PHASE I
ENVIRONMENTAL SITE ASSESSMENT

Property:

J Parcel
Near the Intersection of Eagan Drive and 5th Street
Frisco, Collin County, Texas

February 26, 2013
SWG Project No. 0112079E

Prepared for:

The City of Frisco
c/o Russell & Rodriguez, LLP
1633 Williams Drive
Building 2, Suite 200
Georgetown, Texas, 78628
Attention: Mr. Kerry Russell

Prepared by:

Southwest GEOSCIENCE
2351 W. Northwest Hwy. Suite 3321
Dallas, Texas 75220
Ph: (214) 350-5469
Fax: (214) 350-2914

Southwest
GEOSCIENCE
2351 W. Northwest Hwy. Suite 3321
Dallas, Texas 75220
Ph: (214) 350-5469
Fax: (214) 350-2914

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Re: **Phase I Environmental Site Assessment**
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Southwest Geoscience (SWG) is pleased to submit results of this Phase I Environmental Site Assessment conducted on the property referenced above (the Site). This study was authorized on September 23, 2012 and performed in accordance with SWG's proposal dated September 23, 2012 (SWG Proposal No. P01121341).

This report contains information obtained from on-Site observations, a review of select historical documents, a review of select regulatory databases, interviews with key persons, the visual observation of adjacent properties from public vantage points, and our opinions regarding the potential existence of recognized environmental conditions (RECs), as defined by ASTM 1527-05, on and in the near vicinity of the Site.

Based on ASTM E 1527-05, the contents, opinions and findings of this report can be relied upon for up to one year from the date the information was collected or updated provided the information inquiries were conducted within 180 days of the acquisition or the intended date of transaction. The information inquiries subject to re-evaluation in 180 days are: the interview of past and present owners and occupants, recorded environmental cleanup lien search, government records review, and the visual inspection of the Site and adjoining properties. The information inquiries listed above must be re-evaluated by April 3, 2013 to maintain viability.

We declare that, to the best of our professional knowledge and belief, we meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR 312. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject Property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312. The undersigned Environmental Professionals prepared and/or reviewed this report for accuracy, content, and quality of presentation

SWG appreciates the opportunity to be of service on this project. If we can be of further assistance, please contact the undersigned.

Prepared by:

Tommy R. Kim
Environmental Professional

Reviewed by:

Rusty L. Simpson, P.G., C.P.G.
Senior Technical Review

STATE OF TEXAS
02/26/2013
RUSTY SIMPSON
GEOLOGY
LIC. #218
LICENSED
PROFESSIONAL GEOSCIENTIST

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EXECUTIVE SUMMARY

SWG conducted a Phase I Environmental Site Assessment (ESA) of the approximate 170-acre property located near the intersection of Eagan Drive and 5th Street in Frisco, Collin County, Texas (the "Site"). The Site consists of 13 irregular shaped tracts of vacant land with portions of Eagan Drive, a segment of Stewart Creek, tributaries of Stewart Creek, drainage features, portions of private roads, an intermittent pond, an intermittent natural spring, and two barn structures. For the purpose of the report, the different tracts will be differentiated as Tract A through M (See Appendix A). The Site encompasses adjacent areas surrounding the former Exide Technologies, Inc. (Exide) facility (7471 South 5th Street).

The Site is owned by Exide, an adjacent Resource Conservation Recovery Act (RCRA)-permitted facility. The former Exide facility included a lead oxide manufacturer and secondary lead smelter that operated from 1964 to November 2012 when the facility ceased their industrial manufacturing operations. It should be noted that secondary lead smelting activities at the facility began in 1970. Historical business names that were predecessors to Exide include Burrs Metals; Gould, Inc.; and GNB, Inc. Since the 1980s, multiple investigations of surface and subsurface conditions along with remediation activities have taken place to address the environmental issues associated with the former Exide operations. In addition, regulatory inspections have identified violations associated with materials storage, disposal, processing activities, unauthorized discharges, spills, and administrative issues. As noted previously, the former Exide facility has ceased their manufacturing operations. However, the former Exide facility is undergoing investigation and remedial activities under the direction of the Texas Commission on Environmental Quality (TCEQ) and the Environmental Protection Agency (EPA). In addition to the remediation activities, the decontamination and demolition activities associated with the cessation of the plant will continue until regulatory concurrence/closure is issued; therefore, some of the facility permits will remain active. The former Exide facility entered the TCEQ Voluntary Cleanup Program (VCP) in 2012 and was assigned VCP. No. 2541. The former Exide facility is further discussed in the regulatory summary.

This Phase I ESA was based on a visual survey, off-Site reconnaissance of adjoining properties, interviews with owner/occupants about the Site, a regulatory record review and a review of Site use history. This Phase I ESA was authorized on September 23, 2012 (SWG Proposal No. P01121341). It should be noted that SWG previously prepared a DRAFT Phase I ESA in July 2012. The Site was previously identified as "Boundary 1" and "Boundary 2". Boundary 1 consisted of Tracts A through L. Boundary 2 consisted of Tract M. Information in this ESA report is a compilation of information obtained and reviewed during the July 2012 ESA. SWG updated information including, but not limited to, interviews, visual survey, off-Site reconnaissance, regulatory inquiries and records review, and environmental lien searches.

The ESA was performed in general accordance with the consensus document known as ASTM E 1527-05, a guide for conducting Phase I ESAs. The purpose of the ESA is to assist the client in developing information to identify recognized environmental conditions (RECs) in connection with the Site, as reflected by the scope of SWG's proposal.

We declare that, to the best of our professional knowledge and belief, we meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR 312.

We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Summary of Findings

SWG has prepared Figure 3 in Appendix A to depict the approximate locations of the on-Site monitoring wells that were identified in the regulatory files for the Exide facility. The figures can be used as a reference to determine the relationship (distances, etc.) between the Site and where maximum concentrations of chemicals of concern (COCs) were identified during the investigations. During the previous investigations, the analyses that were conducted were limited to "select COCs", primarily lead and cadmium; however, SWG's review of available regulatory information (e.g., inspections and notice of registrations) for the former Exide facility identified other petroleum products and/or hazardous substances such as hydraulic fluid, solvents, and fuel. Groundwater analytical results were not identified for all wells and it appears that the wells were sampled at various times by different consultants. SWG did not include other sampling points (e.g., surface soil, sediment, etc.) that were not converted into monitoring wells because of the amount of sampling activities that were conducted to evaluate potential impacts from the former Exide facility to the surrounding areas, including the Site. However, SWG included excerpts (text and associated figures) from the previous investigation reports in Appendix F for reference.

It should also be noted that regulatory standards changed over time and the discussions below are related to regulatory standards at the time of the sampling events. Based on a Tier 2 Protective Concentration Level (PCL) calculation for total lead, assuming clayey soil, the Tier 2 PCL for lead would exceed 250 milligrams per kilogram (mg/Kg); therefore, the Residential Critical PCL for lead in surface soil will default to the cleanup goal of 250 mg/Kg that was established by the City of Frisco. Based on SWG's review of available regulatory files for the adjacent former Exide facility, it is presumed that the Site will meet the Class 3 groundwater resource classification. SWG compared the detected cadmium concentrations to the TCEQ TRRP (30 TAC Chapter 350) Tier 1 Residential Critical PCLs for a 30-acre source area considering a Class 3 groundwater designation. The Critical PCL for cadmium is the Tier 1 residential total soil combined (^{Total} Soil $_{Comb}$) PCL of 52 mg/Kg. If Class 3 groundwater designation is not supported by additional investigation results or if the TCEQ concurrence is not received, the applicable Tier 1 Residential Critical PCLs could change. For the purpose of this Phase I ESA, the Residential Critical PCLs for lead and cadmium in surface soil are 250 mg/Kg and 52 mg/Kg, respectively.

<u>Site Description</u>:

The Site consists of 13 tracts of vacant land (Tract A through M) totaling approximately 170 acres. The Site generally consisted of vacant land with areas of dense vegetation, except Stewart Creek intersects the Site through Tracts C and D. Tributaries of Stewart Creek intersected the Site on the southwestern and northern portions. Drainage

features were noted in Tracts A, D, and E. A segment of Eagan Drive (a private driveway owned by the former Exide facility) is located on portions of Tract E and F. Additional on-Site features include an intermittent pond, an intermittent natural spring, two barn structures, and a segment of the former 5th Street. Parkwood Drive, a public right-of-way, intersects Tract C through H and is not part of the Site.

Surrounding Area:

The Site is located within a mixed residential, commercial and industrial area. With the exception of the central-adjacent former Exide facility, the north-adjacent Green Supply Co. (Green Supply), and the north-adjacent former Circuit Fab Corporation (Circuit Fab), the remaining surrounding properties do not present RECs in connection with the Site.

Site Observations:

During the visual survey, SWG did not observe evidence of existing/former underground storage tanks (USTs) and/or aboveground storage tanks (ASTs); hazardous substances and/or petroleum products; release indicators (e.g., spills, sumps, drums, staining, etc.); and/or wastewater/effluent discharges (e.g., oil/water separators, wells, septic tanks, exterior pipe discharges, etc.) except as follows:

- Undocumented fill material was noted in Tracts G and J. The fill material generally consisted of soil mixed with limited concrete and asphalt debris. SWG also identified the presence of scattered battery chips in the undocumented fill. Mr. Larry Eagan, the former Plant Manager of the former Exide facility, was interviewed during this assessment regarding the operational history of the Site and the adjacent former Exide facility. Mr. Eagan did not have knowledge of the origin of the fill. Review of the 1984 aerial photograph identified significant land disturbance activities in close proximity to the fill material in Tract G and Tract J. **Based on the presence of an adjacent industrial facility and because scattered battery chips were noted, the undocumented fill presents a REC in connection with the Site.**

- Berms were identified in Tracts A, E, L, M. No evidence of disposal of solid waste or debris was identified in the proximity of the berms. Recent environmental investigation activities by Pastor, Behling, & Wheeler, LLC (PBW) in March and May 2012 (Section 5.6) documented that the surface soils in some areas of the Site and nearby vicinity have been impacted with lead at concentrations exceeding the City of Frisco cleanup goal of 250 mg/Kg. However, SWG noted that the concentrations of lead detected in the surface soil samples collected in proximity of the on-Site berms were below the cleanup goal. It should be noted that the berms were constructed prior to recent investigation activities; therefore, it is possible that higher concentrations of the COCs may be present within the berm at deeper intervals. Based on the limited information, documented soil impact in the area, and the presence of an adjacent industrial facility, the on-Site berms present a potential environmental concern in connection with the Site.

- Undocumented fill material was noted in Tracts K and L. The fill material generally consisted of soil mixed with limited concrete and asphalt debris. No battery chips were identified in proximity of the fill material. Mr. Eagan did not have knowledge of the origin of the fill. Based on the presence of a nearby industrial facility, the

undocumented fill in Tracts K and L present a potential environmental concern in connection with the Site.

- Significant amounts of surface debris were noted on the northwestern portion of Tract C. The debris consisted of demolished residential building debris, old appliances, some tires, cans, jars, concrete debris, and wood debris. It is unclear how long the debris has been present, the origin of the debris, or what other materials are located beneath the debris. It should be noted that the operation history of the adjacent former Exide facility included four landfills. These landfills are further discussed in Section 6.1. Additionally, land disturbance possibly related to a former gravel pit was also noted in the 1938 aerial photograph in close proximity to the surface debris in Tract C. This land disturbance feature appeared leveled in subsequent photographs. Further discussion on the land disturbance is presented in Section 5.4. Based on the limited information regarding the history of the debris, the presence of nearby landfills, and land disturbance from the 1938 aerial photograph, the on-Site surface debris presents a potential environmental concern in connection with the Site.

- An abandoned cistern was identified near the southeastern corner of Tract B and appeared to have been filled in place. Based on the survey provided by the City of Frisco, the northern portion of the cistern is located on-Site. No evidence of unusual staining or odors was identified in proximity of the abandoned cistern. The abandoned cistern was not identified during review of available historical aerial photographs and topographic maps. No information on its history was identified during this assessment. Additionally, no information was found during this assessment to determine what was used to fill in the cistern. Based on the adjacent industrial history and unknown origin of fill material, the cistern presents a potential environmental concern in connection with the Site.

<u>Historical On-Site Characteristics</u>:

The Site consisted of vacant/agricultural land, Stewart Creek, tributaries of Stewart Creek, an intermittent pond, an intermittent natural spring, and residential structures since at least 1938. Residential structures were generally located on the northern and central portion of the Site. The northern residential structures were gone by 1984. The structures in the central portion were identified during the visual survey and were noted to be either dilapidated or in poor condition. Significant features identified during review of historical records for the Site are discussed as follows:

- The 1938 aerial photograph depicted apparent stock ponds on the southwestern portion of the Site (Tract B). These ponds were no longer visible by the 1942 aerial photograph. An additional pond was noted in the 1968 aerial photograph in the northeastern portion of Tract B among vegetation. The location of this third pond corresponded to the location of an intermittent pond that was identified during the SWG's visual survey. It should be noted that the adjacent industrial activities associated with lead oxide manufacturing began in 1964. In 1970, secondary lead smelting activities began. As further discussed in Section 6.1, lead has been detected in areas surrounding the former Exide plant (including the Site), at concentrations in exceedance of the City of Frisco cleanup goal of 250 mg/Kg. The former and existing ponds are low lying areas where sediments could accumulate.

Based on the adjacent industrial history and documented impact in the area, the former and existing ponds may present a potential environmental concern in connection with the Site.

- During the TCEQ inspection in May/June 2011, the inspector observed a berm (approximately 5,000 cubic feet) on the eastern portion of Tract A (west side of Exide's South Disposal Area). The berm was reportedly used as a shooting range for several years by the City of Frisco Police Department and was no longer in use. The inspector observed large amounts of untreated slag and battery chips in the berm. According to the inspector, the untreated slag and battery chips appeared to have originated from the former Exide facility's adjacent South Disposal Area. It should be noted that the figures attached to this TCEQ May/June 2011 inspection report depicted an additional berm area to the south of the South Disposal Area (north adjacent of Tract B). This area is depicted in Figure 3 in Appendix A.

  According to the regulatory files, several groundwater monitoring wells have been installed since 1990 in proximity of the shooting range berm and adjacent South Disposal Area (part of the former Exide facility). However, SWG noted that none of the wells were installed immediately down-gradient of the former shooting range berm. **Based on information from the TCEQ inspection and adjacent industrial history, the on-Site former shooting range berm presents a REC in connection with the Site.**

- A segment of South 5th Street has been present on-Site since at least 1938 and is currently an extension of Eagan Drive. The segment is located between Tract B and C. It is not known when this road was paved. SWG noted during the regulatory file review that during the TCEQ inspection in May/June 2011, Mr. James Messer, Environmental and Quality Control Manager for the former Exide facility, informed the TCEQ inspector that prior to promulgation of RCRA (1976), the City of Frisco used battery casings from the former Exide facility as road base throughout the City. However, according to Mr. Eagan, lead smelting did not begin until 1970 and South 5th Street was reportedly paved prior to 1970. In March and May 2012, PBW conducted surface soil sampling on-Site. The highest concentration of lead and cadmium detected was in Sample O-15, which was located along South 5th Street on Tract B. The detected lead and cadmium concentrations were 5,180 mg/Kg and 28.6 mg/Kg, respectively. Although cadmium was below the Residential Critical PCL, the detected lead concentration exceeded the City of Frisco cleanup goal of 250 mg/Kg. **Based on available information, the elevated concentration of lead detected along the 5th Street roadway presents a REC in connection with the Site.**

- Based on available aerial photographs, land disturbance features were identified on Tracts B, C, and D of the Site. The 1938 aerial photograph depicted the land disturbance on Tracts C and D but it was no longer visible by 1958. The 1958 aerial photograph depicted land disturbance on the southwestern portion of Tract B and was no longer visible by the 1968 aerial photograph. The land disturbance areas were noted during the time that the former gravel pit on Tract A was visible in the aerial photographs. Additionally, the land disturbance features appeared consistent with the former gravel pit; therefore, it is possible that these land disturbance features were also former small borrow pits. No information was found during this

assessment to determine the materials used to fill in these land disturbance features. To date, no assessments have been conducted on-Site to address potential impact from the land disturbance features on Tracts B, C, and D. Based on limited information regarding the land disturbance, presence of undocumented fill, and adjacent industrial history, the land disturbance feature on Tracts B, C, and D presents a potential environmental concern in connection with the Site.

- The 1984 aerial photograph depicted significant land disturbance activities in Tracts F, G, and J of the Site. The reason for the land disturbance is not known; however, it is possible that filling activities also took place in this area. Landfilling activities associated with the adjacent former Exide facility were taking place approximately 300 feet west-southwest of this land disturbance during the same time. Additionally, as noted in Section 3.7, undocumented fill was identified during SWG's visual survey in Tracts G and J among vegetation. Scattered battery chips were identified in proximity of the undocumented fill. Mr. Eagan did not have knowledge of the fill's origin. No information was found during this assessment to determine the materials used to fill in these land disturbance features. To date, no assessments have been conducted on-Site to address potential impact from the land disturbance features on Tracts F, G, and J. Based on limited information regarding the land disturbance, presence of undocumented fill, and adjacent industrial history, the land disturbance features on Tracts F, G, and J present a potential environmental concern in connection with the Site.

