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AFFECTED PROPERTY ASSESSMENT WORKPLAN FOR NORTHEAST STEWART CREEK SITE (VCP #2632)

PARTIAL RESPONSE ACTION AREA 10 (PRAA 10)

OCTOBER 2014

Prepared for:

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Frisco, Texas

And

Texas Commission on Environmental Quality
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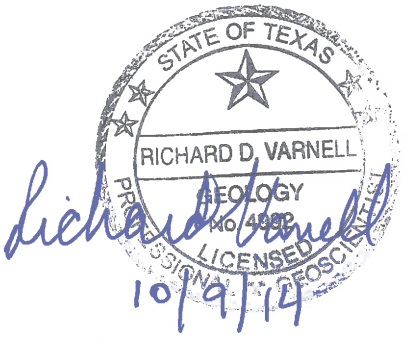

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1.0 INTRODUCTION

This workplan has been prepared by Cook-Joyce, Inc. (CJI) to describe procedures to be used in implementing an affected property assessment for the Partial Response Action Area 10 (PRAA 10) portion of the Northeast Stewart Creek site (Site). The entire Northeast Stewart Creek site is a ~31-acre tract of land generally located southeast of the intersection of Cotton Gin Road (Platinum Parkway) and the Dallas North Tollway in Frisco, Texas. The Site consists of the following tracts of land:

1. An 18.358 acre tract of land which is located to the north of Stewart Creek and at the southeast corner of Cotton Gin Road and the Dallas North Tollway. This tract comprises the northern half of the Site. This property consists of an open field and a driveway linking the adjacent Frisco Discovery Center with the Dallas North Tollway. Most of this property (approximately 17.01 acres), which is owned by the Frisco Community Development Corporation, will be enrolled in the VCP.

2. A portion of a 6.859 acre tract of land owned by Stewart Creek International Investors, LP. This tract comprises the southeast corner of the Site. Portions of this tract that will be enrolled in the VCP include Stewart Creek and floodplain associated with Stewart Creek. This area is approximately 4.08 acres in size.

3. A portion of an 11.718 acre tract of land owned by Bellevue Partners LTD. This tract comprises the southwest corner of the Site. Portions of this tract that will be enrolled in the VCP include Stewart Creek and floodplain associated with Stewart Creek. This area is approximately 6.1 acres in size.

4. 3.6 acres of land within the floodplain of Stewart Creek located beneath the North Dallas Tollway and its access roads. This land is owned by the City of Frisco, but is located within a North Texas Tollway Authority easement. This portion of the property is bordered by Grand Park to the west.

PRAA 10 is located to the south of Stewart Creek within the Site and is approximately 8.4 acres in size. PRAA 10 consists of land within tracts 2 and 3. To avoid confusion with similarly named partial response action areas in the adjacent Grand Park VCP Site, the PRAAs in the Northeast Stewart Creek VCP site are numbered 10 and 11.

The Site is in close proximity to the Exide facility as shown on Figure 1. It appears that the Site has been affected by the historic operations of the nearby former Exide Battery Recycling Facility. This conclusion is based on the following:

1. According to sediment sampling of Stewart Creek conducted by Southwest Geoscience[1] (SWG) and Golder Associates, Inc. (Golder), it appears that Stewart Creek sediment within the Site has been impacted by past operations from the upstream Exide Battery Recycling Facility (Exide).

2. Historic stack emissions from Exide may have impacted surface soils within the Site.

3. As documented in the VCP Application transmittal letter, battery chips may have been used to "pave" a historic ranch road located to the east/southeast of the Site.

4. Battery chips and slag may have been used as fill during the construction and/or repair of a railroad track and trestle which crosses Stewart Creek upstream of the Site. Large quantities of battery chips have been observed in that area. In addition, slag has been observed in Stewart Creek immediately downgradient of that area. As such, that area represents a potential future source of waste materials that could enter Stewart Creek.

The field investigation and data evaluation activities described in this workplan have been developed to fulfill the affected property assessment requirements contained in the TCEQ's Texas Risk Reduction Program (TRRP) rules at 30 TAC Chapter 350, Subchapter C. The primary intent of the affected property assessment is to collect the necessary information to determine the nature and extent of impacted soils or sediments at the Site and to identify any areas of impacted soils or sediments that may require a response action, in accordance with TRRP requirements.

[1] Southwest Geoscience is now Apex TITAN, Inc.

2.0 BACKGROUND INFORMATION

2.1 DESCRIPTION OF THE NORTHEAST STEWART CREEK SITE

The Site consists of approximately 31 acres of contiguous property of undeveloped land. The Site is bound by Cotton Gin Road to the north and by either a Dallas North Tollway access road or Grand Park (beneath the Dallas North Tollway) to the west. The former Stewart Creek Wastewater Treatment Plant is located to the southeast of the Site. Undeveloped land and the Stewart Creek Business Park development are located to the south of the Site. The Frisco Discovery Center and, beyond that, the Museum of the American Railroad property are located to the east of the Site.

PRAA 10 consists of floodplain or upland areas and is located to the south of Stewart Creek within the Site. PRAA 10 is approximately 8.4 acres in size.

2.2 DESCRIPTION OF EXIDE BATTERY RECYLING CENTER

Lead oxide manufacturing operations at Exide's Frisco facility began in 1964. Battery recycling operations began at the facility around 1969 and continued until the facility ceased operations in November 2012. The Exide facility is constructed over the former channel of Stewart Creek and a tributary to the north. Currently, Stewart Creek is adjacent to the southern side of the facility, and the northern tributary of Stewart Creek is located immediately to the north of the facility. Two structures, a stormwater retention pond and the facility's wastewater treatment plant, are located across Stewart Creek from the facility and connected by piping that crosses the creek.

The Exide facility recycled large batteries (such as auto and marine batteries) by breaking them in a water bath. Plastic and rubber "chips" from the broken battery casings floated to the surface of the water where they were collected for disposal. Liquid from the batteries mixed with the water, and was treated in the facility's wastewater treatment plant. Metal from the batteries sank to the bottom of the bath, where it was collected. The metal was then re-smelted to recover lead and smaller amounts of other valuable metals. The smelting process produced three waste streams: slag, dust control water, and particulate (most of which was captured in baghouses). Battery chips were also produced.

