how SPT soil samples will be collected – including sampling on 5 ft centers between 10 ft and 50 ft below grade. GRU believes the work plan needs to provide for continuous coring where the bottom of an SPT sample contains DNAPL, that is, if DNAPL is observed in a soil sample continuous sampling should be conducted until an SPT sample is retrieved showing no DNAPL impact (Criteria 1 or 2).

6. Section 2.1.4.3 (p. 12) - GRU is skeptical that mud rotary drilling will generate only 1.5 drums of drilling mud and cuttings per 60 ft boring.

7. Section 2.2 (p. 12) - The work plan states that "The planned cutoff wall alignment is near the outer limits of three DNAPL source areas … In the event

that a soil boring along the planned cutoff wall alignment encounters significantly impacted soils, the borehole will be terminated near the top of the Hawthorn middle clay layer to avoid drilling through the middle clay. In this case, one or more replacement borings may be drilled to establish an alternate wall alignment outside the edge of significant impacts. Significantly impacted soils will include soils with a DNAPL rating of 4 or 5, as determined by the field engineer…" .

Drilling of the cutoff wall characterization borings will presumably be conducted after characterization borings are drilled for the source areas – certainly after drilling of the former South Lagoon characterization borings in preparation for ISGS treatment. The cutoff wall alignment and boring locations should be adjusted based on pre-treatment investigations of the source areas – so category 4 or 5 DNAPL should not be observed in any of the cutoff wall characterization borings. A detailed re-evaluation of DNAPL distribution will be warranted if category 4 or 5 DNAPL is observed in a cutoff wall characterization boring.

Residual DNAPL will continue to be a significant source of on-going dissolved phase contamination where substantial quantities of DNAPL are present. For this reason GRU believes the cutoff wall should isolate DNAPL impacts of score 3 and above that are continuous over an interval of 2 ft or more.

8. Section 2.3.2 (p. 13) - What is the target hydraulic conductivity for the cutoff wall?

9. Section 2.3.2 (p. 14) - GRU has several questions regarding testing of water to be used in the soil-bentonite mix:
    a. What is the likelihood that untreated surficial aquifer groundwater would inhibit the swelling of the bentonite clay, and what is the mechanism for that inhibition?
    b. Will Beazer test the compatibility of the soil/bentonite mix with the ISGS solution?
    c. Why is influent to the treatment facility preferred as a water source over effluent?

10. Figure 3 - Why are some wells presented on this figure and not others? For instance, why are so little data plotted for the surficial aquifer, and why are HG wells plotted at the Former North Lagoon and the Drip Track but not at

the Former South Lagoon or the Former Process Area? GRU does not propose cluttering the map with no reason but we do not understand the rationale for which wells are included and which ones are not.

11. Figure 6 - It would be helpful to post on this figure, or on another figure using Figure 6 as a base, the locations of characterization borings proposed for the Former South Lagoon and all characterization borings drilled into the UHG.

In addition to the comments above, GRU provides the following comments regarding the background information (site setting and contaminant fate and transport considerations) presented in the work plan:

12. Section 1.3.3 (p. 5) - It is stated here that "Much of the DNAPL is present in residual, immobile form. There is no evidence of DNAPL presence in the UFA."

    This statement does not accurately reflect the site conditions and fails to acknowledge the significant quantities of mobile DNAPL documented in the surficial and UHG in the source areas. Furthermore, GRU disagrees that there is no evidence of DNAPL presence in the UFA. Although the presence of DNAPL has not been observed directly in the UFA, the magnitude and persistence of dissolved creosote concentrations in groundwater in some UFA wells indicate potential DNAPL pathways to the UFA.