Historical Off-Site Characteristics:

- No RECs in connection with the historical use of off-Site properties were identified with the exception of the central-adjacent former Exide facility, the north-adjacent Green Supply, and the north-adjacent former Circuit Fab. These facilities are discussed in the regulatory summary below.

Regulatory:

Review of the EPA and TCEQ environmental database records revealed several regulated facilities that were identified in the vicinity of the Site. One (1) CERCLIS NFRAP facility, one (1) RCRA Generator facility, two (2) RCRIS Treatment, Storage, and Disposal facilities, two (2) CORRACTS facilities, one (1) ERNS report, two (2) Solid Waste facilities, nine (9) Registered Storage Tank facilities (above- and underground), six (6) Registered Leaking Petroleum Storage Tank facilities, two (2) Industrial Hazardous Waste facilities, and one (1) Voluntary Cleanup Program facility were identified within specified search radius of the Site. Based on the Site geology, topographic gradient, distance from the Site, and/or the regulatory status details, these facilities do not constitute RECs in connection with the Site except as follows:

- The former Exide facility is centrally adjacent to the Site. According to historical records, prior to development the location of the former Exide plant was vacant/agricultural land since at least 1938. In addition to vacant/agricultural use, a segment of Stewart Creek intersected the facility and was located beneath the area currently occupied by the existing former Exide buildings. The former Exide property remained vacant/agricultural land with a segment of Stewart Creek until approximately 1964 when a single industrial building was built for the former Burrs

Metals (a division of GNB, Inc.). Burrs Metals was a lead oxide manufacturer. The previously mentioned intersecting segment of Stewart Creek appeared to have been re-routed to channel along the southern boundary of the plant during the development of the Burrs Metals facility. Additionally, a railroad spur extended from the St. Louis – San Francisco Railroad toward the Burrs Metals building. In approximately 1970, GNB began recycling lead acid batteries and became a secondary lead smelter. The production of lead smelting waste (e.g., slag and battery chips) reportedly began in 1970. In 2000, Exide Corporation acquired GNB and by 2001, the facility became known as Exide. The former Exide facility ceased operations in November 2012. The former Exide facility is undergoing investigation and remedial activities under the direction of the TCEQ and EPA. An Affected Property Assessment Report (APAR) is being performed under the direction of the TCEQ.

SWG's review of available aerial photographs from 1968 to 2006 depicted the expansion of the former Exide facility over the years. Expansion activities included the additions of four landfills (North Disposal Area, South Disposal Area, Slag Landfill, and the present day Class 2 Non-Hazardous Landfill), a stormwater retention pond, a Crystallizer plant, and multiple buildings associated with processing activities at the facility.

The former Exide facility was identified on multiple regulatory databases including the CERC-NFRAP, CORRACTS, LPST, and GCC. Based on its history and identification on the regulatory databases, SWG reviewed files at the City of Frisco and the EPA Region IV office. In addition, copies of the TCEQ files were made available by the Client for review. Information from the City of Frisco is summarized in Section 5.6 and 7.1. Information from the EPA is summarized in Section 7.3. The TCEQ files are summarized in Section 5.6 and 7.2.

Based on review of the historical and regulatory information, SWG identified multiple areas of concern associated with the former Exide facility. The areas of concern generally consisted of the former Exide's industrial activities, the former South Disposal Area, the former North Disposal Area, the former Slag Landfill, the existing Class 2 Non-Hazardous Landfill, the existing stormwater retention pond, the existing Crystallizer plant (inactive), the detected concentrations of COCs along the associated railroad, Crystallizer Road, and the potential presence of groundwater impact in the area. Discussions on these areas of concern are as follows:

- The adjacent former Exide facility conducted industrial activities associated with lead oxide manufacturing (1964 to 2012) and secondary lead smelting (1970 to 2012). The facility began with a single industrial building and an associated railroad spur off the St. Louis – San Francisco Railroad that was utilized for materials transportation. Improvements within the former Exide plant area include the truck/tire washing stations, maintenance shop, raw materials storage building (RMSB), reverberatory (reverb) furnace, blast furnace, covered storage area (CSA), battery breaker, slag treatment building, wastewater treatment plant, oxide building, battery storage building, bale stabilization area, and the office building. Previous regulatory inspections have identified various violations associated with the plant including improper storage and disposal of waste, evidence of leaks and spills, unauthorized discharges of wastes, cracks in the

foundation and flood wall, and administrative concerns. Multiple surface and subsurface investigations have taken place at the facility since the 1980s to evaluate the potential impacts from select COCs.

- The industrial activities were also sources of air emission of toxic substances such as lead and cadmium. Wet scrubbers were installed at the plant to help remove particulates from the furnace off-gases. Regulatory records included information pertaining to the facility's air permit and air emission testing. In addition, SWG was provided with the *Annual Soil Sampling* report dated March 1999 that was completed by Whitehead & Mueller, Inc. (WMI). The purpose of the investigation was to evaluate the concentrations of total lead in the surface soil around the facility. According to WMI, there are 10 locations around the Exide facility that are sampled annually. Based on the provided map, locations GNB-SS-01, GNB-SS-03, GNB-SS-04, GNB-SS-05, GNB-SS-06, GNB-SS-07, and GNB-SS-09 were located on-Site on Tracts M, G, E, D, C, B, and A, respectively. The mean lead concentrations for the on-Site sampling locations were 69.8 mg/Kg (GNB-SS-01), 67.8 mg/Kg (GNB-SS-03), 16 mg/Kg (GNB-SS-04), 77.8 mg/Kg (GNB-SS-05), 105.3 mg/Kg (GNB-SS-06), 57.3 mg/Kg (GNB-SS-07), and 32.8 mg/Kg (GNB-SS-09). The WMI report also included analytical results from the previous six-years (1993 through 1998). WMI calculated a six-year average for each sampling point. The six-year average (1993 through 1998) lead concentrations were 134.6 mg/Kg (GNB-SS-01), 134 mg/Kg (GNB-SS-03), 61 mg/Kg (GNB-SS-04), 96.4 mg/Kg (GNB-SS-05), 178 mg/Kg (GNB-SS-06), 106.8 mg/Kg (GNB-SS-07), and 63 mg/Kg (GNB-SS-09). To further evaluate the aerial deposition of lead and cadmium, Exide contracted PBW to conduct a surface soil investigation in the areas surrounding the former Exide plant which included the Site. In March 2012, 117 sampling points were installed across the Site. Lead concentrations ranged from <1.96 mg/Kg (Sample N-10 in Tract B) to 5,180 mg/Kg (Sample O-15 in Tract B). Cadmium concentrations ranged from <0.86 mg/Kg (Sample Q-13 in Tract B) to 28.6 mg/Kg (Sample O-15 in Tract B). Of the 117 sample locations, 29 locations identified lead concentrations in exceedance of the City of Frisco cleanup goal of 250 mg/Kg. The samples were located in Tracts A through H and Tract M. Further delineation of the surface soil by PBW in May of 2012 identified lead exceedances in Tracts B, C, D, and M.

- During the visual survey, SWG identified a drainage feature located adjacent and along the northern boundary of Tract A. Scattered battery chips were identified along the off-Site drainage feature. It should be noted that this drainage feature was located parallel and south-adjacent of Crystallizer Road where battery chips were also observed.

- The South Disposal Area, a closed pre-RCRA landfill, operated from 1970 to 1974 and was used for disposal of rubber chips and blast furnace slag. According to the RCRA Facility Investigation (RFI) by Lake (1991), the South Disposal Area was estimated to be approximately 0.9 acres. No municipal solid waste was identified by Lake during the investigation. The EPA Corrective Action inspection in 2009 identified exposed battery chips and slag which indicated that the cover of this landfill had some erosion. During the May/June 2011 TCEQ inspection, the inspector noted significant evidence of erosion which exposed battery chips along the slope.

In addition, the inspector observed a berm (approximately 5,000 cubic feet) on the west side of the South Disposal Area. The berm reportedly was used as a shooting range for several years by the City of Frisco Police Department but was no longer in use. The inspector observed large amounts of untreated slag and battery chips in the berm. According to the inspector, the untreated slag and battery chips appeared to have originated from the South Disposal Area.

Several groundwater-monitoring wells have been installed in proximity of the South Disposal Area since 1990. The monitoring wells in these areas included B1, B1N, B1R, B1S, B2, B2R, B3, B3N, B3R, B4, and B4R. Of these, monitoring wells B1R, B2R, B3R, and B4R have not been decommissioned. The latest groundwater sampling event (January 2012) by PBW included B3R and B4R; however, monitoring well B3R was dry during the investigation. Monitoring wells B1R, B2R, and B3R have not been sampled since 1997. Lead and cadmium concentrations from the January 2012 sampling event were detected at 0.0761J- milligrams per liter (mg/L) and 0.00062J mg/L, respectively. Sulfate and TDS concentrations were 178 mg/L and 1,170 mg/L, respectively. Although low concentrations of COCs were present in groundwater, it should be noted that analyses were specifically for lead, cadmium, TDS and sulfate. Regulatory information on the former Exide facility indicated the use of petroleum products and other hazardous substances.

- The North Disposal Area, also a closed pre-RCRA landfill, operated from 1974 to 1978 and was used for disposal of rubber chips and blast furnace slag. Additionally, the North Disposal Area was used by the City of Frisco as a municipal solid waste landfill. According to the RFI by Lake (1991), the North Disposal Area was estimated to be approximately 5.2 acres. Landfill materials identified by Lake included construction debris, normal household and industrial trash. Lake noted that the cap on the North Disposal Area was thinning in several areas. Additionally, the EPA Corrective Action inspection in 2009 identified exposed battery chips and slag, which indicated that the cover of this landfill had some erosion.

  It should be noted that in 1986, dredging activities associated with the cleanup of Stewart Creek resulted in the piling of dredged materials on the southwestern portion of the North Disposal Area. In 1989, Lake's closure plan for the Stewart Creek dredging piles were approved by the Texas Water Commission (TWC; predecessor to TCEQ). The dredged sediment was pre-characterized as Class I Non-Hazardous waste. The sediment materials were dispersed above a section of the North Disposal Area were compacted and capped with clay.

  SWG noted that several groundwater-monitoring wells have been installed down-gradient of the North Disposal Area and Stewart Creek dredging pile area since 1990. The monitoring wells included B5, B5N, MW16, MW16S, and MW17. Monitoring well B5 has been decommissioned. The latest groundwater sampling event for the remaining wells was conducted in January of 2012 by PBW. The samples were analyzed for total and dissolved metals (specifically lead and cadmium), sulfate, and TDS. Relatively low concentrations of metals were detected. Sulfate concentrations ranged from 298 milligrams per liter (mg/L; in

MW16) to 1,590 mg/L (MW17). TDS concentrations ranged from 1,380 mg/L (MW16) to 7,980 mg/L (MW16S).

- The former slag landfill was active from 1978 to 1996 and was used for disposal of blast furnace slag. It should be noted that the former Exide's "Boneyard" was located on top of the former slag landfill. Available regulatory files revealed that during the EPA corrective action inspection in December 2009, equipment containing process wastes was observed in the Boneyard. The equipment included a roller belt with battery chips, a kettle with refining dross, a "grizzly screen" containing slag pieces, a bail of untreated cardboard and shrink wrap, and several "supersacks" containing what appeared to be building insulation. In addition, hydraulic equipment including two full hydraulic tanks were observed to be leaking hydraulic fluid onto the ground was observed. In the *National Pollutant Discharge Elimination System (NPDES) Compliance Inspection Report* dated September 14, 2010, the inspector noted that numerous areas of slag, dross, batteries, fire extinguishers, and trash were observed in the Boneyard. In January 2012, PBW collected soil samples at three locations from the former slag landfill area. Soil samples were collected at various intervals up to 10 feet bgs. The maximum lead concentration detected was 7,970J mg/Kg at the two to four feet bgs interval. Cadmium was detected at a maximum concentration of 50.2 mg/Kg at the two to four feet interval. In addition, PBW also collected five soil samples at the zero to two feet bgs interval from locations surrounding the Boneyard. The maximum lead and cadmium concentrations detected were 47,000 mg/Kg and 65.9 mg/Kg, respectively, which were located on the south side of the Boneyard.

  Several groundwater-monitoring wells have been installed down-gradient of the former slag area since 1990. The monitoring wells were B8, B8N, B8R, and MW18. The latest groundwater sampling event (January 2012) by PBW was limited to MW18. Monitoring wells B8, B8N, and B8R have not been sampled since 1997. The January 2012 analytical results for MW18 identified lead and cadmium concentrations (total and dissolved) below their respective detection limits. Sulfate and TDS concentrations were 453 mg/L and 1,040 mg/L. respectively. It should be noted that the analyses were limited to select metals and that the location of MW18 was cross-gradient of the former slag landfill. Additionally, the information from the regulatory files indicated that the activities associated with the Boneyard were uncontrolled and have included the placement of equipment containing process waste and hydraulic fluid in this area. Information from the regulatory database report referenced the use of parts solvent at this facility.

- The stormwater retention pond was constructed in the 1990s and is located adjacent to the Site (Tract A). Stormwater run-off from the manufacturing area of the plant flows into a storm sewer drain that is connected to the pond. The stormwater treatment includes pH adjustment, precipitation of dissolved solids, and filtration. In the past, treated stormwater was discharged into Stewart Creek. Dried sediment was collected and returned to the reverb furnace.

  Although the retention pond is solely used for stormwater control, it should be noted that past regulatory inspections have identified evidence of improper

storage and spills at the facility. In a NPDES compliance inspection conducted in September 2010, the inspector noted that metallurgical coke was stored outside in an uncovered area and the runoff trailed to an open storm sewer curb inlet. During the May/June 2011 TCEQ inspection, the inspector noted white liquid and solid at the plant area. The liquid reported was flowing toward a stormwater pipe. A soil sample collected nearby contained elevated concentrations of lead and cadmium at 39,700 mg/Kg and 574 mg/Kg, respectively. In addition, according to the regulatory information, the manufacturing activities at the facility have included the use of other petroleum products and/or hazardous substances (i.e., solvents). As noted above, investigations of various media associated with the facility were limited to select COCs.

- The present day Class 2 Non-Hazardous Landfill consists of the landfill disposal area, a solar evaporation pond and a leachate collection system. The landfill, which is owned and operated by the former Exide facility, consists of nine cells, six of which were reported by the TCEQ to have been closed. Leachate from the landfill is collected into a leachate tank and is pumped out and processed in the facility's WWTP. Landfill contact water is pumped to the solar evaporation pond. Sediments from the pond are recycled in the reverb furnace or disposed at an off-site landfill. Based on the regulatory files, treated slag (with Enviroblend, Portland cement, etc.) is placed in this landfill. The treated slag is analyzed via Toxicity Characteristic Leaching Procedure (TCLP) extraction to meet the Class 2 Non-Hazardous criteria. However, according to the TCEQ inspection during May to June 2011, it was noted that the treated slag is disposed of in the landfill before the laboratory results are available. Exide's standard operating procedure is to excavate the failed batch from the landfill and retreat it until the TCLP extraction meets the Class 2 Non-Hazardous criteria. During the TCEQ inspection, a sample of the treated slag and one sample of a material resembling mud that consisted of contact water and sediments were collected. Laboratory analytical results indicated hazardous concentrations of lead (up to 36,200 mg/Kg total and 25.52 mg/L TCLP) and cadmium (up to 437 mg/Kg total and 1.57 mg/L TCLP) were present in the Class 2 Non-Hazardous Landfill.

- The Crystallizer plant is located east-adjacent and up-gradient of the Site (Tract A). The activities at the Crystallizer plant were the final phase of processing treated wastewater from the Exide facility. A by-product of the process was sodium sulfate, which was collected and sold to Cooper Industries for re-use in the production of fiberglass, or disposed of at DFW Recycling and Disposal. Information from the regulatory files has identified runoff, spills and battery chips in proximity of the Crystallizer plant.