2.3 CONTAMINATION SOURCE

The waste streams produced at the Exide facility have resulted in widespread contamination of the Exide property and surrounding areas. The Exide Frisco facility has been subject to multiple state and federal environmental enforcement actions. Sections of Stewart Creek have previously been dredged to remove slag and/or lead contaminated sediment - initially in 1986 and again in 1999. Lead contaminated sediment has been reported in or adjacent to Stewart Creek downstream of the Exide facility on the Site.

Sampling has shown that shallow soil contamination from airborne deposition of lead particulate also extends over approximately 20 acres of Exide "buffer property" that surrounds the Exide facility. Most of this soil contamination is less than 1 foot deep. Due to the Site's close proximity to the Exide facility and the Exide "buffer property", shallow soil contamination from airborne deposition of lead is also a potential contaminant source for the Site.

2.4 CONTAMINANTS OF CONCERN

The contaminants of concern (COCs) are the contaminants that have previously been identified during Exide site investigation activities. They include arsenic, lead, cadmium, and selenium.

2.5 PRIOR INVESTIGATION AND SAMPLING

In November 2011, SWG collected 7 sediment samples in and around Stewart Creek on the Site. The locations of the sediment samples are shown on Figure 2 of this document and in SWG's *Limited Site Investigation - Sediment Sampling of Stewart Creek* report (provided as Appendix A in the Workplan for PRAA 11 and incorporated herein by reference). These sediment samples were collected from the surface of the sediment and were submitted for laboratory analysis of arsenic, cadmium, lead, selenium, and sulfate. The analytical results are summarized in Table 1 and the general sample locations are shown on Figure 2 of this workplan.

In March and April of 2013, SWG conducted a walking survey of Stewart Creek between the BNSF railroad bridge and the Dallas North Tollway. SWG identified areas containing battery chips and potential slag within Stewart Creek. Later on in 2013 SWG returned to the Site and collected one sample of a battery chip and one sample of the sediment under and adjacent to the location of the chip (from the adjacent PRAA 11 portion of the Site). Those samples were

analyzed for arsenic, cadmium, and lead. The analytical results are summarized in Table 1 of this workplan. The general locations of these samples are provided on Figure 2 of this report and on Figure 2A of SWG's *Supplemental Site Investigation, Additional Sampling of Stewart Creek* report[2] (provided as Appendix B in the Workplan for PRAA 11 and incorporated herein by reference).

Sediment samples have also been collected from Stewart Creek within the Site boundaries by consultants for Exide. Samples were not collected at the Site as part of the initial Exide Former Operating Plant (FOP) Affected Property Assessment Report (APAR)[3]. The additional sampling was performed in Stewart Creek due to a TCEQ request for additional information in their review of the initial FOP APAR[4].

In January 2014 Golder collected two sediment samples from PRAA 11 as part of Revision 1 to the Exide Former Operating Plant (FOP) APAR[5]. Those samples were collected and were analyzed for arsenic, cadmium, lead, and total organic carbon. A grain size analysis was also performed on each sample. The results of those analyses (except those from the grain size analysis) are summarized in Table 1 and the general sample locations are shown on Figure 2 of this workplan. The Revised FOP APAR is not included with this document due to its size. Instead, it is incorporated by reference.

Golder also collected samples as part of an Interim waste removal effort from Stewart Creek. In their 8 October 2013 response letter regarding the FOP APAR, one of the items required by the TCEQ was an "interim slag and battery chip investigation and recovery plan to address slag and battery chips in and around the downstream portion of Stewart Creek." Due to this requirement, an Exide contractor, Restoration Services, Inc. (RSI), manually removed waste materials from Stewart Creek. The waste materials that were removed from Stewart Creek consisted of battery chips and slag. The wastes were removed from the creek, placed in sealed buckets, and

[2] *Supplemental Site Investigation, Additional Sampling of Stewart Creek*, by Southwest Geoscience, dated 5 March 2014.
[3] *Affected Property Assessment Report, Former Operating Plant, Frisco Recycling Center, Frisco, Collin County, Texas (Agreed Order Docket No. 2011-1712-IHW-E)*, by Pastor, Behling & Wheeler, LLC, dated 8 July 2013.
[4] *Affected Property Assessment Report, Former Operating Plant, Frisco Recycling Center, Frisco, Collin County, Texas (Agreed Order Docket No. 2011-1712-IHW-E)*, by Pastor, Behling & Wheeler, LLC, dated 8 July 2013.
[5] *Revised Affected Property Assessment Report (APAR), Exide Frisco Recycling Center, 7471 South 5th Street, Frisco, Texas*, Golder Associates Inc., dated May 2014

transported to Exide's FOP area for storage and eventual disposal. This work began at the Lebanon Road bridge over Stewart Creek and progressed upstream toward Exide's FOP.

RSI was accompanied during the interim waste removal by personnel from Golder, TCEQ Region 4 personnel, and Apex TITAN (formerly SWG). Golder and Apex collected split sediment samples from locations where waste materials were removed from the creek. In general, Golder and Apex collected one sediment sample from each point where chips or slag were removed. However, in some instances a composite sample was collected from locations where multiple battery chips or pieces of slag were discovered in close proximity to each other. The sediment samples collected by Golder and Apex were analyzed for total concentrations of arsenic, cadmium, and lead. Golder documented their analytical results and waste removal activities in an Interim Waste Removal Report[6] (provided as Appendix C in the Workplan for PRAA 11 and incorporated herein by reference). Apex's data has not been finalized in a report yet.

Based on a review of their report, Golder collected 58 sediment and waste samples from Stewart Creek within the boundaries of the Northeast Stewart Creek VCP site. Analytical data from these samples is summarized in Table 1. Draft data from the 57 sediment samples that were split by Apex are also provided in Table 1. In addition, general sample locations for all of the sediment samples collected on-Site are depicted on Figure 2. Figure 2 also depicts proposed sediment sample locations that will be collected as part of the assessment of the adjacent PRAA 11 area.

