Summary of 2016 Studies to Support the Remedial Investigation and Feasibility Study for the San Jacinto River Waste Pits Superfund Site

In August 2015, the U.S. Environmental Protection Agency (EPA) Directed Respondents to Collect New Data

In 2015, EPA directed the Respondents to undertake a series of new data collection efforts to:

1. *"Confirm that the* [time-critical removal action (TCRA)] *cap continues to prevent dioxin/furan migration from the waste pits to the San Jacinto River following storms occurring since the last cap passive pore-water sampling event in 2012.*
2. *"Determine whether there has been any migration of dioxin/furan contaminated sediment from under the toe of the cap using sediment samples.*
3. *"Determine whether there is any migration of dioxin/furan from the alluvial aquifer at the waste pits or the Southern Impoundment into the San Jacinto River at levels above the Texas Surface Water Quality Standard (SWQS) for dioxin/furan using passive pore-water samplers and surface water samples.*
4. *"Determine whether there is any migration of groundwater in the Southern Impoundment to the surface water in the Old River channel at levels above the SWQS using groundwater samples*."

In early 2016, EPA also required a study of fish tissue.

To address these requirements, Respondents worked with EPA to design the requested studies and to submit and obtain EPA approval of sampling and analysis plans (SAPs). Data quality objectives in the approved SAPs for all five studies focused on EPA's goal of "verification that the armored cap and conditions south of I-10 are effective in preventing releases of dioxins and furans from the paper mill wastes."

2016 Studies Demonstrate that Dioxins and Furans in Paper Mill Wastes are Contained

Available results for these multiple lines of evidence indicate that the TCRA armored cap and the conditions south of I-10 are effective in preventing the release of dioxins and furans in the wastes into the environment. Sediment data and groundwater data have been validated. Data for surface water, porewater, and tissue are still in the process of validation.

Impoundments North of I-10

- **TCRA Armored Cap Porewater.** 2,3,7,8-TCDD, 2,3,7,8-TCDF and 2,3,4,7,8-PentaCDF, the target compounds for the TCRA armored cap porewater study, were not detected in any of the samples of porewater of the TCRA armored cap.
- **Sediments.** 2,3,7,8-TCDD and 2,3,7,8-TCDF concentrations in sediments surrounding the impoundments north of I-10 are significantly lower than in 2010. 2,3,7,8-TCDD toxicity equivalent (TEQ) concentrations in 2016 sediments are also lower than in 2010 sediments, and are well below the sediment protective concentration level (PCL) of 220 ng/kg.
- **Surface Water.** The average TEQ concentrations in surface water above the submerged portion of the impoundments north of I-10 in 2016 were 91% lower than their pre-TCRA average TEQ values in 2009.
- **Groundwater.** In groundwater beneath the impoundments north of I-10, 2,3,7,8-TCDD, 2,3,7,8-TCDF and 2,3,4,7,8- PentaCDF, the target dioxin and furan compounds for the groundwater study, were not detected.
- Groundwater beneath the impoundments north of I-10 meets the Texas SWQS for TEQ.

- Groundwater results indicate that there is no evidence of subsurface transport of dioxins and furans from the impoundments to surface water.

Impoundment South of I-10

- **Groundwater.** In groundwater beneath the impoundment south of I-10, 2,3,7,8-TCDD, 2,3,7,8-TCDF and 2,3,4,7,8- PentaCDF were not detected in 8 out of 10 wells. The only wells where these compounds were detected were those drilled directly into the waste.
- None of the target compounds were detected in the deep groundwater well.
- None of the target compounds were detected in wells along the shoreline of the peninsula south of I-10.
- There is no evidence of subsurface transport of dioxins and furans from the impoundment to surface water.
- Groundwater beneath the impoundment south of I-10 meets the Texas SWQS for TEQ except where detected, in the two shallow wells drilled directly into the wastes.