  During the EPA's corrective action inspection in December 2009, liquid was leaking from a frac tank at the Crystallizer unit. A visible drainage pathway was observed leading from the frac tank to the edge of a concrete ramp. The EPA noted that analytical results for the contents of the frac tank over the past year indicated that the contents of the tank were hazardous waste due to toxicity for selenium and cadmium on several occasions. In the *NPDES Compliance Inspection Report* dated September 14, 2010, the inspector observed uncontrolled salt laden runoff from the Crystallizer plant and also that the frac tank was leaking. In the May/June 2011 TCEQ inspection, the inspector

observed a white solid and several battery chips in a drainage swale west of the Crystallizer area. Additionally, dead vegetation and a white solid along a drainage pathway that began at the Crystallizer and ended at the culvert were observed. Water from this drainage reportedly discharges to the City of Frisco. However, it was not stated in the report whether the drainage discharged into the City's storm sewer or the sanitary sewer. One soil sample was collected at the opening of the culvert. Total lead and TCLP lead were detected at concentrations of 694 mg/Kg and 3.92 mg/L, respectively. Sulfates were detected at a concentration of 6,040 mg/Kg. In addition to the regulatory inspections, SWG was provided with analytical results associated with the January 2012 facility investigation by PBW. Two soil samples were collected from the Crystallizer plant area and at the zero to two feet bgs interval. The soil samples were analyzed for various metals and reported the following maximum concentrations: <0.293R mg/Kg (antimony), 7.18J mg/Kg (arsenic), 50.8J mg/Kg (barium), 0.806 mg/Kg (beryllium), 0.466 mg/Kg (cadmium), 9.52J mg/Kg (chromium), 33.2 mg/Kg (lead), 12.4J mg/Kg (nickel), <0.328 mg/Kg (selenium), <0.15 mg/Kg (silver), 54.5J mg/Kg (zinc), and 8,190 mg/Kg (sulfates). The "R" notation reportedly indicates the result was rejected. The "J" notation indicates an estimated value. It should be noted that the sampling point locations were north of the driveway for the Crystallizer plant. No samples appeared to have been collected along the drainage swale associated with the Crystallizer plant. In addition, the previous investigations were limited to select COCs. Liquids have been noted to be leaking from the frac tank. The liquids originated from the plant where other potential COCs such as petroleum products and/or hazardous substances may have been used. To date, no groundwater assessments appear to have been conducted in the immediate vicinity of the Crystallizer plant.

It should be noted that during the surrounding area reconnaissance, a fill mound was located off-Site between Tract A and the adjacent Crystallizer plant. Mr. Eagan stated that the origin of the fill is soil that was scraped from around the Crystallizer plant to create a drainage swale for routing surface water to the adjacent drainage feature (located along the northern boundary of Tract A). According to available regulatory information, several regulatory inspections from 2009 through 2011 (presented in Section 5.6) by the EPA and TCEQ have identified run-off of liquids and solids from the adjacent Crystallizer plant area to its surrounding area. In addition, soil samples collected near the Crystallizer plant by the regulatory agencies have identified COC concentrations in exceedance of the Residential Critical PCLs.

- In the 1960s, a railroad spur off the west-adjacent St. Louis – San Francisco Railroad was built along the southern boundary of Tract M. This railroad spur appears to be a path for transportation of materials to and from the adjacent former Exide facility. During review of previous environmental reports (Section 5.6), SWG noted that in 1998, JD Consulting, L.P. (JDC) collected soil samples from four locations along a segment of this railroad for lead analysis. Although the sample locations were not located on-Site, laboratory analytical results reported elevated concentrations of lead at depths up to 48 inches bgs. The maximum lead concentration detected during the investigation was 30,200 mg/Kg at a depth of six to 12 inches bgs. In addition, in March 2012, PBW collected surface soil samples near the adjacent railroad spur. The detected lead

concentrations were below the City of Frisco cleanup goal of 250 mg/kg. The detected cadmium concentrations were below the Residential Critical PCL of 52 mg/Kg. Although the detected lead and cadmium concentrations were below their respective PCLs during the March 2012 surface soil sampling event, it is possible that higher concentrations of the COCs may be present at deeper intervals based on the results from the 1998 soil sampling event. In addition, based on its historical use, materials may have spilled from the rail cars along the tracks.

- The north-adjacent Crystallizer Road is associated with the former Exide operations. During the visual survey, SWG noted that scattered battery chips were present on this off-Site road. The segment of Crystallizer Road located north of Tract A (within 50 feet) was noted to be unpaved. Based on available historical information, Crystallizer Road was constructed sometime between 1968 and 1972.

- Stewart Creek and its tributary have intersected the Exide plant since at least 1938. The creek and tributary were flowing during SWG's visual survey. The flow direction in these features is to the west. It should be noted that Stewart Creek and the tributary's original drainage paths appeared to have been altered over the years. Based on the aerial photographs, a segment of Stewart Creek was originally beneath the current location of the former Exide plant. Stewart Creek appeared to have been re-routed during construction of the original Burrs Metals. No information was found during this assessment as what materials were used to fill in the original segment of Stewart Creek that is currently located beneath the former Exide plant. The original segment of Stewart Creek is a preferential migration pathway for contaminants present in the vicinity of the former creek channel.

  Regulatory information indicated that in 1973, the TWQB conducted an inspection at the former Exide facility. The inspector identified inadequate stormwater control at the facility. As a result, contaminated run-off from the battery plate storage area and the battery wrecking area entered Stewart Creek. The inspector also noted unauthorized cooling water discharge from the plant entering the creek. Additional information reviewed for the former Exide facility indicated that untreated slag and battery chips from the plant were used to line the creek banks to prevent erosion in the 1960s. In 2000, remediation activities along Stewart Creek were conducted by JDC and the results were presented in a *Stewart Creek Corrective Measures Implementation Report.* The focus of the remediation efforts was the segment of Stewart Creek located between South 5th Street and the adjacent railroad to the west. The assessment activities generally consisted of the removal of soils and slag from Stewart Creek followed by verification sampling. Approximately 16,025 tons of material were removed from Stewart Creek. Following analytical data confirming that the cleanup levels were met, the creek bottom was backfilled with clean soils and graded as necessary. Although remediation efforts have been taken, it should be noted that the focus of the 2000 investigation was limited to metals, specifically lead and cadmium. The Notice of Registration (NOR) for Exide included other petroleum products and/or hazardous substances such as benzene and tetrachloroethylene. In addition, since 2000, there were regulatory inspections including a TCEQ

inspection in May 2011 that identified "dead vegetation near a crack in the barrier wall (also known as the flood wall) where a liquid was discharging." The TCEQ staff collected a soil sample from the embankment where the dead vegetation was observed and analyzed it for lead (total and TCLP). The detected lead concentrations were 3,560 mg/Kg (total) and 2.86 mg/L (TCLP). The TCEQ staff also observed a staining along the wall where the stormwater pipe exited the wall (approximately 500 feet east-northeast of Tract A). The staff noted that the "pipe appeared to be leaking due to worn out gaskets." A sample of the soil and rock along the embankment beneath the pipe indicated lead and cadmium concentrations at 39,800 mg/Kg and 894 mg/Kg, respectively. It is unclear how long the seepage from the cracked wall or the pipe discharges had been occurring.

- During the visual survey, groundwater-monitoring wells were identified on Tract E (known as MW20), Tract G (known as MW19), and Tract M (known as LMW1 through LMW4). Based on SWG's review of the regulatory files, multiple groundwater-monitoring wells have been installed across the area (including the Site) at various times to evaluate the subsurface conditions and the potential impact from the adjacent former Exide's activities. To date, a number of these groundwater-monitoring wells have been decommissioned. However, there remain numerous active groundwater-monitoring wells that are located on- and off-Site. Figure 3 depicts the approximate location of the wells that were found in the regulatory files. Groundwater analytical results were not identified for all wells and it appears that the wells were sampled at various times by different consultants. The on-Site monitoring wells MW19 and MW20 were last sampled in January 2012 by PBW. SWG noted that the investigations were conducted to evaluate select COCs. Information from the regulatory database and files associated with the adjacent Exide facility have documented other potential COCs such as petroleum products and/or hazardous substances (i.e., solvents) that were utilized or handled at the facility.

The former Exide facility began operation in 1964. From 1964 to 2012, the facility was a lead oxide manufacturer. Lead smelting operations began in 1970. Expansion activities since the 1960s included the addition of operation buildings at the plant, landfills, a retention pond and a Crystallizer plant. **Based on an industrial history of more than 40 years, documented violations, limited analytical program utilized in past investigations, proximity to the Site, and information from previous regulatory inspections, the adjacent former Exide facility presents a REC in connection with the Site.**

- The north-adjacent and up-gradient Green Supply has been in business since 1984. Regulatory information has identified a release associated with the facility that impacted areas beyond the facility's limits. According to available regulatory information, the facility has received regulatory closure. To date, no assessments have been conducted on-Site to address potential impact from the documented release and industrial activities associated with Green Supply. **Based on the type of business, more than 20 years of industrial activities, documented release, up-gradient and adjacent location, SWG's visual survey, and lack of subsurface assessments on-Site, Green Supply presents a REC in connection with the Site.**

- The north-adjacent and up-gradient Circuit Fab was in business from 1984 to 1988. Regulatory information has identified a release associated with the facility that impacted areas beyond the facility's limits. The facility underwent a *Pre-CERCLIS Screening Assessment* that was conducted by the TCEQ and the facility was not recommended for further evaluation under CERCLA. To date, no assessments have been conducted on-Site to address potential impact from the documented release and industrial activities associated with Circuit Fab. **Based on the type of business, industrial use, documented release, up-gradient and adjacent location, and lack of subsurface assessments on-Site, Circuit Fab presents a REC in connection with the Site.**

- The north-adjacent Martin Marietta (also known as Boorhem-Fields) stone, sand and gravel yard located at 6601 Eubanks Street has been in operation since the late 1980s. Regulatory information indicated one 10,000-gallon fuel UST was removed from the facility in 1989. Although no documented releases were reported, the exact location of the former UST in relation to the Site is unknown. No records of subsurface assessments were identified for the facility. Stormwater runoff from this facility appears to discharge into a drainage swale that appears to route the facility's stormwater onto the Site. To date, no assessments have been conducted on-Site to address potential impact from nearby and up-gradient facilities. Based on lack of information pertaining to the operational history, distance, up-gradient location, and SWG's observations, the north-adjacent Martin Marietta facility presents a potential environmental concern in connection with the Site.

- The Frisco RM facility was identified on the regulatory databases for having one 10,000-gallon UST containing diesel that was installed in 1983 and removed in 1996. The location of this former facility could not be determined during this assessment based on its address other than it was located along Eubanks Street which is up-gradient of the Site. However, based on the tank operation dates (1983 to 1996) and its ownership reference as a concrete ready-mix facility, it is likely that the Frisco RM facility was an apparent batch plant facility that was depicted in the 1984 and 1995 aerial photograph. Although no documented releases were reported, the exact location of the former UST in relation to the Site is unknown. No records of subsurface assessments were identified for the facility. To date, no assessments have been conducted on-Site to address potential impact from nearby and up-gradient facilities. Based on the lack of information pertaining to the operational history, distance, and up-gradient location, the former Frisco RM facility to the north-northeast presents a potential environmental concern in connection with the Site.

- Xtreme Iron/Rodman facility appears to have been in operation since at least 1999 as a supplier of heavy equipment utilized for construction activities. Information from the TCEQ identified one 30,000-gallon duel compartment UST (gasoline and diesel) and a total of nine diesel ASTs with capacities ranging from 2,000- to 8,000-gallons for the facility. However, it should be noted that the TCEQ PST Registration database identified a total of 23 ASTs with similar capacities. Although no documented releases in connection with the UST or ASTs were identified during this assessment, the ASTs have been in operation for more than 10 years and it appears that several of the ASTs were installed in earthen dikes. Exterior storage of drums without secondary containment or under a covered area was noted during SWG's area reconnaissance. Stormwater runoff from this facility appears to discharge into

a drainage swale and appears to route the surface water onto the Site. To date, no assessments have been conducted on-Site to address potential impact from nearby and up-gradient facilities. Based on lack of information pertaining to the operational history, discrepancies between the TCEQ file and the PST registration database, distance, up-gradient location, and SWG's observations, the Xtreme Iron/Rodman facility presents a potential environmental concern in connection with the Site.

Conclusions

We have performed a *Phase I Environmental Site Assessment* in conformance with the scope and limitations of ASTM Practice E-1527-05 of the approximate 170-acre property located near the intersection of Eagan Drive and 5th Street, the *property*. Any exceptions to, or deletions from, this practice are described in Section 1.1 of this report. **This assessment revealed no evidence of RECs in connection with the property except for the following:**

<u>On-Site</u>

- The undocumented fill in Tracts G and J;
- the former shooting range berm; and
- the elevated concentration of lead along the 5th Street roadway.

<u>Off-Site</u>

- the central-adjacent former Exide facility;
- the north-adjacent Green Supply; and
- the north-adjacent former Circuit Fab;

In addition to the RECs identified above, SWG identified several issues that were considered to present potential environmental concerns in connection with the Site. Detailed discussions on these issues are presented in their respective sections of this report. These issues are as follows:

<u>On-Site</u>

- The berms located in Tracts A, E, L, and M (Section 3.7);
- the undocumented fill in Tracts K and L (Section 3.7);
- the surface debris (concrete, wood, tires, cans, jars, etc.) located in Tract C (Section 3.7);
- the abandoned cistern located in Tract B (Section 3.8);
- the former and existing ponds located in Tract B (Section 5.4); and
- the historical land disturbance features located on Tracts B, C, D, F, G, and J (Section 5.4).

<u>Off-Site</u>

- The Boorhem-Fields/Martin Marietta facility to the north (Section 6.1);
- the Frisco RM facility to the north (Section 6.1); and
- the Xtreme Iron/Rodman facility to the north (Section 6.1).

PHASE I ENVIRONMENTAL SITE ASSESSMENT
J Parcel
Near the intersection of Eagan Drive and 5th Street
Frisco, Collin County, Texas
SWG Project No. 0112079E

1.0 INTRODUCTION

SWG has completed a Phase I ESA of approximate 170-acre property located near the intersection of Eagan Drive and 5th Street in Frisco, Collin County, Texas (the "Site"). The Site consists of 13 irregular shaped tracts of vacant land with portions of Eagan Drive, a segment of Stewart Creek, tributaries of Stewart Creek, drainage features, portions of private roads, an intermittent pond, an intermittent natural spring, and two barn structures. For the purpose of the report, the separate tracts will be differentiated as Tract A through M (See Appendix A). The Site encompasses adjacent areas surrounding the former Exide facility (7471 South 5th Street). This work was performed in general compliance with the consensus document known as ASTM E 1527-05 for conducting ESAs and in accordance with SWG's proposal dated September 23, 2012 (Proposal No. P01121341). In order to identify "recognized environmental conditions" (RECs)[1], the Phase I ESA included the following tasks:

- A visual survey of the Site and cursory observations of adjoining properties, to identify RECs in connection with the Site;
- Review of available records including commercial database sources of government listings, topographic maps, city directories, aerial photographs, etc. to identify RECs associated with the Site;
- Interviews with individuals knowledgeable about the Site to obtain information indicating RECs associated with the Site; and
- Interviews with, or inquiries to, local government officials to obtain information indicating RECs associated with the Site.

1.1 Exceptions to ASTM E 1527-05

- At the time of the SWG Site reconnaissance, the Site was primarily vacant land. However, it should be noted that there are areas of dense vegetation on-Site that limited SWG's view of the surface of the Site.

[1] "Recognized environmental conditions" are defined in ASTM E 1527-05 as; "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include de minimis conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies."

- The City of Dallas Public Library available city directories were dated between 1978 and 2011. SWG contacted the City of Frisco Public Library but no historical city directories dated prior to 1978 were available. Based on the availability of other references (aerials, topographic maps, prior reports, and regulatory information, this limitation was not considered to present a significant data gap.

1.2 General Comments and Disclaimers

SWG has performed a Phase I ESA in accordance with SWG's proposal dated September 23, 2012 (Proposal No. P01121341) and in general compliance with the scope and limitations of the consensus document known as ASTM E 1527-05. These services do not assess for any areas, conditions or features beyond those described in our proposal. This report may also document additional or reduced services authorized by the client, as noted at the end of the report.

This report is intended as a limited Phase I assessment of observable conditions or features in accessible and representative portions of the Site as of the most recent visual survey and from other reviews described in this report. Phase I assessments are nondestructive, visually-based, and rely upon opinions derived from limited data sources which we believe to be reliable (SWG does not warrant the authenticity of third party data sources). Due to its limited scope, uncertainty cannot be eliminated as to the presence of RECs (hazardous substances or petroleum products) or latent conditions at the Site.

These services and this report were performed and prepared in accordance with generally accepted local assessment practices at the time the services were performed; no warranties, express or implied, are intended or made. The limitations of this assessment should be recognized as the City of Frisco formulates conclusions on the environmental risks associated with this Site. Further, the services herein shall in no way be construed, designed or intended to be relied upon as legal interpretation or advice.

This report represents SWG's final document for these services as of the report date. These services and report were prepared for the exclusive use of the City of Frisco c/o Russell & Rodriguez, LLP. No other individual or entity may rely on this report without written permission from SWG and the City of Frisco c/o Russell & Rodriguez, LLP. If written consent is provided, the recipient agrees to be bound by the same contractual terms and conditions agreed to by SWG and the City of Frisco City of Frisco c/o Russell & Rodriguez, LLP. Unless otherwise agreed in writing, the liability limitation listed in SWG's standard terms and conditions constitutes SWG's aggregate liability as to the client and all relying parties for any and all claims.