Several conclusions can be drawn from the analytical results and the walking survey for use in future planning of affected property assessment activities:

- Sediments in Stewart Creek within the Site are known to have been impacted by past operations at the Exide facility.

[6] *Interim Action Report, Slag and Battery Case Fragment Removal and Disposal, Exide Frisco Recycling Facility, 7471 South 5th Street, Frisco, Texas 75034-5047, TCEQ SWR No. 30516, TCEQ Hazardous Waste Permit No. HW-50206, TCEQ Agreed Order Docket No. 2011-1712-IHW-E, EPA ID No. TXD006451090, Customer No. CN600129779, Regulated Entity No. RN100218643*, by Golder Associates, dated 22 August 2014.

- The extent of impacted soils is currently unknown, therefore it is unknown if PCLs for a source area of less than ½ acre or greater than ½ acre but less than 30 acres will be used during the investigation. However, as a conservative measure CJI will assume that less than 30 acre PCLs should be used at the Site unless the sample data suggests otherwise.

3.0 ASSESSMENT APPROACH

An affected property assessment will be conducted to determine the nature and extent of contaminants in soils within the PRAA 10 portion of the Site. The assessment activities may require more than one field mobilization to adequately determine the extent of soil contamination to the appropriate assessment levels. The investigation activities for the first field mobilization are presented in Section 4.0. Subsequent field mobilizations, if required, will be based on the investigation findings from the first field mobilization.

The Northeast Stewart Creek site is being separated into two areas for assessment. Partial Response Action Area 10 (PRAA 10) is approximately 8.4 acres in size and located to the south of Stewart Creek. Partial Response Action Area 11 (PRAA 11) makes up the remainder of the Site. A separate assessment workplan has been prepared for PRAA 11. The PRAA 10 and PRAA 11 portions of the Site are depicted in Figures 1, 2, and 3.

This workplan describes assessment activities for the PRAA 10 portion of the Site. PRAA 10 is located to the south of Stewart Creek in floodplain/upland areas of the Northeast Stewart Creek site and, therefore, will not involve sediment or surface water sampling in Stewart Creek.

3.1 SOIL SAMPLING IN FLOODPLAINS AND UPLAND AREAS (PRAA 10)

The soil assessment will be conducted by superimposing a 1-acre by 1-acre sampling grid across the Site and collecting samples within that grid. General sample locations are depicted on Figure 3. As shown on Figure 3, CJI proposes collecting approximately two samples per acre across the Site. This will result in an initial total of approximately 18 surface soil samples within PRAA 10. The 2 per acre sampling frequency is justified because the Site is not platted for future residential use. In addition, the primary contaminant expected to be present at the Site is lead. CJI and the City of Frisco plan to use an assessment level of 250 milligrams per Kilogram (mg/Kg), half of the residential $^{Tot}Soil_{Comb}$ PCL of 500 mg/Kg.

While collecting soil samples, CJI will look for battery chips. If battery chips are observed the pre-selected soil sample locations will be modified to so that samples are collected in areas where battery chips are observed. If resampling or delineation is required those activities will increase the total number of soil samples collected in the floodplain and in upland areas of the Site.

Each soil sample will be collected from the top few inches of soil (0 to 3 inches below ground surface) since the potential contamination is from particulate deposition from airborne emissions from the former Exide facility or from battery chips used as fill or “pavement”. Samples will be collected by hand using either a plastic sampling trowel or a stainless steel shovel that will be decontaminated prior to each use or using disposable, single-use plastic sampling trowels. The coordinates of each surface soil sample will be determined using a GPS unit and recorded in the logbook. A physical marker, such as flagging or a stake, will also be used to mark each sample location. One duplicate sample per 20 soil samples will be collected for QA/QC purposes.

4.0 FIELD INVESTIGATION ACTIVITIES (PRAA 10)

CJI anticipates that PRAA 10 field activities for the affected property assessment may require at least two field mobilizations. The following presents the investigation strategy for the first field mobilization. The investigation strategy for subsequent field mobilizations will be based on information obtained from the first field mobilization. As described below, 18 surface soil samples will be collected during the first field mobilization. Soil samples will be collected for laboratory analysis in an effort to determine the nature and extent of impacts. The planned locations of these samples are shown on Figure 2. Sampling locations may require field adjustment based on actual site conditions encountered. Actual locations of all collected samples will be determined using a GPS unit and recorded in the logbook.

4.1 ASSESSMENT SAMPLES

During the first field mobilization, 18 soil samples will be collected at the PRAA 10 portion of the Site. Soil samples will be collected from 0 to 3 inches at or near the locations shown on Figure 2.

Samples will be collected and handled in accordance with EPA and TCEQ technical guidance. The soil samples will be collected using pre-cleaned or decontaminated equipment. All samples will be placed in laboratory supplied, pre-cleaned jars with airtight lids, and then immediately transferred into a cooled shuttle container for delivery to the analytical laboratory.

4.2 QUALITY ASSURANCE / QUALITY CONTROL SAMPLES

Quality assurance/quality control samples will be collected to ensure data usability. QA/QC samples will consist of one duplicate sample for every 20 soil samples collected (1 total in PRAA 10). The analytical results for the duplicate samples will be evaluated to determine the precision of sampling and analysis methods.

4.3 BACKGROUND SAMPLING

Background sampling has been performed for an associated investigation (investigation of the former Exide facility and the investigation of buffer property surrounding that facility). Additional background sampling is not proposed for this assessment.

4.4 VERTICAL AND LATERAL DELINEATION

Using an iterative process, CJI will return to areas with contaminant concentrations that exceed the residential assessment levels (RALs) for the Site. If possible, impacts will be delineated vertically to background or, if applicable, to the method quantitation limit (MQL). If vertical delineation within soil is not possible, impacts will be delineated vertically through a groundwater assessment. Impacts will be delineated laterally to the RAL or, if applicable, the appropriate ecological PCL or comparison standard.