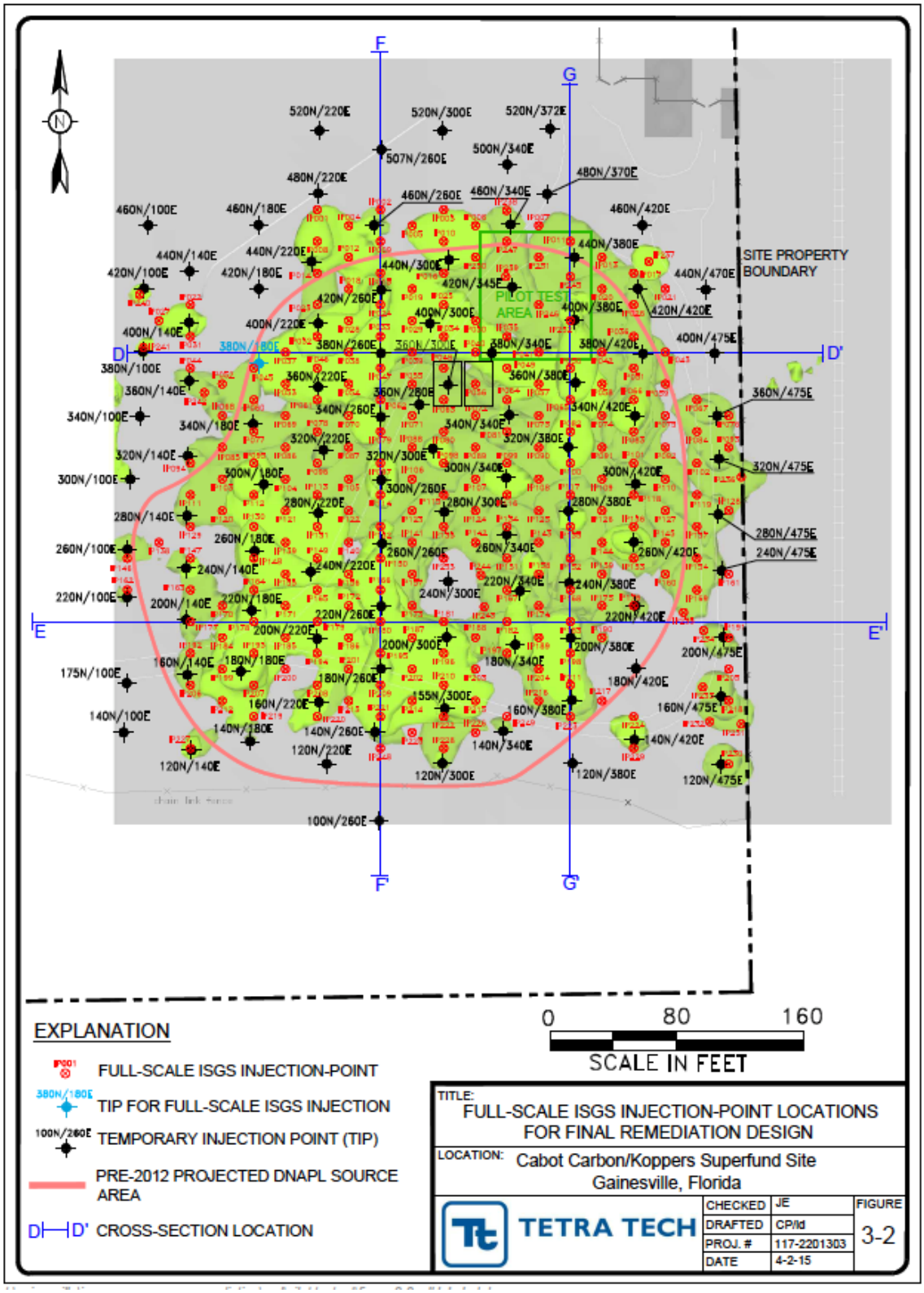
13. Section 1.3.4 (p. 5) - It is stated here that "naphthalene, a relatively mobile PAH that degrades relatively easily in the environment under aerobic conditions."
    It should be pointed out that while naphthalene degrades relatively easily in the environment under aerobic conditions, it degrades much more slowly under the anaerobic conditions which are likely present in the Upper and Lower Hawthorn, and UFA.

14. Section 1.3.5.1 (p. 6) - The work plan states “With time DNAPL is depleted by drainage and/or dissolution. Ultimately, DNAPL ... is no longer mobile as a separate liquid phase”.
    A work plan should accurately describe the conditions at the site. The plan should acknowledge that there are significant quantities of DNAPL at the site

that continue to be mobile, and would likely continue to be mobile for a very long time without treatment. The continued migration of DNAPL and its collection in monitoring wells and TIPS, as witnessed at this site after 90 years, makes these statements irrelevant and misleading.

15. Section1.3.5.2 (p. 6) - The work plan states "...the processes of biodegradation...all result in natural attenuation of constituents".
    The cutoff wall is needed to isolate areas where DNAPL and elevated COC concentrations make it very unlikely that natural attenuation will occur in a reasonable length of time, so this statement is irrelevant to the discussion.

16. Section 1.4.1 (p. 7) - It is stated here that "*The low-permeability middle clay layer of the Hawthorn Group will serve as the bottom of the groundwater containment zone*."
    Although the middle clay layer does provide a significant degree of containment, there has been and will continue to be downward leakage of contaminants through the middle clay. For this reason it will be necessary to continue to monitor within the Lower Hawthorn and UFA.


F
G
D
D'
E
E'
F'
G'
N
SITE PROPERTY BOUNDARY
PILOT TEST AREA
520N/220E
520N/300E
520N/372E
507N/260E
500N/340E
480N/220E
480N/370E
460N/260E
460N/340E
460N/100E
460N/180E
460N/420E
440N/140E
440N/220E
440N/380E
420N/100E
420N/180E
440N/300E
440N/470E
420N/345E
420N/260E
420N/420E
400N/300E
400N/380E
400N/140E
400N/220E
400N/475E
380N/180E
380N/260E
380N/300E
380N/340E
380N/420E
380N/100E
360N/140E
360N/220E
360N/380E
360N/475E
360N/280E
340N/100E
340N/180E
340N/260E
340N/340E
340N/420E
320N/140E
320N/220E
320N/380E
320N/475E
320N/300E
300N/100E
300N/180E
300N/340E
300N/420E
300N/260E
280N/140E
280N/220E
280N/300E
280N/380E
280N/475E
260N/100E
260N/180E
260N/340E
260N/420E
240N/475E
240N/140E
240N/220E
240N/300E
240N/380E
220N/100E
220N/180E
220N/340E
200N/140E
220N/260E
220N/420E
200N/220E
200N/300E
200N/380E
200N/475E
160N/140E
180N/180E
180N/340E
175N/100E
180N/260E
180N/420E
155N/300E
160N/220E
160N/380E
160N/475E
140N/100E
140N/180E
140N/260E
140N/340E
140N/420E
120N/220E
120N/140E
120N/300E
120N/380E
120N/475E
100N/260E
0
80
160
SCALE IN FEET
EXPLANATION
FULL-SCALE ISGS INJECTION-POINT
380N/180E
TIP FOR FULL-SCALE ISGS INJECTION
100N/260E
TEMPORARY INJECTION POINT (TIP)
PRE-2012 PROJECTED DNAPL SOURCE AREA
D
D'
CROSS-SECTION LOCATION
TITLE:
FULL-SCALE ISGS INJECTION-POINT LOCATIONS FOR FINAL REMEDIATION DESIGN
LOCATION:
Cabot Carbon/Koppers Superfund Site
Gainesville, Florida
TETRA TECH
CHECKED
JE
DRAFTED
CP/ld
PROJ. #
117-2201303
DATE
4-2-15
FIGURE
3-2