2.0 SITE DETAILS AND PHYSICAL SETTING

2.1 Site Ownership and Location

Site Owner:	GNB Inc. c/o Exide Tech Tax Department or GNB Batteries, Inc. (based on the CCAD)

Site Occupants:	Not applicable
Current Use:	Vacant Land, segments of roads, Stewart Creek, tributaries of Stewart Creek, an intermittent pond, an intermittent natural spring, and two barn structures.
Date of Ownership:	Tract A – October 24, 1989 Tract B – February 12, 1992 Tract C – February 12, 1992 Tract D – February 12, 1992 Tract E – February 12, 1992 Tract F – April 19, 2001 Tract G – January 21, 1983 Tract H – February 10, 1993 Tract I – April 19, 2001 Tract J – Unknown* Tract K – July 31, 1996 Tract L– July 31, 1996 Tract M – November 7, 1983
Site Location:	Near the intersection of Eagan Drive and 5th Street, Frisco, Texas
County:	Collin County
USGS Quadrangle:	Frisco, Texas USGS 7.5-minute Quadrangle Map dated 1981
Latitude, Longitude (approximate center of Site)	Tract A: Latitude 33.139278°, Longitude -96.831954° Tract B: Latitude 33.136897°, Longitude -96.829036° Tract C: Latitude 33.136986°, Longitude -96.824447° Tract D: Latitude 33.138855°, Longitude -96.824342° Tract E: Latitude 33.140354°, Longitude -96.823564° Tract F: Latitude 33.141949°, Longitude -96.824805° Tract G: Latitude 33.142409°, Longitude -96.824862°

Tract H:
Latitude 33.143399°, Longitude -96.825036°

Tract I:
Latitude 33.144043°, Longitude -96.824965°

Tract J:
Latitude 33.142819°, Longitude -96.823767°

Tract K:
Latitude 33.142767°, Longitude -96.822602°

Tract L:
Latitude 33.142849°, Longitude - 96.821295°

Tract M:
Latitude 33.143439°, Longitude -96.830600°

*No information on the ownership was found in the chain-of-title report (Appendix H) or on the CCAD website.

2.2 Site Description

The Site consists of 13 tracts of vacant land (Tract A through M) totaling approximately 170 acres. The Site generally consisted of vacant land with areas of dense vegetation, except Stewart Creek intersects the central portion of the Site through Tracts C and D. Tributaries of Stewart Creek intersected the Site on the southwestern and northern portions. A segment of Eagan Drive (a private driveway owned by the former Exide facility) is located on portions of Tract E and F. Parkwood Drive, a public right-of-way, intersects Tracts C through H and is not part of the Site. Additional on-Site features include an intermittent pond, an intermittent natural spring, two barn structures, and a segment of the former 5th Street.

The Site location is depicted on Figure 1 of Appendix A which was reproduced from a portion of the United States Geological Survey (USGS) 7.5-minute series topographic map (Frisco, Texas Quadrangle), which was updated in 1981. A Site Vicinity Map of the Site and adjoining properties is included as Figure 2 of Appendix A, and a Site Plan is included as Figure 3 in Appendix A. The FEMA map is presented as Figure 4 in Appendix A.

2.3 Physical Setting

The following table provides physical setting information for the Site and surrounding area.

DESCRIPTION		SOURCE
Topography (Refer to Appendix A for an excerpt of the Topographic Map)		
Site Elevation:	Site elevation ranges from approximately 620 to 700 feet above mean sea level.	USGS Topographic Map, Frisco, Texas (1981)
Surface Runoff:	**Tract A & B:** Surface runoff is generally to the west- northwest. **Tract C & D:** Surface runoff is generally to the north towards Stewart Creek. **Tract E & F:** Surface runoff is generally to the west. **Tract G:** Surface runoff is generally to the north and south towards a tributary of Stewart Creek. **Tract H and I:** Surface runoff is generally to the south towards a tributary of Stewart Creek. **Tract J:** Surface runoff is generally to the north and south towards a tributary of Stewart Creek. **Tract K, L and M:** Surface runoff is generally to the west- southwest.	
Closest Surface Water:	Stewart Creek intersects the central portion of the Site through Tracts C, Tract D and runs adjacent to the southern boundary of Tract M. Stewart Creek's tributary intersects the southwestern (Tract B) and northern (Tracts F, G, J, K, and L) portion of the Site. The TCEQ *Interoffice Memorandum* dated August 2, 2011 classified Stewart Creek as an intermittent stream. Additionally, an intermittent pond, an intermittent natural spring were located on-Site. The intermittent pond was located on the northeastern portion of Tract B. The intermittent natural spring was located on the southwestern portion of Tract C.	
FEMA Map		
Zone:	The Site includes Zone AE, Zone X (shaded) and Zone X (unshaded). Zone AE consists of the base floodplain where flood elevations are provided. Zone X (shaded) consists of an area of a moderate flood hazard, usually the area between the 100-year and 500-year floods. Zone X (unshaded) consists of an area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level.	FEMA Agency Flood Insurance Rate Map, Community Panel Number 48085C0240J Revised June 2, 2009
Soil Characteristics		
Soil Type:	The Site contains Austin Silty Clay (AuB and AuC2), Eddy Gravel Clay Loam (EdB and EdD2), Heiden Clay (HcC2), Houston Black Clay (HoA), Houston Black Clay (HoB and HoB2), Lewisville Silty Clay (LeC2), Stephen Silty Clay (ScB), Stephen-Eddy Complex (SeC2), Tinn Clay (Tf) and Trinity Clay (To).	Natural Resource Conservation Service, Web Soil Survey

	DESCRIPTION	SOURCE
Description:	**Austin Silty Clay (AuC2 and AuB):** moderately deep, well drained, moderately low to moderately high permeable soils that formed from residuum weathered from chalk. Slopes range from 1 to 5 percent. This series occupies Tact H, Tract I and portions of Tract E, Tract J, Tract K and Tract L. **Eddy Gravelly Clay (EdD2 and EdB):** moderately low, well drained, moderately low to high permeable soils that formed from residuum weathered from Austin Chalk formation. Slopes range from 1 to 8 percent. This series occupies portions of Tract A, Tract B, Tract C, Tract D, Tract E, Tract K and Tract L. **Heiden Clay (HcC2):** moderately deep, well drained, low to moderately low permeable soils that formed residuum weathered from clayey shale of Eagle Ford shale or Taylor marl. Slopes range from 3 to 5 percent. This series occupies portions of Tract A and Tract B. **Houston Black Clay (HoA):** moderately deep, moderately well drained, very low to moderately low permeable soils that formed from residuum weathered from calcareous shale of Taylor marl and Eagle Ford shale. Slopes range from 0 to 1 percent. This series occupies the western central and southern portion of Tract M. **Houston Black Clay (HoB and HoB2):** moderately deep, moderately well drained, low to moderately low permeable soils that formed from residuum weathered from calcareous shale of Taylor marl and Eagle Ford shale. Slopes range from 1 to 4 percent. This series occupies portions of Tract E, Tract F, Tract G, Tract J and Tract M. **Lewisville Silty Clay (LeC2):** moderately deep, well drained, moderately high to high permeable soils that formed from alluvium of quaternary age derived from mixed sources. Slopes range from 3 to 5 percent. This series occupies a portion of the northwest corner of Tract A. **Stephen Silty Clay (ScB):** moderately shallow, well drained, moderately low to moderately high permeable soils that formed from residuum weathered from Austin Chalk. Slopes range from 1 to 3 percent. This series occupies the eastern portion of Tract B and the western and southern portions of Tract C. **Stephen-Eddy Complex (SeC2):** moderately shallow, well drained, moderately low to moderately high permeable soils that formed from residuum weathered from Austin Chalk. Slopes range from 3 to 5 percent. This series occupies the eastern portion of Tract I. **Tinn Clay (Tf):** moderately deep, moderately well drained, very low to moderately low permeable soils that formed from residuum weathered from clayey alluvium of Holocene age derived from mixed sources. Slopes range from 0 to 1 percent. This series occupies all of Tract A. **Trinity Clay (To):** moderately deep, moderately well drained, very low to moderately low permeable soils that formed from clayey alluvium of Holocene age derived from mixed sources. Slopes range from 0 to 1 percent. This series occupies the northwest corner of Tract A, the majority of Tract D and the central portions of Tract G, Tract J, Tract K and Tract L.	
Permeability:	Variable across the Site due to different soil series as presented above.	

	DESCRIPTION	SOURCE
Available Water Capacity:	Variable across the Site due to different soil series as presented above.	

Geology/Hydrogeology		
Formation:	Austin Chalk (Kau) and Eagle Ford Formation (Kef).	Bureau of Economic Geology - Geologic Atlas of Texas, Sherman Sheet, Revised 1991
Description:	**Quaternary Alluvium (Qu):** surficial deposits consisting of sand, clay, silt, and gravel. In Texas, it is mostly colluviums and minor alluvium. **Austin Chalk Formation (Kau):** upper and lower parts, chalk, light-gray, massive, some interbeds and partings of calcareous clay, marine megafossils scarce. Middle part, mostly thin-bedded marl with interbeds of massive chalk, light-gray, weathers white, marine megafossils scarce. Thickness of Austin Chalk (undivided) approximately 600 feet. **Eagle Ford Formation (Kef):** shale, medium- to dark-gray, selenitic, bituminous, calcareous concretions and septaria common, some thin platy beds of sandstone and sandy limestone in middle and upper parts, marine megafossils. Thickness of Eagle Ford Formation 300 to 400 feet. During the visual survey, SWG noted the outcrop of the both the Austin Chalk and the Eagle Ford Formations. Based on the geologic map, the Site is located in proximity to the contact zone for the Austin Chalk and the Eagle Ford Formations.	
Topographic Gradient:	The topographic gradient at the Site is generally to the west and southwest.	
Hydrogeologic Gradient:	According to Dames & Moore (D&M) hydrogeologic report (1983), groundwater within the adjacent main plant area (of the former Exide facility) moves towards the branches of Stewart Creek. The groundwater north of an approximate line corresponding to the railroad spur at the adjacent former Exide plant is moving to the northwest towards the northern tributary of Stewart Creek, whereas the groundwater south of the spur has an apparent flow direction to the southwest and the southern tributary of Stewart Creek. The *Site Investigation Report (PBW, 2012)* reported groundwater in the uppermost groundwater bearing unit occurs under unconfined conditions. PBW prepared a potentiometric surface map based on water elevations measured at the Site in February 2512. According to PBW, the potentiometric surface of the Site generally slopes toward the southwest with a gradient of approximately 0.018 ft/ft except near the bluff at the southern boundary of the Site where it slopes steeply toward the north and Stewart Creek. It should be noted that the assessed area was bounded by the central-adjacent former Exide facility.	Previous Environmental Reports (Section 5.6)
Estimated Depth to First Occurrence of Groundwater:	No groundwater level data was found for the on-Site wells. However, groundwater levels in nearby monitoring wells including P1 (approximately 100 feet west of Tract H), MW10 (approximately 75 feet west of Tract E), P2 (approximately 125 feet west of Tract D), and MW15 (approximately 205 feet north of Tract A) have been measured at 11.15 feet bgs, 6.85 feet bgs, 10.78 feet bgs, and 9.15 feet bgs, respectively.	Previous Environmental Reports (Section 5.6)
Site Water Source	The City of Frisco utilizes area surface water reservoirs for water supply.	

The groundwater flow direction and the depth to the initial shallow, unconfined groundwater-bearing unit, if present, would likely vary depending upon seasonal

variations in rainfall and the depth to the soil/bedrock interface. Recharge areas for these units are typically local and can be influenced by surface development of impervious cover (buildings, parking lots, roads). The groundwater flow direction in these unconfined aquifer units is highly variable but is generally toward the nearest down-gradient water body (lakes, creeks, rivers) and can be approximated by observing the surface topography. Using the assumptions outlined above, and review of previous reports, the groundwater flow direction at the Site is expected to flow toward Stewart Creek and its tributaries.

3.0 VISUAL SURVEY

Information contained in this section is based on a visual survey performed on October 22, 2012 (by Mr. Tommy Kim and Mr. Beaux Jennings). It should be noted that SWG previously conducted the visual survey on April 5 and 6, 2012. The information below is a compilation of both Site visual surveys because the information was generally consistent. At the time of the recent visual survey, the weather was sunny and the temperature was approximately 75°F.

The Site location is depicted on Figure 1 of Appendix A which was reproduced from a portion of the USGS 7.5-minute series topographic map (Frisco, Texas Quadrangle), which was updated in 1981. A Site Vicinity Map of the Site and adjoining properties is included as Figure 2 of Appendix A, and a Site Plan is included as Figure 3 in Appendix A. The FEMA map is presented as Figure 4 in Appendix A.

3.1 Current Land Use

The Site consists of 13 tracts of vacant land (Tract A through M) totaling approximately 170 acres. The Site generally consisted of vacant land with areas of dense vegetation, except Stewart Creek intersects the Site through Tracts C and D. Tributaries of Stewart Creek intersected the Site on the southwestern and northern portions. Drainage features were noted in Tracts A, D, and E. A segment of Eagan Drive (a private driveway owned by the former Exide facility) is located on portions of Tract E and F. Additional on-Site features include an intermittent pond, an intermittent natural spring, two barn structures, and a segment of the former 5th Street.

Parkwood Drive, a public right-of-way, intersects Tract C through H and is not part of the Site. It should be noted that Parkwood Drive is an extension of 5th Street which extends from the north. Fifth Street was reconstructed to direct traffic from the adjacent former Exide facility. For this reason, a segment of the original 5th Street is present on-Site.

3.2 Structures

The majority of the Site is vacant land with limited areas of dense vegetation. SWG identified two barn structures on Tract C and Tract D. A demolished residential structure was also noted in the northeastern portion of Tract B. Additionally, it should be noted that segments of Eagan Drive and 5th Street are located on-Site.

3.3 Utilities

There are no utility services for the Site; however, adjacent properties are serviced by the City of Frisco for water. Multiple electricity service providers including Green Mountain Energy, TXU, and Reliant are available in the Frisco, Texas area.

The City of Frisco obtains its water supply from area surface water reservoirs and treats its drinking water to meet the EPA and TCEQ guidelines for public consumption.

3.4 Electrical or Hydraulic Equipment (Potential PCBs)

Some older electrical transformers, capacitors, generators, and fluorescent light ballasts may contain polychlorinated biphenyl (PCB) dielectric fluid. PCB is recognized as a toxic substance by the federal government under the Toxic Substance Control Act (TSCA). Transformers containing PCBs at a concentration of 500 parts per million (ppm) or greater are no longer allowed to be installed. Releases from transformers containing PCBs onto soil or other permeable surfaces could constitute a REC.

Overhead electric lines were located along western boundary of Tract A, along the southern boundary of Tract F, and along Eagan Drive. No PCB-containing equipment was identified.

3.5 Hazardous Substances and Petroleum Products

Hazardous materials are those which are manufactured and could have an adverse effect on human health or the environment. Hazardous materials could include but are not limited to: hazardous substances as defined by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); hazardous wastes as defined by the Resource Conservation and Recovery Act (RCRA); and petroleum products.

During SWG's visual survey of Tract C, the barn housed less than 10 (one- to five-gallon containers) of substances called Rezklad hardener and red furnace hardener. No unusual staining or evidence of staining was identified in proximity of the containers. Based on the limited quantity and lack of staining observed, SWG considers the limited containers a *de minimis* condition. In addition, SWG identified a 55-gallon drum of unknown oily substance in proximity of the barn. Limited staining was observed at the base of the drum. The limited staining was considered a *de minimis* condition.

In Tract C, SWG identified approximately three pallets of stacked bags (approximately 50 pounds each) of unknown white powdery substance. The bags were in damaged condition and the solidified powder had eroded in multiple places. No dead vegetation was noted in proximity of the bags. According to Mr. Larry Eagan, the white powdered substance is diatomaceous earth. SWG does not consider diatomaceous earth a REC in connection with the Site.

3.6 Storage Tanks

3.6.1 Aboveground Storage Tanks

AST registration is not generally required for ASTs with a capacity of less than 1,100 gallons unless the tank contains hazardous waste/materials or requires a flammable (or combustible) contents permit from the local fire department.

ASTs or surface indications of former ASTs were not observed on the Site during the visual survey.

3.6.2 Underground Storage Tanks

USTs are tanks that store regulated substances and have at least 10 percent of their volume, including contents of associated pipes, underground. Surface indications of existing or former USTs could include pump islands, cut-off pipes, fill ports, vent pipes and asphalt patches.

Surface indications of existing or former USTs were not observed on the Site during the visual survey.

3.7 Release Indicators

Release indicators could include: 1) strong, pungent or noxious odors; 2) pools of liquid; 3) sumps likely to contain hazardous substances or petroleum products; 4) standing surface water; 5) drums; 6) hazardous substance and petroleum product containers; 7) unidentified substance containers; 8) interior stains or corrosion; 9) pits, ponds or lagoons; 10) stained soil or pavement; 11) stressed vegetation; and 12) filled areas graded by non-natural causes suggesting trash, construction debris, demolition debris or other solid waste disposal.