4.5 GROUNDWATER ASSESSMENT

CJI proposes to install permanent monitoring wells at a minimum of 3 locations where surface soil contamination is discovered in upland portions of the Site. In the event that surface soil contamination is not discovered, then CJI will install 3 permanent monitoring wells at locations to be determined during field investigation activities. Each of the new wells installed by CJI at the Site will be developed and sampled for target metals.

4.6 ANALYTICAL PROTOCOL

Each soil sample collected during the first field mobilization will be analyzed for total concentrations of arsenic, cadmium, lead, and selenium. Specific metals were chosen based on the contaminants previously identified during site investigation activities at the Exide facility. Contaminants of concern are described in Section 2.3.

Table 2 identifies the soil sample collection intervals and their associated analytical protocol. Analytical methods and sample handling requirements are summarized in Table 3.

4.7 DECONTAMINATION PROCEDURES

Sample collection equipment (trowels, shovels, etc.) will be cleaned in appropriate containers by scrubbing with a decontamination solution and rinsing with distilled water prior to each use and/or reuse. Decontamination rinsate water and residues will be containerized in drums and managed as potentially-contaminated materials.

4.8 MANAGEMENT AND DISPOSAL OF INVESTIGATION DERIVED WASTE

Investigation-derived waste (IDW) will be collected and stored in one or more drums that will be temporarily stored on-site.

5.0 RECEPTOR SURVEY AND GROUNDWATER CLASSIFICATION

5.1 RECEPTOR SURVEY

A receptor survey will be conducted as part of the affected property assessment. The survey will include a search for water wells within one-half mile of the affected property. In addition, a field receptor survey will be performed within 500 feet of the affected property to identify potential receptors, drainage features, ecological considerations, utilities, and other field receptor information required by TRRP.

5.2 GROUNDWATER CLASSIFICATION

A minimum of three monitoring wells will be installed at the Northeast Stewart Creek site to evaluate Site groundwater.

6.0 DATA EVALUATION AND PLANNING

Upon receipt of the laboratory results, CJI will evaluate the laboratory data to determine if it meets quality assurance requirements and project and measurement objectives. CJI will evaluate the information obtained during the first field mobilization to determine if additional data collection activities will be required to fulfill the affected property assessment requirements of 30 TAC 350.

Once sufficient data has been collected and all impacts have been delineated at the PRAA 10 portion of the Site, CJI will present that information to the TCEQ in an APAR. If applicable, a Response Action Plan (RAP) will also be submitted.

TABLES

TABLE 1 - NORTHEAST STEWART CREEK SITE, FRISCO, TEXAS
SUMMARY OF PREVIOUS STEWART CREEK ANALYTICAL DATA

Sample I.D.	Sample Date	Source	Depth (feet)	Arsenic Total (mg/Kg)	Cadmium Total (mg/Kg)	Lead Total (mg/Kg)	Selenium Total (mg/Kg)	Sulfate Total (mg/Kg)
SC-SED-10	11/17/2011	SWGeo-SCWWTP APAR	0-0.5	12.3	0.72	22.5	<1.01	45.0
SC-SED-11	11/17/2011	SWGeo-SCWWTP APAR	0-0.5	29.4	1.11	46.8	<1.02	38.2
SC-SED-5	11/17/2011	SWGeo-SCWWTP APAR	0-0.5	14.4	0.90	397	<1.20	241
SC-SED-6	11/17/2011	SWGeo-SCWWTP APAR	0-0.5	16.2	1.05	307	<1.08	55.0
SC-SED-7	11/17/2011	SWGeo-SCWWTP APAR	0-0.5	16.1	0.54	35.6	<1.07	60.2
SC-SED-8	11/17/2011	SWGeo-SCWWTP APAR	0-0.5	47.2	0.96	35.2	<1.10	52.7
SC-SED-9	11/17/2011	SWGeo-SCWWTP APAR	0-0.5	20.5	4.16	162	<1.06	43.1
Chip (6-24)-5	6/24/2013	SWGeo-Bowtie Inv.	--	5.4	0.088 J	15.4 J	---	---
Chip (6-24)-5 Base Comp	6/24/2013	SWGeo-Bowtie Inv.	--	8.9	0.63	76.7	---	---
2014-SED-014	1/29/2014	Golder FOP APAR RV1	--	12.0 J	0.439 J	25.0	---	---
2014-SED-015	1/29/2014	Golder FOP APAR RV1	--	22.0	0.522	32.9	---	---
2014-IABC-012	6/5/2014	Golder - Interim Waste	--	IV	IV	IV	---	---
2014-IASED-503	6/4/2014	Golder - Interim Waste	--	16.4 J	0.804 J	71.9	---	---
	6/4/2014	Apex - Interim Waste	--	19.4	1.50	75.4	---	---
2014-IASED-504	6/4/2014	Golder - Interim Waste	--	19.1 J	0.876 J	26.9	---	---
	6/4/2014	Apex - Interim Waste	--	16.1	0.9	31.5	---	---
2014-IASED-505	6/4/2014	Golder - Interim Waste	--	15.7 J	0.739 J	65.6	---	---
	6/4/2014	Apex - Interim Waste	--	18.9	1.50	50.1	---	---
2014-IASED-506	6/4/2014	Golder - Interim Waste	--	21.5 J	1.02 J	70.8	---	---
	6/4/2014	Apex - Interim Waste	--	16.6	1.2	37.4	---	---
2014-IASED-507	6/5/2014	Golder - Interim Waste	--	11.7	0.799	42.7	---	---
	6/5/2014	Apex - Interim Waste	--	10.3	1.50	71.7	---	---
2014-IASED-508	6/5/2014	Golder - Interim Waste	--	9.4	7.16	152.0	---	---
	6/5/2014	Apex - Interim Waste	--	41.3	2.5	79.2	---	---
2014-IASED-509	6/5/2014	Golder - Interim Waste	--	25.5	0.704	11.1	---	---
	6/5/2014	Apex - Interim Waste	--	32.8	2.00	62.7	---	---
2014-IASED-510	6/5/2014	Golder - Interim Waste	--	18.2	1.05	86.0	---	---
	6/5/2014	Apex - Interim Waste	--	16.3	1.4	92.3	---	---
2014-IASED-511	6/5/2014	Golder - Interim Waste	--	16.1	0.752	1270	---	---
	6/5/2014	Apex - Interim Waste	--	18.8	1.20	33.9	---	---
2014-IASED-512	6/5/2014	Golder - Interim Waste	--	16.1	0.767	30.8	---	---
	6/5/2014	Apex - Interim Waste	--	23.2	1.2	75.0	---	---
2014-IASED-513	6/5/2014	Golder - Interim Waste	--	NR	NR	NR	---	---
	6/5/2014	Apex - Interim Waste	--	15.1	0.89	41.2	---	---