Release indicators identified during SWG's visual surveys are as follows:

- SWG identified drainage features to the east of Parkwood Drive in Tracts D and E, and along the western boundary of Tract M. No unusual odor, staining, or evidence of dumping was noted in the on-Site drainage features.

- SWG identified several berms on-Site as follows:

    - One berm was located parallel to the drainage feature along the northern portion of Tract A. The berm area was heavily vegetated during the Site reconnaissance. It is unclear what the origin of the berm was or how it was constructed. It should be noted that the berm also borders the location of a former gravel pit that is discussed in Section 5.4.

    - A total of three berms were identified on Tract E and Tract L. Two were located west-adjacent to the multifamily development to the east. Mr. Eagan indicated these two berms were constructed with unused soil that was generated during construction activities (e.g., grading) associated with the east-adjacent multifamily development. The third berm was located west-adjacent of the

intersecting Parkwood Drive. Mr. Eagan indicated this berm was constructed with soil that was scraped from vacant areas west of this berm. The construction dates of the berms were unknown. Based on available aerial photographs, it appears that the initial construction of the berms began sometime between 1984 and 1995.

- In Tract M, berms were identified along the northern Site boundary. Mr. Eagan did not recall the date of its construction. The berm reportedly was constructed with soil that was excavated from native material during the construction of the adjacent Class 2 Non-Hazardous Landfill and piled along the northern boundary.

Historical information presented in Section 5.0 indicates the Site has been vacant/agricultural land that is owned by the adjacent Exide facility. In addition, recent environmental investigation activities by Pastor, Behling, & Wheeler, LLC (PBW) in March and May 2012 (Section 5.6) documented that the surface soils in some areas of the Site and nearby vicinity have been impacted with lead at concentrations exceeding the City of Frisco cleanup goal of 250 mg/Kg. However, SWG noted that the concentrations of lead detected in the surface soil samples collected in proximity of the on-Site berms were below the cleanup goal. It should be noted that the berms were constructed prior to recent investigation activities; therefore, it is possible that higher concentrations of the COCs may be present within the berm at deeper intervals. Based on the limited information, documented soil impact in the area, and the presence of an adjacent industrial facility, the on-Site berms present a potential environmental concern in connection with the Site.

- Significant amounts of surface debris were noted on the northwestern portion of Tract C. The debris consisted of demolished residential building debris, old appliances, some tires, cans, jars, concrete debris, and wood debris. It is unclear how long the debris has been present, the origin of the debris, or what other materials are located beneath the debris. It should be noted that the operation history of the adjacent former Exide facility included four landfills. These landfills are further discussed in Section 6.1. Additionally, land disturbance possibly related to a former gravel pit was also noted in the 1938 aerial photograph in close proximity to the surface debris in Tract C. This land disturbance feature appeared leveled in subsequent photographs. Further discussion on the land disturbance is presented in Section 5.4. Based on the limited information regarding the history of the debris, the presence of nearby landfills, and land disturbance from the 1938 aerial photograph, the on-Site surface debris presents a potential environmental concern in connection with the Site.

- Undocumented fill material was noted in Tracts G and J. The fill material generally consisted of soil mixed with limited concrete and asphalt debris. SWG also identified the presence of scattered battery chips in the undocumented fill. Mr. Larry Eagan, the former Plant Manager of the former Exide facility, was interviewed during this assessment regarding the operational history of the Site and the adjacent former Exide facility. Mr. Eagan did not have knowledge of the origin of the fill. Review of the 1984 aerial photograph identified significant land disturbance activities in close proximity to the fill material in Tract G and Tract J. **Based on the presence of an adjacent industrial facility and because scattered battery chips were noted, the undocumented fill presents a REC in connection with the Site.**

- Undocumented fill material was noted in Tracts K and L. The fill material generally consisted of soil mixed with limited concrete and asphalt debris. No battery chips were identified in proximity of the fill material. Mr. Eagan did not have knowledge of the origin of the fill. Based on the presence of a nearby industrial facility, the undocumented fill in Tracts K and L present a potential environmental concern in connection with the Site.

- In Tract J, SWG identified dumped concrete debris and several abandoned concrete culvert pipes. The origin of the debris and pipes are unknown. No unusual odor or staining was identified in proximity of these items. Based on the limited quantity and SWG's observation, the limited concrete debris and culvert pipes are not considered to present a REC in connection with the Site.

3.8 Wastewater/Effluent Discharges

Wastewater/effluent discharge could include: existing or former oil/water separators, sumps, dry wells, catch basins, injection wells, groundwater/wastewater treatment systems, septic tanks, leach fields, floor drains, compressor blowdown, and exterior pipe discharges.

- Groundwater-monitoring wells associated with the central-adjacent former Exide facility were identified on-Site during the visual survey and is further discussed in Section 6.1.

- An abandoned cistern was identified near the southeastern corner of Tract B and appeared to have been filled in place. Based on the survey provided by the City of Frisco, the northern portion of the cistern is located on-Site. No evidence of unusual staining or odors was identified in proximity of the abandoned cistern. The abandoned cistern was not identified during review of available historical aerial photographs and topographic maps. No information on its history was identified during this assessment. Additionally, no information was found during this assessment to determine what was used to fill in the cistern. Based on the adjacent industrial history and unknown origin of fill material, the cistern presents a potential environmental concern in connection with the Site.

3.9 Surrounding Properties

The adjoining visual property survey was performed by SWG at the same time as the visual survey of the Site and consisted of cursory visual observations (view from the Site and public areas) of adjoining properties and land uses to evaluate their potential for RECs.

Surrounding properties are primarily developed with mixed commercial and industrial properties. The Site was bordered by the following streets, properties or land uses:

- The former Exide facility is centrally adjacent to the Site. The former Exide facility was identified during the regulatory review and is further discussed in Section 6.1.

- Martin Marietta Materials, Green Supply, a storage building (previously occupied by the former Circuit Fab), multifamily residences, vacant/wooded land and single-family residences bounded the Site to the north. Martin Marietta Materials, Green Supply, and the former Circuit Fab were identified during the regulatory database review and is further discussed in Section 6.1.

- Single-family residences, multifamily residences, commercial office developments, a segment of Stewart Creek, and the City of Frisco Police Department bounded the Site to the east.

- Vacant land and the Dallas North Tollway roads bounded the Site to the south.

- The Saint Louis – San Francisco railroad followed by Stewart Creek Business Center, the former Stewart Creek Wastewater Treatment Plant (SCWWTP), vacant wooded land and portions of the winding Stewart Creek, future Museum of the American Railroad, and the City of Frisco Discovery Center bounded the Site to the west. The SCWWTP was identified during the regulatory database review and is further discussed in Section 6.1.

4.0 INTERVIEWS

4.1 User Questionnaire

Mr. Henry Hill, representative of the City of Frisco (the User), was interviewed on June 22, 2012. Based on Mr. Hill's response to the User Questionnaire (ASTM E 1527-05; Section X3.), he is aware of no environmental cleanup liens filed or recorded against the Site. Mr. Hill is aware of the presence of AULs that are associated with the Site and referred SWG to review the deed records for the Site.

SWG inquired if Mr. Hill had any specialized knowledge or experience regarding the Site or nearby properties. Mr. Hill indicated that the City of Frisco (Frisco) previously owned a portion of the Site. Being a municipal government, the City of Frisco has knowledge of building and code enforcement activities.

In regards to the purchase price of the Site, Mr. Hill indicated that the purchase process included an appraisal of the Site and was a factor in determining the purchase price. While there is known contamination on portions of the Site, the nature of the purchase transaction, which requires some seller participation in remediation and closure of the existing plant (adjacent former Exide facility), did not lower the purchase price.

Mr. Hill is aware of the past uses of the Site and is aware that chemicals (i.e., lead and cadmium) are present or were once present at the Site. Additionally, he is aware that spills or chemical releases have occurred on the Site. Mr. Hill has provided SWG with municipal and regulatory records associated with any environmental cleanup activities that have been conducted at the Site. SWG's review of the provided documents is presented in Section 5.6. Mr. Hill is aware that there are other obvious indicators of the presence or likely presence of RECs at the Site.

During this investigation, a new User Questionnaire and copies of the previous responses were provided to City. Mr. Ron Patterson, the Assistant City Manager, responded on January 22, 2013 via e-mail that he reviewed the provided documents and that there no changes.

4.2 Owner Representative

Ms. Christine Graessle, the Assistant General Counsel with the former Exide facility, was interviewed on April 30, 2012. SWG contacted Ms. Graessle via phone and discussed the ASTM E1527-05 information needed from the owner including: 1) Helpful Documents as detailed in ASTM E1527-05, 2) Inquiry regarding "Proceedings Involving the Property (ASTM E1527-05-Section 10.9; and 3) Requested the most recent investigation information that has been collected in response to the EPA letter dated August 1, 2011 and the TCEQ Investigation Report (No. 880260).

Ms. Graessle indicated that the regulatory information regarding the adjacent former Exide facility that is part of the RCRA-permitted area would be located within the TCEQ and EPA regulatory files and she is not aware of any other relevant reports for these properties outside of available information from the regulatory agencies. She indicated that she would attempt to locate any due diligence reports that may have been prepared when former Exide facility purchased the boundary properties (J Parcel); however, she does not recall having previously seen any Phase I ESAs. Ms. Graessle indicated that to her knowledge at that time, the only threatened proceeding related to the properties were the City of Frisco discussions regarding the building codes. With regard to the most recent investigation information, Ms. Graessle will inquire with Mr. Matt Love of Exide to determine what new information is available that Exide can share. On behalf of Exide, PBW provided information including results from recent 2012 investigations as presented in Section 5.6.

SWG conducted a follow-up interview with Ms. Graessle on February 22, 2013 regarding the building code issues. According to Ms. Graessle, the issues concerning the building codes have been resolved. Ms. Graessle indicated that investigations under the direction of the TCEQ and EPA are ongoing.

4.3 Maintenance Personnel

Mr. Larry Eagan was present during the initial SWG's visual survey in April 2012. Mr. Eagan is the former Plant Manager for the former Exide facility. In addition, SWG met with Mr. Eagan on September 26, 2012 during a meeting with representatives of Exide, PBW, and the City of Frisco. It should be noted that during the September 2012 meeting, Mr. Carlos Liscano, former Assistant Plant Manager (1970 – 2011), and Mr. David McKercher, also a former Plant Manager (2011 – 2012) were present. The following information is a compilation of information from April and September 2012:

Mr. Eagan was employed by the former Exide facility from 1991 to 2006. Mr. Eagan explained that the former Exide facility was initially developed in 1964 as a lead oxide manufacturer (known as Burrs Metals at the time). According to Mr. Eagan, generation of waste (i.e., battery chips) began in 1970 when secondary lead smelting operations began. Mr. Eagan was not aware of any environmental liens associated with the Site (J Parcel).

SWG inquired about the former Frisco Lake and on-Site former gravel pit. Regarding the former Frisco Lake, Mr. Eagan stated that to his knowledge, the lake silted up. Mr. Eagan had no knowledge of the former lake being filled in. Regarding the former gravel pit, Mr. Eagan indicated that the area was relatively shallow and that soil from surrounding area was scraped and pushed over to level the former gravel pit. Mr. Eagan indicated that no significant filling activities took place in this area and no plant wastes or debris were utilized.

SWG identified berms on Tracts E, L, and M of the Site. Mr. Larry Eagan does not recall the dates of their construction. However, Mr. Eagan stated that the berms located adjacent to Parkwood Drive on Tract E were constructed with soil that was scraped from the Site. The berms along the eastern boundary of Tract E and Tract L were constructed with soil that was scraped from vacant areas east of these berms during construction of the adjacent residential areas. The berms on along the northern boundary of Tract M were constructed with soil excavated during the construction of the adjacent Class 2 Non-Hazardous Landfill. One additional berm was located parallel to the drainage feature along the northern portion of Tract A. Mr. Eagan did not have any knowledge of this berm.

SWG inquired about the fill material that was identified in Tracts G, J, K and L. Mr. Eagan did not have knowledge regarding the fill material in these areas.

SWG identified a fill mound located east-adjacent of Tract A in close proximity of the adjacent Crystallizer plant associated with the former Exide facility. Mr. Eagan stated that the fill mound consisted of soil surrounding the Crystallizer plant. Mr. Eagan explained that the soil was scraped to help channel surface water away from the Crystallizer plant toward the drainage feature located along the northern boundary of Tract A.

SWG inquired about the borrow pits that were depicted on the Lake Engineering Survey dated 1984. According to Mr. Eagan, the two borrow pits adjacent to the former Exide facility's stormwater retention pond was associated with the construction of the stormwater retention pond. The borrow pit adjacent to Crystallizer Road was used to help straighten the creek to control the flood. Lastly, Mr. Eagan did not have knowledge regarding the borrow pit located adjacent to former Exide's North Disposal Area. However, he indicated that he was aware of no soil from these areas being removed and dispersed elsewhere.

On February 12, 2013, SWG conducted an additional follow-up interview with Mr. Liscano regarding the history of the J Parcel. To the best of his knowledge, no production related activities occurred on the J Parcel. The activities associated with the J Parcel were limited to mowing for hay. Mr. Liscano also confirmed the details that were provided by Mr. Eagan regarding the berms, fill material, former gravel pit, former Frisco Lake, fill mound adjacent to the Crystallizer Plant, and the borrow pits. Regarding the former gravel pit, Mr. Liscano indicated he was present during the leveling activities.

4.4 Historical Owner/Tenant Interviews

Information from the title report indicated that the City of Frisco was a historical owner of Tracts B, C, F, G, I and M. A User Questionnaire was provided by the City. Information provided by the City is presented in Section 5.6.

5.0 HISTORICAL REVIEW

SWG reviewed the following available information in order to ascertain the historical uses of the Site and immediately adjacent properties to evaluate the presence of activity of potential environmental concern:

5.1 Historical Topographic/Planning Maps

SWG reviewed the Frisco, Texas Quadrangle published by the United States Geological Survey (USGS) which includes the Site. The color coding used on the maps indicates areas that are historically developed, recently developed or undeveloped at the time of the map update.

- The **1960** topographic map depicted the Site to generally be vacant land except that a residence is noted in the central portion of the Site (in general proximity of the existing barn structure); Stewart Creek extended from the east and intersected the central portion of the Site; a tributary of Stewart Creek intersected the northern portion of the Site; and a secondary tributary of Stewart Creek intersected the southwestern portion of the Site. Additionally, a gravel pit was located on the northwestern portion of Tract A. The northern boundary of Tract A appeared to encroach the limits of a lake located north-adjacent of the Site. This lake is later identified as Frisco Lake. A road, later identified as 5th Street, extended from areas north of the Site and ran along the western boundary of Tract D through Tract I and intersected Tract B and C. The on-Site gravel pit and Frisco Lake are discussed in Section 5.4.

  The surrounding area generally consisted of vacant land with limited residential structures, Steward Creek, tributaries of Stewart Creek, Frisco Lake, and the St. Louis – San Francisco Railroad

- The **1968** and **1978** topographic maps depicted no significant changes in the use of the Site. The previously mentioned on-Site gravel pit and Frisco Lake remained visible.

  No significant changes were noted in the use of the surrounding properties except for the addition of a railroad spur that extended from the west-adjacent St. Louis – San Francisco Railroad toward an industrial facility. The industrial facility is currently known as the former Exide facility and is further discussed in Section 6.1. It should be noted that the former Exide facility was historically also known as Gould, Inc., GNB Technologies, and Burrs Metals.

- The **1981** topographic map depicted no significant changes in the use of the Site except the addition of two other residential structures in the central portion of the Site (on Tract B and C. It should be noted that these residential structure markings appear to correspond with SWG's visual survey. A demolished residential structure was observed in Tract B. Two barn structures were identified in Tract C and D. The previously mentioned on-Site gravel pit remained visible.

  Frisco Lake was no longer visible. As noted above, Stewart Creek previously extended from the east and drained into the former Frisco Lake. In the absence of the lake and further expansion of the adjacent former Exide facility, it appears that Stewart Creek was rerouted to channel the creek water around the facility going westward. Other than the former Exide plant expansion, an apparent water feature is visible to the west of the Site (specifically Tract A). This feature is later identified as a surface pond associated with the SCWWTP. The SCWWTP was identified during the regulatory database review and is further discussed in Section 6.1. No other significant changes were noted in the surrounding area.

Based on SWG's review of the USGS Topographic Quadrangle Map, no water wells, oil and gas production wells or pipelines were identified in connection with the Site. It should be noted that based on the Railroad Commission of Texas online database, a natural gas pipeline is located approximately 585 feet north of the Site. The pipeline reportedly is active and is operated by Atmos Pipeline. Based on its reported use for natural gas and distance, the pipeline does not present a REC in connection with the Site.

5.2 Historical Aerial Photographs

Historical aerial photographs were reviewed to obtain information concerning the history of development on and near the Site. Although generally flown at medium to high altitudes, they may be useful in visually comparing historic and current conditions. They may also be helpful in determining whether conditions of apparent environmental concern existed on or near the Site at the time they were taken.