TABLE 1 - NORTHEAST STEWART CREEK SITE, FRISCO, TEXAS
SUMMARY OF PREVIOUS STEWART CREEK ANALYTICAL DATA

Sample I.D.	Sample Date	Source	Depth (feet)	Arsenic Total (mg/Kg)	Cadmium Total (mg/Kg)	Lead Total (mg/Kg)	Selenium Total (mg/Kg)	Sulfate Total (mg/Kg)
2014-IASED-514	6/5/2014	Golder - Interim Waste	--	15.0	0.797	7.7	---	---
	6/5/2014	Apex - Interim Waste	--	21.9	1.2	39.2	---	---
2014-IASED-515	6/5/2014	Golder - Interim Waste	--	17.2	1.19	59.7	---	---
	6/5/2014	Apex - Interim Waste	--	17.8	1.3	41.8	---	---
2014-IASED-516	6/5/2014	Golder - Interim Waste	--	21.9	7.89	513.0	---	---
	6/5/2014	Apex - Interim Waste	--	15.4	7.2	272.0	---	---
2014-IASED-517	6/5/2014	Golder - Interim Waste	--	18.3	0.637	33.6	---	---
	6/5/2014	Apex - Interim Waste	--	20.1	0.9	30.8	---	---
2014-IASED-518	6/5/2014	Golder - Interim Waste	--	22.9 J	0.715	72.2	---	---
	6/5/2014	Apex - Interim Waste	--	4.0	0.23	42.9	---	---
2014-IASED-519	6/5/2014	Golder - Interim Waste	--	25.2	1.40	27.0	---	---
	6/5/2014	Apex - Interim Waste	--	16.2	1.3	24.4	---	---
2014-IASED-520	6/5/2014	Golder - Interim Waste	--	17.8	0.891	46.4	---	---
	6/5/2014	Apex - Interim Waste	--	25.3	1.40	40.9	---	---
2014-IASED-521	6/5/2014	Golder - Interim Waste	--	16.1	0.812	33.6	---	---
	6/5/2014	Apex - Interim Waste	--	25.7	1.1	23.8	---	---
2014-IASED-522	6/5/2014	Golder - Interim Waste	--	13.5	1.02	61.5	---	---
	6/5/2014	Apex - Interim Waste	--	22.3	1.1	53.1	---	---
2014-IASED-523	6/5/2014	Golder - Interim Waste	--	12.7	1.19	139.0	---	---
	6/5/2014	Apex - Interim Waste	--	13.5	1.2	106.0	---	---
2014-IASED-524	6/5/2014	Golder - Interim Waste	--	14.7	7.64	329.0	---	---
	6/5/2014	Apex - Interim Waste	--	30.2	11.6	335.0	---	---
2014-IASED-525	6/5/2014	Golder - Interim Waste	--	21.4	0.555	14.2	---	---
	6/5/2014	Apex - Interim Waste	--	13.9	0.78	38.2	---	---
2014-IASED-526	6/5/2014	Golder - Interim Waste	--	14.4 J	0.703	77.8 b	---	---
	6/5/2014	Apex - Interim Waste	--	19.8	0.86	87.6	---	---
2014-IASED-527	6/5/2014	Golder - Interim Waste	--	22.1 J	0.672	62.1 b	---	---
	6/5/2014	Apex - Interim Waste	--	24.4	1.3	57.0	---	---
2014-IASED-528	6/5/2014	Golder - Interim Waste	--	19.0 J	0.973	40.0 b	---	---
	6/5/2014	Apex - Interim Waste	--	15.1	0.79	42.5	---	---
2014-IASED-529	6/5/2014	Golder - Interim Waste	--	13.2 J	2.99	137.0 b	---	---
	6/5/2014	Apex - Interim Waste	--	25.3	3.0	96.9	---	---
2014-IASED-530	6/5/2014	Golder - Interim Waste	--	18.7 J	0.776	20.2 b	---	---
	6/5/2014	Apex - Interim Waste	--	40.6	1.5	41.5	---	---

TABLE 1 - NORTHEAST STEWART CREEK SITE, FRISCO, TEXAS
SUMMARY OF PREVIOUS STEWART CREEK ANALYTICAL DATA

Sample I.D.	Sample Date	Source	Depth (feet)	Arsenic Total (mg/Kg)	Cadmium Total (mg/Kg)	Lead Total (mg/Kg)	Selenium Total (mg/Kg)	Sulfate Total (mg/Kg)
2014-IASED-531	6/5/2014	Golder - Interim Waste	--	0.711 J	0.0299 U	1.87 b	---	---
	6/5/2014	Apex - Interim Waste	--	28.8	1.6	86.8	---	---
2014-IASED-532	6/5/2014	Golder - Interim Waste	--	<0.232 UJ	0.0273 U	< 0.112 UJ	---	---
	6/5/2014	Apex - Interim Waste	--	15.6	0.76	252.0	---	---
2014-IASED-533	6/5/2014	Golder - Interim Waste	--	16.1 J	0.955	10.9 b	---	---
	6/5/2014	Apex - Interim Waste	--	17.0	3.4	35.0	---	---
2014-IASED-534	6/5/2014	Golder - Interim Waste	--	26.9 J	0.746	42.2 b	---	---
	6/5/2014	Apex - Interim Waste	--	29.2	7.3	52.1	---	---
2014-IASED-535	6/5/2014	Golder - Interim Waste	--	23.7 J	0.749	68.3 b	---	---
	6/5/2014	Apex - Interim Waste	--	35.8	1.6	39.4	---	---
2014-IASED-536	6/5/2014	Golder - Interim Waste	--	9.86 J	0.848 J	10.6 b	---	---
	6/5/2014	Apex - Interim Waste	--	19.3	1.7	47.8	---	---
2014-IASED-537	6/5/2014	Golder - Interim Waste	--	8.25 J	0.501	13.6 b	---	---
	6/5/2014	Apex - Interim Waste	--	22.7	2.4	192.0	---	---
2014-IASED-538	6/5/2014	Golder - Interim Waste	--	15.6 J	0.749	47.4	---	---
	6/5/2014	Apex - Interim Waste	--	17.3	0.78	37.4	---	---
2014-IASED-539	6/5/2014	Golder - Interim Waste	--	29.2 J	0.975	44.9 b	---	---
	6/5/2014	Apex - Interim Waste	--	27.3	1.4	38.3	---	---
2014-IASED-540	6/5/2014	Golder - Interim Waste	--	17.8 J	5.74	178.0 b	---	---
	6/5/2014	Apex - Interim Waste	--	18.8	2.0	106.0	---	---
2014-IASED-541	6/5/2014	Golder - Interim Waste	--	25.9 J	0.607	607.0 b	---	---
	6/5/2014	Apex - Interim Waste	--	21.0	1.0	1060	---	---
2014-IASED-542	6/6/2014	Golder - Interim Waste	--	20.8	1.01	53.5	---	---
	6/6/2014	Apex - Interim Waste	--	21.0	1.1	64.8	---	---
2014-IASED-543	6/6/2014	Golder - Interim Waste	--	27.3	0.816	969.0	---	---
	6/6/2014	Apex - Interim Waste	--	45.9	2.0	1570	---	---
2014-IASED-544	6/6/2014	Golder - Interim Waste	--	40.8	0.661	21.6	---	---
	6/6/2014	Apex - Interim Waste	--	24.7	1.3	376.0	---	---
2014-IASED-545	6/6/2014	Golder - Interim Waste	--	16.6	0.660	89.7	---	---
	6/6/2014	Apex - Interim Waste	--	21.4	1.2	619.0	---	---
2014-IASED-546	6/6/2014	Golder - Interim Waste	--	16.2	0.252	15.7	---	---
	6/6/2014	Apex - Interim Waste	--	49.0	2.300	1380	---	---
2014-IASED-547	6/6/2014	Golder - Interim Waste	--	22.0	3.51	208.0	---	---
	6/6/2014	Apex - Interim Waste	--	16.8	1.5	225.0	---	---

TABLE 1 - NORTHEAST STEWART CREEK SITE, FRISCO, TEXAS
SUMMARY OF PREVIOUS STEWART CREEK ANALYTICAL DATA

Sample I.D.	Sample Date	Source	Depth (feet)	Arsenic Total (mg/Kg)	Cadmium Total (mg/Kg)	Lead Total (mg/Kg)	Selenium Total (mg/Kg)	Sulfate Total (mg/Kg)
2014-IASED-548	6/6/2014	Golder - Interim Waste	--	15.2	0.644	107.0	---	---
	6/6/2014	Apex - Interim Waste	--	15.2	0.85	208.0	---	---
2014-IASED-549	6/6/2014	Golder - Interim Waste	--	36.5 J	0.431	24.2	---	---
	6/6/2014	Apex - Interim Waste	--	15.6	1.3	75.2	---	---
2014-IASED-550	6/6/2014	Golder - Interim Waste	--	16.6	1.34	160.0	---	---
	6/6/2014	Apex - Interim Waste	--	16.1	1.7	129.0	---	---
2014-IASED-551	6/6/2014	Golder - Interim Waste	--	13.5	0.802	43.9	---	---
	6/6/2014	Apex - Interim Waste	--	13.8	0.76	70.2	---	---
2014-IASED-552	6/6/2014	Golder - Interim Waste	--	16.4	0.938	33.3	---	---
	6/6/2014	Apex - Interim Waste	--	26.7	1.8	420.0	---	---

Notes:

SWGeo-SCWWTP APAR = Data collected by Southwest Geoscience to support the Stewart Creek Wastewater Treatment Plant APAR.
SWGeo-Bowtie Inv. = Data collected by Southwest Geoscience to support the City of Frisco.
Golder FOP APAR RV1 = Data collected by Golder Associates from Stewart Creek to support the Exide Former Operating Plant investigation.
Golder - Interim Waste = Data collected by Golder Associates from Stewart Creek during the Interim Waste Removal Project.
Apex - Interim Waste = DRAFT data collected by Apex Titan (formerly Southwest Geoscience) from Stewart Creek during the Interim Waste Removal Project.
mg/Kg = milligrams per Kilogram
-- = No sample depth reported.
--- = Sample not analyzed for this constituent.
IV = Insufficient Volume for analysis.
NR = Data for this sample was not reported.

TABLE 2
NORTHEAST STEWART CREEK SITE, FRISCO, TEXAS
SAMPLE COLLECTION INTERVALS AND ANALYTICAL PROTOCOL FOR PRAA 10

Type of Sample	Sample Collection Intervals	Initial Analytical Protocol	Subsequent Field Mobilization	Purpose of Sample
Surface Soil	0-3"	Total arsenic, cadmium, lead, and selenium.	Vertical and lateral delineation where necessary.	Determine if soil impacts are present at the site.
Groundwater	NA	Total arsenic, cadmium, lead, and selenium.	Lateral delineation where necessary.	Determine if groundwater impacts are present at the site.