The photographs obtained from EDR were reviewed as follows:

- The **1938** aerial photograph generally depicted the Site as vacant/agricultural land except for land disturbance and a limited portion of a lake in the northwest portion of Tract A; two circular features (possible stock ponds) and a tributary of Stewart Creek on the southwestern portion of the Tract B; a road, now known as 5th Street, extended from north to south along the western boundary of Tracts D through I and intersected Tracts B and C; a segment of Stewart Creek and land disturbance in Tract C and D; and another tributary of Stewart Creek intersecting through Tracts G, J, K, and L. In addition, residential structures were noted in the central and northern portion of the Site.

  The land disturbance feature in Tract A was noted during review of the topographic maps as a former gravel pit. The previously mentioned lake is identified as the former Frisco Lake which was constructed in 1902 when the railroad dammed up a section of Stewart Creek. As noted during the topographic map review, Stewart

Creek and a tributary of Stewart Creek drained into Frisco Lake and continued westward. The land disturbance on Tract C and D was not pictured on the topographic maps; however, the scarring appears to be consistent with the gravel pit located on Tract A.

The surrounding areas generally consisted of extension of Stewart Creek and its tributaries, limited residential use, vacant/agricultural land, the St. Louis – San Francisco Railroad, and the former Frisco Lake.

- The **1942** and **1951** aerial photographs depicted no significant changes in the use of the Site except that in the 1951 aerial photograph, the land disturbance on Tract C and D was no longer visible and an apparent pond is noted in the northeastern portion of Tract B. This pond appears to correspond with the pond that was identified during SWG's visual survey. The previously mentioned stock pond features on the southwestern portion of the Tract B were no longer visible.

  No significant changes were noted in the surrounding areas. Increased residential development was noted farther north of the Site.

- The **1958** aerial photograph generally depicted no significant changes in the use of the Site except for the presence of an area of land disturbance on the southwestern portion of Tract B and Frisco Lake appeared dry, filled in place, and/or the dam had been removed.

  No significant changes were noted in the surrounding areas. As noted above, Frisco Lake was no longer a lake. Additionally, vegetation took presence to the east of the former Frisco Lake.

- The **1968** aerial photograph depicted the Site as vacant/agricultural land. The previously mentioned Stewart Creek, tributaries, intersecting segment of 5th Street, and gravel pit remained visible. The previously mentioned land disturbance on the southwestern portion of Tract B was no longer visible. It should be noted that the on-Site former gravel pit appeared inactive.

  A railroad spur extended eastward from the west-adjacent St. Louis – San Francisco Railroad toward an industrial facility that is currently known as the central-adjacent former Exide facility. The former Exide facility is further discussed in Section 6.1. No significant changes were noted in the remaining surrounding areas. Increased residential developments were noted farther north of the Site.

- The **1972** aerial photograph depicted no significant changes in the use of the Site. The residential structures remain in the central and northern portions of the Site. The former gravel pit area consisted of apparent rough terrain indicating it was not leveled with the surrounding area.

  Improvements associated with the former Exide facility were noted to the north/northwest of the Tracts A through E. The improvements included the addition of a road (now known as Crystallizer Road) that extended from 5th Street to the west-adjacent railroad; addition of building structures; and apparent landfilling activities located east-adjacent of Tract A. The landfill located east-adjacent of Tract A was

later identified as the "South Disposal Landfill" for the former Exide facility and is discussed in Section 6.1. Residential and possibly commercial properties were located farther north of the Site. The areas to the east and south remained as vacant/agricultural land in addition to extensions of Stewart Creek and tributaries. The previously mentioned Crystallizer Road extended west toward an industrial facility that was identified as the former SCWWTP. Agricultural land and residences are also noted west of the adjacent railroad.

- The **1984** aerial photograph depicted the Site as agricultural land. Additionally, the location of the former gravel pit on Tract A appeared to be leveled. The residences on the northern portion of the Site were no longer visible. However, land disturbance likely associated with additional land fill activities was noted on Tracts F, G, and J.

  The adjacent former Exide facility appeared to have expanded its operation. Additional landfill activities were noted north of the facility (west-adjacent of the Tracts F, G, and H). The identified landfill was later known as the former "Slag Landfill" and former "North Disposal Area" which are further discussed in Section 6.1. The former South Disposal Area remained visible. Increased industrial/commercial developments were noted north-adjacent of Tract J which included an industrial building. This industrial building was identified during the regulatory database review as the "Former Circuit Fab" facility and is further discussed in Section 6.1.

  The west-adjacent SCWWTP appeared to have expanded its facility. A possible batch plant located approximately 680 feet north-northeast of Tract M appears to correspond with information on a ready-mix facility that was identified during the regulatory database review as "Frisco RM". The Frisco RM discussion is presented in Section 6.1.

- The **1995** aerial photograph depicted the Site as agricultural land. The residential structures in the central portion of the Site remained visible. Limited land disturbance associated with the former gravel pit remained visible on Tract A. A drainage feature was noted on Tract E of the Site.

  The adjacent former Exide facility expanded its facility with additions of buildings and a stormwater retention pond (north-adjacent of Tract A). The previously mentioned North Disposal Area and South Disposal Area appeared inactive. The former Slag Landfill appeared active. Land disturbance likely associated with the construction of the present-day Class 2 Non-Hazardous Landfill (owned and operated by the former Exide facility) was noted approximately 600 feet west of the Tract H and I. An additional industrial building was located north-adjacent of Tract I. This location was identified during the regulatory database review as "Green Supply Co." and is further discussed in Section 6.1.

  The surrounding areas consisted of vacant/agricultural land, residential developments, and the previously mentioned SCWWTP. Additionally, a second batch plant facility had been constructed north-adjacent of Tract M. This facility was identified during the regulatory database review as "Martin Marietta Materials" and is further discussed in Section 6.1.

- The **2004** and **2005** aerial photographs depicted the Site as agricultural land with areas of dense vegetation, drainage features (including tributaries) and Stewart Creek. The land disturbance associated with the former gravel pit on Tract A was no longer visible. Residential structures remained visible in the central portion of the Site. A segment of South 5th Street located on-Site appeared to have been reconstructed into a divided road. The western segment of the divided road became the present-day Eagan Drive that is a private driveway owned by the former Exide facility. The eastern segment of the divided road is currently a public road known as Parkwood Drive. Eagan Drive intersected Tracts E and F of the Site. Parkwood Drive intersected Tract C through H of the Site.

  The former Exide facility added a Crystallizer plant located north-adjacent of Tract A. Additionally, former Exide Class 2 Non-Hazardous Landfill to the west of the Site made several improvements including the addition of a pond (specifically, a solar evaporation pond) and landfill coverage. Increased residential developments were noted east of the Site. Roads associated with the present-day Dallas North Tollway system were located south-adjacent of the Site. Commercial buildings associated with the Stewart Creek Business Park were constructed west-adjacent of the Site beyond the railroad. SCWWTP remained visible to the west.

- The **2006** aerial photograph depicted no significant changes in the use of the Site or adjacent properties except that the west-adjacent SCWWTP appeared inactive.

Copies of select historical aerial photographs are included in Appendix C.

5.3 Historical Fire Insurance Maps

Historical fire insurance maps produced by the Sanborn Map Company were requested to evaluate past uses and relevant characteristics of the Site and adjoining properties. These maps were originally compiled from field observations and public records by fire insurance underwriters and are now frequently used to provide an indication of past land usage.

Fire insurance maps from were not available in the vicinity of the Site.

5.4 Historical City Directories

Cole and other private city directories list businesses and residences by street address and aid in determining former Site tenants/occupants. The reference department of the City of Dallas Library was consulted for ownership and use history of the Site and vicinity. City directories for the years 1978 through 2011 were reviewed, in 3 to 7 year increments (as available), for the listings described below.

SITE LISTING(S)		
Address	Tenant	Years Listed
The Site consists of approximately 170 acres of vacant land near the intersection of Eagan Drive and 5th Street in Frisco, Texas. The Site consisted of vacant/agricultural land, Stewart Creek, tributaries of Stewart Creek, an intermittent pond, an intermittent natural spring, and residential structures. The Site does not have a physical address and no city directory listings were identified for the Site. However, it should be noted that the Site is owned by the central-adjacent former Exide facility at 7471 5th Street. Further discussion on the Site's history is presented below. The former Exide facility, which is centrally adjacent to the Site, was identified during the regulatory database review and is further discussed in Section 6.1.		

CENTRAL PROPERTY LISTING(S)			
Address		Tenant	Years Listed
7471	5th Street	Exide Technologies	2008 – 2011
		Address Not Found	2002 – 2005
		GNB Technology Inc.	1992 – 1999
		Address Not Found	1979 – 1986

NORTH PROPERTY LISTING(S)			
Address		Tenant	Years Listed
6601	Eubanks Street	Meridian	1999 – 2011
		Boorhem-Fields Inc.	1992 – 1995
		Address Not Found	1986
		Street Not Found	1979
6950	Eubanks Street	Multiple Tenants – Bellair Heating & Cooling, JSC Industries, Morgan Fence Co., B & S Cabinets and other similar businesses	1986 – 2011
		Street Not Found	1979
6958	Eubanks Street	Frisco Play Ball Batting Cages	2011
		Boss Willworks Inc., Williams Resources Inc.	2008
		Wood Products Inc.	1986 – 2005
		Street Not Found	1979
7850	5th Street	Green Supply Co. Inc.	1986 - 2011
		Address Not Found	1979
7990	5th Street	Address Not Found	1992 - 2011
		Circuit Fab Corp.	1986
		Address Not Found	1979
8142	5th Street	Address Not Found	2011
		Saber Machine Co. Inc.	1992 - 2008
		Address Not Found	1979 - 1986
7159	Hickory Street	Frisco ISD	2011
		Address Not Found	2005 - 2008
		Frisco ISD	1986 - 2002
		Address Not Found	1979
7275	Hickory Street	Foxhaven Apartments	1986 - 2011
		Address Not Found	1979

EAST PROPERTY LISTINGS			
Address		Tenant	Years Listed
Multiple addresses	Fossil Ridge Drive	Single Family Residences	2002 - 2011
		Street Not Found	1979 - 1999
Multiple addresses	Rimrock Circle	Single Family Residences	2002 - 2011
		Street Not Found	1979 - 1999
7500	Rolling Brook Drive	Single Family Residences (Stonebrook Village Apartments)	1999 - 2011
		Street Not Found	1979 - 1995
7501	Rolling Brook Drive	Address Not Found	2002 - 2011
		Single Family Residence	1999
		Street Not Found	1979 - 1995
6930	Parkwood Boulevard	Stokes Kathleen D	2011
		Frisco Pediatrics	2008
		Street/address Not Found	1979 - 2005
6960	Parkwood Boulevard	Locksmith, City Garage, Stonebridge Orthodontics	2011
		Frisco Oral Surgery	2008
		Street/address Not Found	1979 - 2005
7200	Stonebrook Parkway	Frisco Police Station	2008 - 2011
		Street/address Not Found	1979 - 2005
7315	Stonebrook Parkway	Address Not Found	2008 - 2011
		Charlie Morgan	2005
		Street/address Not Found	1979 - 2005
7380	Stonebrook Parkway	Lazy Paw Animal Hospital	2011
		Street/address Not Found	1979 - 2008
7450	Stonebrook Parkway	Parkview Senior Apartments	2011
		Alice Oconner	2008
		Street/address Not Found	1979 - 2005
7480	Stonebrook Parkway	Trent Learning Center	1999 - 2011
		Address Not Found	1979 - 1995
7500	Stonebrook Parkway	Office Building with Multiple Tenants – Allstate, Frisco Family Dentistry, Wise Orthodontics and other similar businesses	1999 - 2011
		Address Not Found	1979 - 1995
7600	Stonebrook Parkway	Not Available	2011
		Stonebrook Dental	2008
		Address Not Found	1979 - 2005

SOUTH PROPERTY LISTING(S)		
Address	Tenant	Years Listed
Vacant land and the Dallas North Tollway roadway system bounded the Site to the South.		

WEST PROPERTY LISTING(S)			
Address		Tenant	Years Listed
8000	Dallas Parkway	Multiple Tenants - American Locksmith, Convenience Food Systems, Deka Machine Engineering Inc. and other similar businesses	2002 – 2011
		Street Not Found	1979 – 1999
5750	Genesis Court	Office Building with Multiple Tenants – Del Mar Energy Inc., Lone Star Benefits, Solutions Tax & Bookkeeping and other similar businesses	2011
		Del Mar Energy Inc.	2008
		Address Not Found	2002 – 2005
		Street Not Found	1979 – 1999
5795	Genesis Court	Every Orphans Hope	2011
		Worldserve Ministries	2008
		PSI Extrusions	2002 – 2005
		Street Not Found	1979 – 1999
5798	Genesis Court	IBB Design Group	2011
		IBB Design Group, Celina Furniture Outlet Lic., Improve to Move	2008
		Address Not Found	2002 – 2005
		Street Not Found	1979 – 1999

Discussion

The Site consisted of vacant/agricultural land, Stewart Creek, tributaries of Stewart Creek, an intermittent pond, an intermittent natural spring, and residential structures since at least 1938. Residential structures were generally located on the northern and central portion of the Site. The northern residential structures were gone by 1984. The structures in the central portion were identified during the visual survey and were noted to be either dilapidated or in poor condition. Significant features identified during review of historical records for the Site are discussed as follows:

- The northern boundary of Tract A encroached within the limits of the former Frisco Lake. According to available historical records, the developers of the west-adjacent railroad dammed up Stewart Creek in the early 1900s to construct Frisco Lake to serve as a water supply for the steam locomotives. By 1958, Frisco Lake appeared dry due to possible filling and/or dam removal. No information was found during this assessment to determine what was used to fill in the lake. However, according to Mr. Eagan and to the best of his knowledge, the lake had silted up over time. Based on the interview with Mr. Eagan, the former Frisco Lake was not considered a REC in connection with the Site.

- Aerial photographs and topographic maps indicated that a gravel pit was located on the northwest portion of Tract A of the Site since at least 1938. By 1968, the gravel pit no longer appeared active. The 1972 aerial photograph depicted the former gravel pit area consisting of a rough terrain which was different from the surrounding area. By the 1984 aerial photograph, the former gravel pit appeared leveled with the surrounding vacant/agricultural land. During SWG's visual survey, the former gravel pit area was noted to be generally leveled. According to former Exide's representatives, the former gravel pit was relatively shallow and that soil was used to level the area. Exide representatives indicated that no solid waste or other debris were used as fill. Based on the information presented by Exide representatives, the adjacent former gravel pit was not considered a REC in connection with the Site.

- The 1938 aerial photograph depicted apparent stock ponds on the southwestern portion of the Site (Tract B). These ponds were no longer visible by the 1942 aerial photograph. An additional pond was noted in the 1968 aerial photograph in the northeastern portion of Tract B among vegetation. The location of this third pond corresponded to the location of an intermittent pond that was identified during the SWG's visual survey. It should be noted that the adjacent industrial activities associated with lead oxide manufacturing began in 1964. In 1970, secondary lead smelting activities began. As further discussed in Section 6.1, lead has been detected in areas surrounding the former Exide plant (including the Site), at concentrations in exceedance of the City of Frisco cleanup goal of 250 mg/Kg. The former and existing ponds are low lying areas where sediments could accumulate. Based on the adjacent industrial history and documented impact in the area, the former and existing ponds may present a potential environmental concern in connection with the Site.

- During the TCEQ inspection in May/June 2011, the inspector observed a berm (approximately 5,000 cubic feet) on the eastern portion of Tract A (west side of Exide's South Disposal Area). The berm was reportedly used as a shooting range for several years by the City of Frisco Police Department and was no longer in use. The inspector observed large amounts of untreated slag and battery chips in the berm. According to the inspector, the untreated slag and battery chips appeared to have originated from the former Exide facility's adjacent South Disposal Area. It should be noted that the figures attached to this TCEQ May/June 2011 inspection report depicted an additional berm area to the south of the South Disposal Area (north adjacent of Tract B). This area is depicted in Figure 3 in Appendix A.

  According to the regulatory files, several groundwater monitoring wells have been installed since 1990 in proximity of the shooting range berm and adjacent South Disposal Area (part of the former Exide facility). However, SWG noted that none of the wells were installed immediately down-gradient of the former shooting range berm. **Based on information from the TCEQ inspection and adjacent industrial history, the on-Site former shooting range berm presents a REC in connection with the Site.**

- A segment of South 5th Street has been present on-Site since at least 1938 and is currently an extension of Eagan Drive. The segment is located between Tract B and C. It is not known when this road was paved. SWG noted during the regulatory file review that during the TCEQ inspection in May/June 2011, Mr. James Messer, Environmental and Quality Control Manager for the former Exide facility, informed the TCEQ inspector that prior to promulgation of RCRA (1976), the City of Frisco used battery casings from the former Exide facility as road base throughout the City. However, according to Mr. Eagan, lead smelting did not begin until 1970 and South 5th Street was reportedly paved prior to 1970. In March and May 2012, PBW conducted surface soil sampling on-Site. The highest concentration of lead and cadmium detected was in Sample O-15, which was located along South 5th Street on Tract B. The detected lead and cadmium concentrations were 5,180 mg/Kg and 28.6 mg/Kg, respectively. Although cadmium was below the Residential Critical PCL, the detected lead concentration exceeded the City of Frisco cleanup goal of 250 mg/Kg. **Based on available information, the elevated concentration of lead**

detected along the 5th Street roadway presents a REC in connection with the Site.