TABLE 3

NORTHEAST STEWART CREEK SITE, FRISCO, TEXAS

ANALYTICAL METHODS AND SAMPLE HANDLING REQUIREMENTS FOR PRAA 10

Parameters	Analytical Method	Preservation	Required Reporting Limit	Holding Time
Total arsenic, cadmium, lead, and selenium	EPA 6010/6020	None	TRRP Reporting (see note 1)	180 days

Notes:

(1) Reporting limits must meet TRRP Tier 1 critical PCLs for a 30-acre source area. All analytical results will be reported for concentrations that exceed the method detection limits and that meet the qualitative identification criteria recommended in the analytical method. Analytical results that are reported at concentrations between the method detection limit and method quantitation limit shall be flagged. Analytical results that are reported as undetected will be reported as undetected at the sample quantitation limit.

FIGURES

N

400 200 0 400

(SCALE IN FEET)

LEGEND

SITE BOUNDARY

PRAA 10 AREA

REV.	DATE	DESCRIPTION	DR BY	APP BY

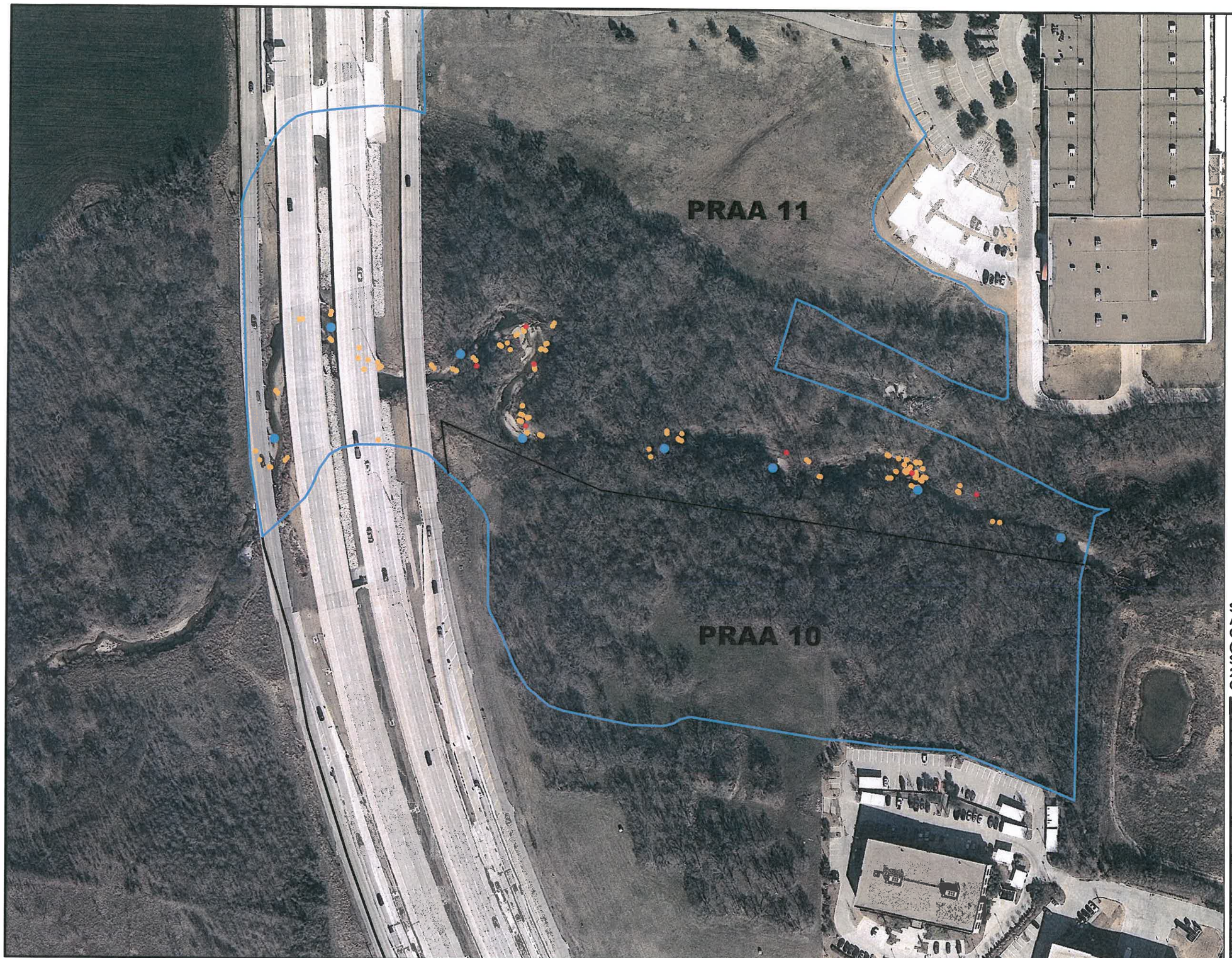
COOK-JOYCE INC.
ENGINEERING AND CONSULTING
812 WEST ELEVENTH 512-474-9097
AUSTIN, TEXAS 78701
HUB & WBE CERTIFIED
TEXAS REGISTERED ENGINEERING FIRM F-883

PROJECT:
NORTHEAST STEWART CREEK SITE
FRISCO, TEXAS

SHEET TITLE:
SITE VICINITY MAP

DES BY			SCALE: SEE BAR SCALE
DR BY	SDB		PROJECT NO. 13048.01
CHK BY	KLL		CJI NO. 13048010
APP BY	RDV		SHEETS 1 OF 1 SHEETS
DATE ISSUED: 09-11-2014			FIGURE NO. 1
PURPOSE: WORKPLAN			

S:\CAD\City of Frisco\13048\13048010 Fig 1.dwg, 9/17/2014 1:25:18 PM



N

150 75 0 150

(SCALE IN FEET)

LEGEND

- SAMPLE LOCATION WITH ARSENIC, CADMIUM, & LEAD DATA
- SAMPLE LOCATION WITH ARSENIC, CADMIUM, LEAD, SELENIUM, & SULFATE DATA
- PROPOSED SAMPLE LOCATION