- Based on available aerial photographs, land disturbance features were identified on Tracts B, C, and D of the Site. The 1938 aerial photograph depicted the land disturbance on Tracts C and D but it was no longer visible by 1958. The 1958 aerial photograph depicted land disturbance on the southwestern portion of Tract B and was no longer visible by the 1968 aerial photograph. The land disturbance areas were noted during the time that the former gravel pit on Tract A was visible in the aerial photographs. Additionally, the land disturbance features appeared consistent with the former gravel pit; therefore, it is possible that these land disturbance features were also former small borrow pits. No information was found during this assessment to determine the materials used to fill in these land disturbance features. To date, no assessments have been conducted on-Site to address potential impact from the land disturbance features on Tracts B, C, and D. Based on limited information regarding the land disturbance, presence of undocumented fill, and adjacent industrial history, the land disturbance feature on Tracts B, C, and D presents a potential environmental concern in connection with the Site.

- The 1984 aerial photograph depicted significant land disturbance activities in Tracts F, G, and J of the Site. The reason for the land disturbance is not known; however, it is possible that filling activities also took place in this area. Landfilling activities associated with the adjacent former Exide facility were taking place approximately 300 feet west-southwest of this land disturbance during the same time. Additionally, as noted in Section 3.7, undocumented fill was identified during SWG's visual survey in Tracts G and J among vegetation. Scattered battery chips were identified in proximity of the undocumented fill. Mr. Eagan did not have knowledge of the fill's origin. No information was found during this assessment to determine the materials used to fill in these land disturbance features. To date, no assessments have been conducted on-Site to address potential impact from the land disturbance features on Tracts F, G, and J. Based on limited information regarding the land disturbance, presence of undocumented fill, and adjacent industrial history, the land disturbance features on Tracts F, G, and J present a potential environmental concern in connection with the Site.

  In addition, it should be noted that the Site has a history of agricultural activities dating back to at least 1938. Based on available historical information, agricultural activities in the City of Frisco primarily included cotton, corn, wheat and hay. No evidence of areas on-Site where bulk chemical storage associated with agricultural activities may have been stored or mixed were identified from review of aerial photographs. However, it should be noted that the use of pesticides and herbicides are common practices associated with agricultural activities. In addition, the use of historical arsenic-based pesticides and defoliants associated with cotton farming is known to result in elevated arsenic levels in surface soil. No records were found for the Site at the TCEQ that indicated any environmental response or assessment in connection with historical agricultural activities.

<u>Central</u>
The areas located centrally adjacent of the Site consisted of vacant/agricultural land, the former Frisco Lake, Stewart Creek, and a tributary of Stewart Creek since at least 1938.

In 1964, the GNB facility (currently known as former Exide facility) was constructed. The former Exide facility made several modifications and additions to its facility since 1964. The former Exide facility was identified during the regulatory database review and is further discussed in Section 6.1. It should be noted that the aerial photographs depicted apparent construction of the adjacent Class 2 Non-Hazardous Landfill in the early 1990s. The landfill was completed sometime between 1995 and 2004. This landfill is owned and operated by former Exide facility and is also discussed in Section 6.1.

North

According to historical records, the areas to the north of the Site consisted of vacant/agricultural land and single-family residences since at least 1938. By 1984, commercial/industrial developments began emerging to the north of the Site. By 1995, a batch plant facility (currently known as Martin Marietta Materials) for sand, rock and gravel was constructed north-adjacent of the Site (Tract M). Three north-adjacent businesses of environmental concern were identified during the historical review and included Green Supply (7850 5th Street), Circuit Fab (7990 5th Street), and the Martin Marietta Materials facility (6601 Eubanks St.). These businesses were identified during the regulatory databases and are further discussed in Section 6.1.

In addition, SWG identified a "Saber Machine Company" that was located at 8142 5th Street, approximately 275 feet north-northwest of the Site (Tract J). The city directory listings identified the business from 1992 to 2008. This location was occupied by LD Automotive, an automotive repair shop that initiated operations in the Fall of 2011. SWG contacted the nearby business, Green Supply, which has been in business in the area since 1985 to inquire about the former Saber Machine Company. SWG spoke with Mr. Sam Hay, who indicated that Saber Machine Company was in business since 1985 and manufactured machine fittings. According to Mr. Hay, the facility could manufacture machine parts by following drawings provided by its customers. Mr. Hay indicated he had never been inside the shop; however, the owner of Saber Machine Company visited Green Supply from time to time. Mr. Hay indicated that the owner passed away approximately eight to ten years ago and the company went out of business. The former Saber Machine Company was not identified during the regulatory database review. SWG contacted the TCEQ via letter and was informed that no files were found for this location (8142 5th Street). Based on the lack of documented releases and lack of information from the regulatory databases or agency indicating the facility handled/stored petroleum products and/or hazardous substances, the former Saber Machine Company does not present a REC in connection with the Site. Regarding the present-day LD Automotive, this business has been in operation for less than a year and there are no documented releases in connection with the facility. Therefore, LD Automotive does not present a REC in connection with the Site.

East

The east-adjacent areas generally consisted vacant/agricultural land, a segment of Stewart Creek, and tributaries of Stewart Creek since at least 1938. Since 1995, commercial/residential properties and associated roads/driveways began emerging to the east of Site. The adjacent areas to the east of the Site do not present a REC in connection with the Site.

South
Historical activities to the south generally consisted of vacant/agricultural land, a tributary of Stewart Creek, and an extension of 5th Street since at least 1938. By 2004, roads and residential properties began developing to the south of the Site and have increased in density since. The adjacent areas to the south of the Site do not present a REC in connection with the Site.

West
Since at least 1938, the area west of the Site consisted of the adjacent Saint Louis – San Francisco railroad followed by a vacant wooded land, a segment of Stewart Creek, and vacant/agricultural land. In the early 1970's, the former SCWWTP was constructed to the west. The plant remained active until late 1990s. Commercial developments to the west began emerging in the 2000s. SCWWTP was identified during the regulatory database review and is further discussed in Section 6.1.

5.5 Historical Lien and Title Information

Tract A is part of a larger parcel of land identified by the CCAD with identification number 1874172.

- EDR provided SWG with the environmental lien search report dated October 8, 2012. According to the EDR report, no environmental liens or activity and use limitations (AULs) were identified for this parcel.

- EDR provided SWG with the chain-of-title report dated May 17, 2012. According to the EDR title report, individuals owned the Site from at least 1930 to approximately 1989 when title became vested in GNB, Inc. It should be noted that GNB, Inc. was acquired by Exide in 2000.

Tracts B and C are identified by the CCAD with identification numbers 1991360 and 1991359, respectively.

- EDR provided SWG with the environmental lien search report dated October 8, 2012. According to the EDR report, no environmental liens were identified.

- EDR provided SWG with the chain-of-title report dated May 17, 2012. According to the EDR title report, individuals owned the Site from at least 1938 to approximately 1952 when title became vested in the City of Frisco. An individual took title in 1972 until 1991 when First Gibraltar Bank, FSB became the owner. GNB, Inc. became the owner in 1992.

  The title and lien reports included a *Special Warranty Deed with Restrictive Covenant* documented dated May 31, 1993. In the document, it was noted that the "Grantee acknowledges and agrees with Grantor that Grantee, and its successors and assigns, shall not use the Property for any of the following purposes (collectively, the "Restrictions"): a) manufacturing processing, cooking or handling of any food, beverage or consumable produce; b) lodging, dwelling, food services, beverage services or vending; or C) apartment, motel, hotel, restaurant, or residential purposes. Grantee, for itself and its successors and assigns, agrees with Grantor that the foregoing Restrictions are covenants running with the land and shall

be in effect until the plant on the property to the north and west of the Property owned by GNB, Incorporated ceases operation and such plant and its owners have complied with all applicable local state, and federal requirements, if any, relating to the closure of such plant and the cleanup of the land on which such plant is located and any adjacent land, including the Property. The Restrictions shall be binding on all parties having any right, title or interest in or to the Property or any part thereof, and their heirs, executors, legal representatives, successors, and assigns."

Tracts D and E are identified by the CCAD with identification number 957619 and 957600, respectively.

- EDR provided SWG with the environmental lien search report dated October 8, 2012. According to the EDR report, no environmental liens were identified.

- EDR provided SWG with the chain-of-title report dated May 17, 2012. According to the EDR title report, individuals, trusts, and banks owned the Site from at least 1935 to approximately 1992 when title became vested in GNB, Inc.

  The title and lien reports included a *Special Warranty Deed with Restrictive Covenant* documented dated May 31, 1993. In the document, it was noted that the "Grantee acknowledges and agrees with Grantor that Grantee, and its successors and assigns, shall not use the Property for any of the following purposes (collectively, the "Restrictions"): a) manufacturing processing, cooking or handling of any food, beverage or consumable produce; b) lodging, dwelling, food services, beverage services or vending; or C) apartment, motel, hotel, restaurant, or residential purposes. Grantee, for itself and its successors and assigns, agrees with Grantor that the foregoing Restrictions are covenants running with the land and shall be in effect until the plant on the property to the north and west of the Property owned by GNB, Incorporated ceases operation and such plant and its owners have complied with all applicable local state, and federal requirements, if any, relating to the closure of such plant and the cleanup of the land on which such plant is located and any adjacent land, including the Property. The Restrictions shall be binding on all parties having any right, title or interest in or to the Property or any part thereof, and their heirs, executors, legal representatives, successors, and assigns."

Tract F is identified by the CCAD with identification number 2138104.

- EDR provided SWG with the environmental lien search report dated October 8, 2012. According to the EDR report, no environmental liens or AULs were identified for this parcel.

- EDR provided SWG with the chain-of-title report dated May 17, 2012. According to the EDR title report, individuals owned the Site from at least 1931 to approximately 1948 when title became vested in the City of Frisco. A trust took title in 1970 until 2001 when Exide Corporation became the owner.

Tract G is identified by the CCAD with identification number 957593.

- EDR provided SWG with the environmental lien search report dated October 8, 2012. According to the EDR report, no environmental liens or AULs were identified for this parcel.

- EDR provided SWG with the chain-of-title report dated May 17, 2012. According to the EDR title report, individuals owned the Site from at least 1939 to approximately 1951 when title became vested in the City of Frisco. A trust took title in 1968 until 1983 when Gould, Inc. became the owner.

Tract H is identified by the CCAD with identification number 1963622.

- EDR provided SWG with the environmental lien search report dated October 8, 2012. According to the EDR report, no environmental liens were identified. With regards to AULs, SWG noted the following in the deed document: "Subject to the restriction that, as part of the consideration for this Deed, the said land and property, or any part thereof, shall not be used for any manufacturing, processing, cooking, or handling of any food, beverage, or other consumable product, nor shall the said land and property, or any part thereof, be used for lodging, dwelling, or food or beverage services or vending (which includes a prohibition against uses such as apartment, motel, hotel, restaurant or residential); provided that any breach of the foregoing restriction shall cause irreparable harm and injury entitling the Grantor, its successors, or assigns, to injunctive relief."

- EDR provided SWG with the chain-of-title report dated May 17, 2012. According to the EDR title report, individuals owned the Site from at least 1932 to approximately 1993 when title became vested in GNB, Inc.

Tract I is identified by the CCAD with identification number 957502.

- EDR provided SWG with the environmental lien search report dated October 8, 2012. According to the EDR report, no environmental liens were identified. With regards to AULs, SWG noted the following in the deed document: "Subject to the restriction that, as part of the consideration for this Deed, the said land and property, or any part thereof, shall not be used for any manufacturing, processing, cooking, or handling of any food, beverage, or other consumable product, nor shall the said land and property, or any part thereof, be used for lodging, dwelling, or food or beverage services or vending (which includes a prohibition against uses such as apartment, motel, hotel, restaurant or residential); provided that any breach of the foregoing restriction shall cause irreparable harm and injury entitling the Grantor, its successors, or assigns, to injunctive relief."

- EDR provided SWG with the chain-of-title report dated May 17, 2012. According to the EDR title report, individuals owned the Site from at least 1938 to approximately 1948 when title became vested in the City of Frisco. A trust took title in 1970 until 2001 when Exide Corporation became the owner.

Tract J is identified by the CCAD with identification number 2138103.

- EDR provided SWG with the environmental lien search report dated October 8, 2012. According to the EDR report, no environmental liens or AULs were identified for this parcel.

- EDR provided SWG with the chain-of-title report dated May 17, 2012. According to the EDR title report, GNB, Inc. owned the Site. EDR report indicated the county records were searched back to 1940 but no deed was found.

  Although the deed was not found, the City of Frisco provided the title documents which included the *Agreement Between the City of Frisco, Texas and GNB Battery Technologies Inc. and J.W. "Bill" Christie Testamentary Trust and Christie Real Estate Co., Ltd..,* dated May 1994. This document referenced the dedication of Parkwood Drive, construction of a private entrance for GNB, and the abandonment of 5th Street. As part of the document, Tract J parcel description was included as an "Exhibit". In addition, the lien search report above for Tract J included a *Special Warranty Deed with Vendor's Lien* dated July 31, 1996, The Exhibit "A" for this document referenced Tract J as part of another tract of land described in *Special Warranty Deed (No. 94-0040129),* dated June 18, 1993. This deed was obtained from the CCAD and reviewed. The Agreement (1994), Special Warranty Deed with Vendor's Lien (1996), and Special Warranty Deed (1993) did not identify liens or AULs for this parcel.

Tract K is identified by the CCAD with identification number 2002351.

- EDR provided SWG with the environmental lien search report dated October 8, 2012. According to the EDR report, no environmental liens or AULs were identified for this parcel.

- EDR provided SWG with the chain-of-title report dated May 17, 2012. According to the EDR title report, individuals owned the Site from at least 1928 to approximately 1996 when title became vested in GNB, Inc.

Tract L is identified by the CCAD with identification number 2002352.

- EDR provided SWG with the environmental lien search report dated October 8, 2012. According to the EDR report, no environmental liens or AULs were identified for this parcel.

- EDR provided SWG with the chain-of-title report dated May 17, 2012. According to the EDR title report, individuals owned the Site from at least 1939 to approximately 1996 when title became vested in GNB, Inc.

Tract M is part of a larger single parcel of land identified by the CCAD with identification number 957511.

- EDR provided SWG with the environmental lien search report dated April 3, 2012. According to the EDR report, no environmental liens were identified. With regards to AULs, SWG noted the following in the deed document: "Pursuant 31 Texas Administrative Code, Section 335.5(c), of the Rules of the Texas Department of

Water Resources, notice is hereby given that a portion of the property described in this deed has been used to managed hazardous waste and that the use of such portion is restricted under the Rules of the Texas Department of Water Resources pertaining to industrial solid waste management."

- EDR provided SWG with the chain-of-title report dated May 17, 2012. According to the EDR title report, individuals owned the Site from at least 1930 to approximately 1959 when title became vested in the City of Frisco. Gould Inc. took title in 1970 followed by GNB Batteries, Inc. in 1983 (current owner).

The title history documentation and environmental lien search report are included in Appendix H.

5.6 Previous Environmental Reports

<u>The following reports were provided by the Client:</u>

SWG has prepared Figure 3 in Appendix A to depict the approximate locations of the on-Site monitoring wells that were identified in the regulatory files for the Exide facility. The figures can be used as a reference to determine the relationship (distances, etc.) between the Site and where maximum concentrations of chemicals of concern (COCs) were identified during the investigations. During the previous investigations, the analyses that were conducted were limited to "select COCs", primarily lead and cadmium; however, SWG's review of available regulatory information (e.g., inspections and notice of registrations) for the former Exide facility identified other petroleum products and/or hazardous substances such as hydraulic fluid, solvents, and fuel. Groundwater analytical results were not identified for all wells and it appears that the wells were sampled at various times by different consultants. SWG did not include other sampling points (e.g., surface soil, sediment, etc.) that were not converted into monitoring wells because of the amount of sampling activities that were conducted to evaluate potential impacts from the former Exide facility to the surrounding areas, including the Site. However, SWG included excerpts (text and associated figures) from the previous investigation reports in Appendix F for reference.