SOURCES:
AERIAL: NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENT (NCTOCG); 2011
SOUTHWEST GEOSCIENCE, 2001, 2013, 2014
GOLDER ASSOCIATES, 2014

REV.	DATE	DESCRIPTION	DR BY	APP BY

COOK-JOYCE INC.
ENGINEERING AND CONSULTING
812 WEST ELEVENTH 512-474-9097
AUSTIN, TEXAS 78701
HUB & WBE CERTIFIED
TEXAS REGISTERED ENGINEERING FIRM F-883

PROJECT:
NORTHEAST STEWART CREEK SITE
FRISCO, TEXAS

SHEET TITLE:
STEWART CREEK PREVIOUS AND PROPOSED SAMPLE LOCATIONS

DES BY			SCALE: SEE BAR SCALE
DR BY	SDS		PROJECT NO. 13048.01
CHK BY	KLL		C-JI NO. 13048013
APP BY	RDV		SHEETS 1 OF 1 SHEETS
DATE ISSUED: 10-08-2014			FIGURE NO. 2
PURPOSE: WORKPLAN			

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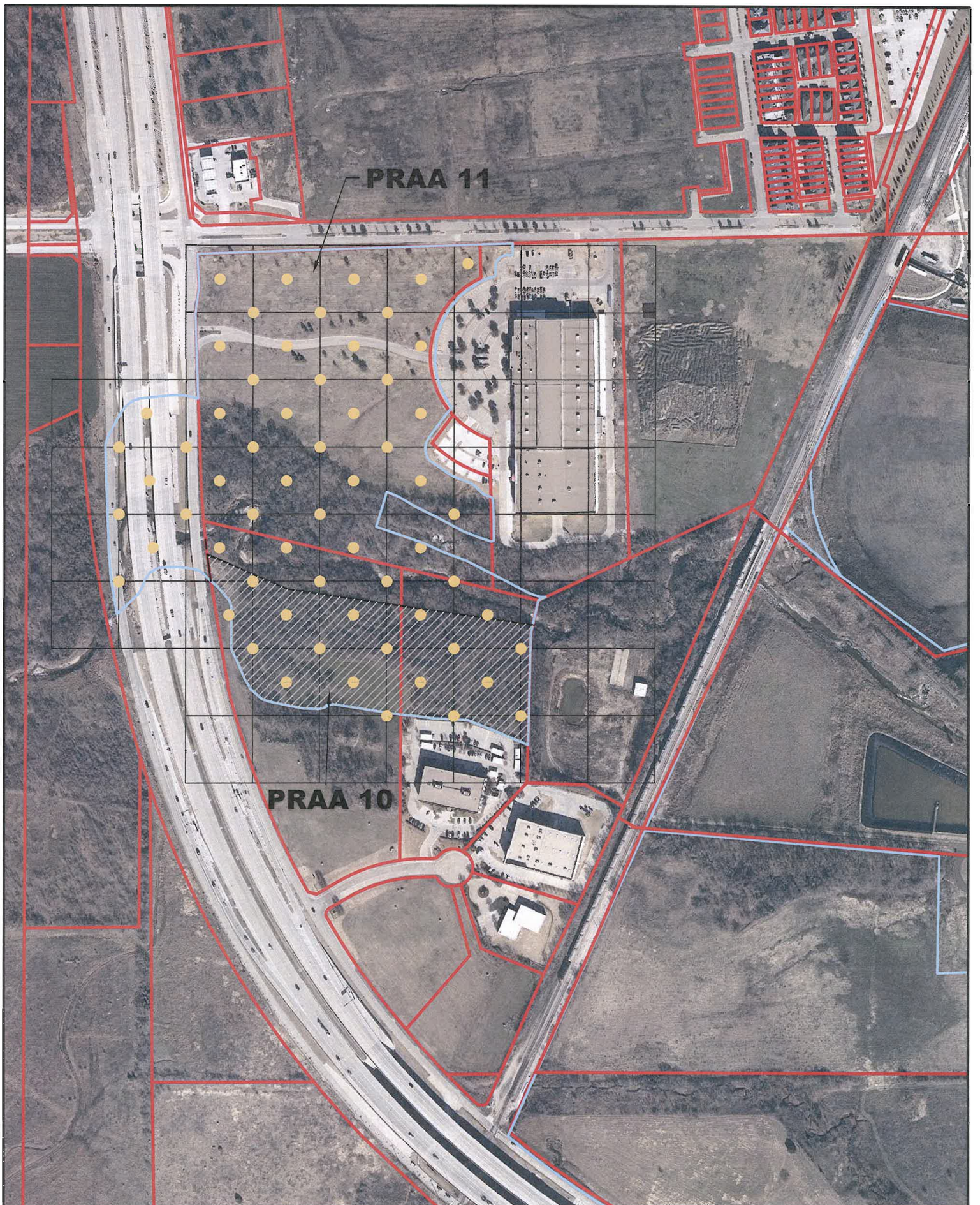

LEGEND

SITE BOUNDARY

SAMPLE LOCATION

PRAA 10 AREA

1 ACRE GRID

N

300 150 0 300

(SCALE IN FEET)

REV.	DATE	DESCRIPTION	DR BY	APP BY

COOK-JOYCE INC.
ENGINEERING AND CONSULTING
812 WEST ELEVENTH 512-474-9097
AUSTIN, TEXAS 78701
HUB & WBE CERTIFIED
TEXAS REGISTERED ENGINEERING FIRM F-883

PROJECT:
NORTHEAST STEWART CREEK SITE
CITY OF FRISCO

SHEET TITLE:
PROPOSED UPLAND SAMPLE LOCATIONS

DES BY			SCALE: SEE BAR SCALE
DR BY	SDB		PROJECT NO. 13048.01
CHK BY	KLL		CJI NO. 13048011
APP BY	RDV		SHEET 1 OF 1 SHEETS
DATE ISSUED: 09-11-2014			FIGURE NO. 3
PURPOSE: WORKPLAN			

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