It should also be noted that regulatory standards changed over time and the discussions below are related to regulatory standards at the time of the sampling events. Based on a Tier 2 PCL calculation for total lead, assuming clayey soil, the Tier 2 PCL for lead would exceed 250 mg/Kg; therefore, the Residential Critical PCL for lead in surface soil will default to the cleanup goal of 250 mg/Kg that was established by the City of Frisco. Based on SWG's review of available regulatory files for the adjacent former Exide facility, it is presumed that the Site will meet the Class 3 groundwater resource classification. SWG compared the detected cadmium concentrations to the TCEQ TRRP (30 TAC Chapter 350) Tier 1 Residential Critical PCLs for a 30-acre source area considering a Class 3 groundwater designation. The Critical PCL for cadmium is the Tier 1 residential total soil combined (^{Total} Soil $_{Comb}$) PCL of 52 mg/Kg. If Class 3 groundwater designation is not supported by additional investigation results or if the TCEQ concurrence is not received, the applicable Tier 1 Residential Critical PCLs could change. For the purpose of this Phase I ESA, the Residential Critical PCLs for lead and cadmium in surface soil are 250 mg/Kg and 52 mg/Kg, respectively.

Groundwater Investigation, Frisco, Texas Plant, prepared by D&M dated August 29, 1983.

- The stated objective of the investigation was to evaluate hydrogeologic conditions in the disposal areas and to evaluate the degree, if any, of lead contamination in the groundwater.

- Drainage at the facility reportedly was towards the two branches of Stewart Creek which join approximately 600 feet west of the plant buildings. Stewart Creek flows off the plant property generally to the west and turns southwesterly toward the Garza-Little Elm Reservoir located approximately five miles downstream of the plant.

- During this assessment, seven soil borings that were converted to monitoring wells (B1 through B7) were drilled at the facility in proximity of the North and South Disposal Areas. Monitoring wells B1 through B4 were installed in proximity of the South Disposal Area and are located within 500 feet east and cross- to up-gradient of the Site. The nearest, monitoring well B4, was approximately 50 feet east of Tract A. Monitoring wells B5 through B7 were installed in proximity of the North Disposal Area and are located at least 300 feet east and down-gradient of the Site. The depths of these wells ranged from 20 to 61 feet bgs. In addition, D&M installed one shallow well (B1S) adjacent to B1 to intercept the perched groundwater table at the bedrock surface in that location. Monitoring well B1S was installed to a depth of 10 feet bgs.

    - In B1, approximately 1.5 feet of silty gravel was noted above the bedrock. Additionally, 5.5 feet of limestone belonging to the Austin Chalk formation was present above the Eagle Ford shale. The limestone was medium gray in color, moderately weathered and fractured, and fossiliferous. In B2, B3, and B4, the unconsolidated material consisted of yellowish brown to brownish gray silty clay with a trace of sand and gravel. In B5 and B7, layers of gray to brown clayey sand were present above the bedrock surface and were overlain by finer silty clay deposits. In B6, five feet of fill overlying two feet of silty clay was noted.

- According to D&M, groundwater within the main plant area moves towards the branches of Stewart Creek. The groundwater north of an approximate line corresponding to the railroad spur is moving to the northwest towards the northern tributary of Stewart Creek, whereas the groundwater south of the spur has an apparent flow direction to the southwest towards the southern tributary of Stewart Creek.

- Groundwater samples were collected from B1 through B7 and not B1S. The samples were analyzed for arsenic, cadmium, chromium, lead, mercury, nickel, zinc, conductivity, pH, sulfate, and total dissolved solids (TDS). D&M compared the analytical results to the Texas Department of Health primary and secondary water quality standards established at that time. The Texas primary standards are established for health reasons and the secondary standards pertained to the aesthetics (taste, color, and smell) of the water.

- In reference to the primary standards, cadmium concentrations in B2 (0.017 mg/L) and B3 (0.015 mg/L) exceeded its standard of 0.01 mg/L. Lead exceeded the primary standard of 0.05 mg/L in samples B2 (0.13 mg/L) and B6 (0.07 mg/L). No other exceedances of the primary standard were noted.

- In reference to the secondary standards, sulfate concentrations in B2 (1,200 mg/L), B6 (1,010 mg/L), and B7 (906 mg/L) exceeded its standard of 300 mg/L. In B1, TDS exceeded its secondary standard of 1,000 mg/L. No other exceedances of the secondary standard were noted.

D&M concluded, "Based on these results, it appears that the impact of the on-site disposal areas on the local groundwater is minimal. However, we feel some additional actions should be undertaken to complete the hydrogeologic assessment performed during this investigation. As stated in the report, the groundwater levels in several wells have not recovered to static levels. Therefore, water level readings should be made in all of the site monitoring wells for a period of six months to a year. When static levels have been reached in all the wells, the potentiometric surface map should be revised to determine if there are significant changes in flow direction as a result of the new data. Also, the positioning and depths of the present wells should be examined critically at the time and modifications made to the system to assure representative monitoring of the disposal facilities. In particular, once static water level conditions are reached in wells B1, B3, and B4, shallower wells intercepting the groundwater table should be installed adjacent to each of these wells to provide water quality data representative of the upper groundwater flow system. We also feel that additional groundwater samples should be collected from all wells except B1, B3, and B4 to evaluate chemical variations with time. Monitoring wells B1, B3, and B4 should not be sampled so that these wells can recover to static conditions."

Water and Sediment Tests, GNB Lead Plant, Frisco, Texas, prepared by Southwestern Laboratories (SWL) dated February 21, 1986.

- On January 9, 1986, SWL collected 25 creek water samples, 24 stream sediment samples, and four creek bank samples from 28 locations. Based on the provided maps, the sampling points were located along the segment of Stewart Creek between 5th Street and the railroad to the west of the plant and along the segment of the tributary between 5th Street and where the tributary meets the creek. It should be noted that the soil and sediment samples were analyzed by Extraction Procedure Toxicity (EPTox) for lead and cadmium.

- None of the 25 creek water samples contained cadmium or lead concentrations above 0.05 mg/L or 1.3 mg/L, respectively.

- In the stream sediment samples, the maximum cadmium and lead concentrations detected were 3.63 mg/L (Sample ID 55-12; approximately 275 feet northeast of the Tract A) and 23.8 mg/L (Sample ID 55-18; approximately 200 feet southwest north of Tract M), respectively. Both locations were downstream of the former Exide plant.

- The bank samples were analyzed for cadmium and lead in soil and water. In water, neither cadmium nor lead exceeded a concentration of 0.01 mg/L. In soil, the maximum cadmium and lead concentrations detected were 30 mg/Kg and 2,290

mg/Kg, respectively. Both results appeared to originate from Sample No. 4 which appeared to correspond to a location south of the plant and approximately 360 feet east-northeast of Tract A.

Several recommendations were made by SWL including excavation of sediments from the stream bed in various locations; determination of sources of contaminated sediment material; and establish practical measures to limit and/or eliminate them from entering the stream in the future.

Stream Sediment Samples, GNB, Inc. Plant, Frisco, Texas, prepared by SWL dated May 21, 1986.

- The sampling activities referenced in this letter report were conducted after the dredging activities of Stewart Creek were completed.

- On April 24, 1986, 12 additional sediment samples were collected from Stewart Creek and sampled by EPTox methods. The maximum cadmium and lead concentrations detected were 0.72 mg/L and 33.6 mg/L, respectively. Both results appeared to originate from Sample No. 1 which appeared to correspond to a location south of the plant and approximately 215 feet north-northeast of Tract A.

- Based on information presented in this letter, it appears that dredging activities followed the recommendations made in the February 1986 SWL letter report.

Based on their findings, SWL suggested "re-dredging Stewart Creek from about fifty (50) feet east of sample location #1 to approximately fifty (50) feet west of sample location #2." It should be noted that the sampling locations were located down- to cross-gradient of the Site.

Stream Sediment Test, GNB, Inc. Plant, Frisco, Texas, prepared by SWL dated June 13, 1986.

- On May 23, 1986, SWL sampled 19 points from the perimeter of the Stewart Creek dredging piles. Four additional samples were collected from Stewart Creek. It should be noted that the dredging piles were located approximately 400 feet northeast and cross-gradient of the Site (Tract A).

- The maximum cadmium and lead concentrations detected in the dredging piles were 0.71 mg/L (Sample No. 1); and 11.7 mg/L (Sample No. 8), respectively.

- The four additional samples from Stewart Creek reported maximum cadmium and lead concentrations at 0.21 mg/L (Sample No. 22) and 8.7 mg/L (Sample No. 21), respectively.

- The results of this investigation were compared to the EPA Specification's maximum acceptable concentrations of leachable lead and cadmium which are 5 mg/L and 1 mg/L, respectively.

- Based on information presented in this letter, it appears that re-dredging activities followed the recommendations made in the May 1986 SWL letter report.

Stream Sediment Tests, GNB, Inc. Plant, Frisco, Texas, prepared by SWL dated July 29, 1986.

- On July 8, 1986, four sediment samples were collected from Stewart Creek (beginning southwest from the plant) following a third dredging event.

- The maximum cadmium and lead concentrations detected were 0.08 mg/L and 3.8 mg/L, respectively.

SWL concluded, "The four sediment sample tests indicated that the current EPA specification for lead (5 mg/L) and cadmium (1 mg/L) were not exceeded."

RCRA Facility Assessment, Facility Investigation Workplan, GNB Incorporated, Frisco, Texas, prepared by Lake dated August 23, 1988.

- This workplan was developed as the first phase in fulfillment of Section VIII of the Hazardous Waste Facility Permit No. HW-50206 issued May 25, 1988. The purpose of the facility investigation was to collect sufficient data to assess the facility by determining the nature and extent of any contamination possibly resulting from activities conducted at the facility.

- According to Lake, soil samples taken during the cleanup of closed units at the facility indicated the presence of lead and cadmium. Groundwater sampling conducted by GNB, Inc. from the on-site wells did not detect concentrations of lead and cadmium in excess of the EPA Interim Primary Drinking Water Standards.

- The Lake workplan referenced the 1983 D&M hydrogeologic investigation (previously summarized). The hydrogeologic investigation consisted of the installation of eight groundwater-monitoring wells (only seven were sampled). In 1987, SWL installed two additional groundwater-monitoring wells (B-8 and B-9) to further evaluate groundwater conditions.

- The Solid Waste Management Units (SWMUs) are as follows: Battery Storage Area (No. 1), Raw Materials Storage Area (No. 2); Slag Landfill (No. 4); North Disposal Area (No. 5); South Disposal Area (No. 6), Stewart Creek (No. 9), Old Drum Storage Area (No. 10); and Stewart Creek Sediment Dredging Waste Pile (No. 11); Product (rubber chips) Waste Pile (No. 7). It should be noted that the parenthetical numbers were used by the TCEQ in their Release Assessment Investigation dated November 16, 1987. A tenth SWMU was identified in 1988 during construction of the containment wall when residue of an earlier oil leak was encountered.

- The Lake workplan proposed soil and hydrogeologic investigation at the former Exide facility.

RCRA Facility Investigation (RFI), GNB Incorporated, Frisco, Texas, prepared by Lake dated May 8, 1991.

- The purpose of the RFI was to determine whether hazardous constituents listed in 40 CFR Part 261, Appendix VII have been released into the environment from the SWMUs listed in Section VIII of the permit.

- The TWC approved the workplan for this RFI on February 6, 1990. The workplan presented a strategy for investigating the facility's SWMUs to determine the extent of possible contaminants from these units. The investigation included sampling the sediment, surface water, groundwater, surface soil, and subsurface soil.

- The former Exide facility was known as GNB, Inc. (GNB) during Lake's assessment. According to Lake, GNB implemented an environmental improvement program that included the construction of facilities to capture, store, and treat all stormwater runoff for the plant site; cleanup and/or closure of the various process units including the drum storage area, the product waste pile, and the old battery storage area; the voluntary installation of nine on-site monitoring wells and initiation of periodic sampling procedures; dredging and disposal of the sediment from Stewart Creek; and upgrade of the wastewater treatment plant.

  Lake indicated that the operating permit specifies nine SWMUs. Four of the units are landfills, four are storage areas, and one is Stewart Creek. Prior to this RFI, GNB performed certified closures on four of the nine SWMUs. The North and South Disposal landfills were closed prior to 1979 but required boundary delineation under the permit stipulations. Three of the units, the slag landfill, raw materials storage area, and Stewart Creek were not closed as of the date of the 1991 report. Lake noted that in the Spring of 1988, a tenth SWMU was discovered. The tenth SWMU was an oil spill.

- The objectives of this RFI were as follows: determine the size and extent of the landfills; determine the extent of any potential soil and water contamination around the SWMUs identified in the permit; determine background concentrations; further define the groundwater flow pattern; collect sufficient data to evaluate the subsurface soil and rock strata; define the horizontal and vertical extent of any groundwater contamination; determine the extent of any contamination along Stewart Creek; determine the hydrogeologic relation between Stewart Creek and the groundwater regime.

  For the purpose of designing a groundwater-monitoring system, the SWMUs were categorized into four Waste Management Areas (WMAs). WMA 1 consisted of the North Disposal Area, Slag Landfill, and sediment waste pile. WMA 2 consisted of the Raw Material Storage Area, Old Drum Storage Area, Product Waste Pile, Battery Storage Area, and the oil spill. WMA 3 consisted of the South Disposal Area. WMA 4 consisted of Stewart Creek.

- The first part of the assessment was to conduct a soil investigation (surface and subsurface) to determine the horizontal and vertical extent of contamination, if any, that was associated with the four WMAs. The soil samples were collected at zero to six inch, six to 12 inch, 12 to 18 inch, five feet, and at five-foot intervals until

groundwater was encountered. A total of 197 samples were collected from 26 locations for analysis of pH, lead, and cadmium. Selected samples were analyzed for TPH and EPTox for lead.

The maximum cadmium concentrations in the zero to six inch, six to 12 inch, 12 to 18 inch, 18 to 24 inch, five feet, and ten feet intervals were 8.10 mg/Kg (Sample ID No. MW17-SB-001), 4.90 mg/Kg (Sample ID No. B1N-SB-002), 5.30 mg/Kg (Sample ID No. B1N-SB-003), 3.60 mg/Kg (Sample ID No. MW10-SB-003A), 4.50 mg/Kg (Sample ID No. B1N-SB-004), 4.30 mg/Kg (Sample ID No. B5N-SB-005), respectively. At five-foot intervals from 15 feet to 265 feet bgs, the highest cadmium concentration was reported at 4.50 mg/Kg at 20 feet bgs (Sample ID No. MW13-SB-007).

The maximum lead concentrations in the zero to six inch, six to 12 inch, 12 to 18 inch, 18 to 24 inch, five feet, and ten feet intervals were 12,100 mg/Kg (Sample ID No. BS3-SB-001B), 584 mg/Kg (Sample ID No. MW10-SB-002B), 340 mg/Kg (Sample ID No. P1-SB-003), 52 mg/Kg (Sample ID No. BS-6-004), 46 mg/Kg (Sample ID Nos. B7N-SB-004 and MW16S-SB-004), and 134 mg/Kg (Sample ID No. MW18-SB-005), respectively. At five-foot intervals from 15 feet to 265 feet bgs, the highest cadmium concentration was reported at 50 mg/Kg at 20 feet bgs (Sample ID No. MW13-SB-007).

The TPH concentrations detected in the samples (up to 40 feet bgs) were all below the detection limit of 20 mg/Kg. The maximum concentrations for EP toxicity lead were 41 mg/L (Sample ID. No. BS3-SB-001B), 1.0 mg/L (BS1-SB-001B), 0.5 mg/L (Sample ID No. B7N-SB-003B) in the zero to six inch, six inch to twelve inch, and 12 to 18 inch intervals, respectively.

- The second part of the investigation was to determine the extent of impact associated with the fuel oil (possibly diesel) from WMA 2. Three groundwater and five soil samples were collected during this assessment. The sampling points were located at least 300 feet of the Site (Tract A).

  All three groundwater samples were analyzed for TPH and reported concentrations were below 2.0 mg/L. A fourth sample was attempted from location D-2 but not sampled due to insufficient water.

  The five soil samples were collected and analyzed for TPH. Of the five, one soil sample (DS-1) was collected at six feet bgs and reported a TPH concentration of 30 mg/Kg. The remaining four samples were collected at 12 feet bgs and reported TPH concentrations ranging from <30 mg/Kg to 50 mg/Kg.

- The third part of the assessment consisted of the hydrogeologic investigation which was designed to evaluate groundwater flow and pattern, determine uppermost aquifer beneath the WMAs; assist in developing geologic sections of the area; determine horizontal and vertical extent of any contamination at the WMAs; determine the hydraulic conductivity; determine background groundwater contaminant concentrations; and determine if any release to soil or groundwater had occurred from the units listed in the permit. It should be noted that during this investigation, there reportedly were ten existing groundwater monitoring wells that were decommissioned. Seventeen new wells and two piezometer monitoring wells

were installed during this investigation. Of these, one monitoring well (MW16) was installed to a depth of 265 feet to characterize the aquifer system. MW16 was installed north of the existing stormwater retention pond between Stewart Creek and the railroad spur. It should be noted that the maximum contaminant levels (MCLs) used for comparing the analytical results for lead and cadmium were 0.05 mg/L and 0.1 mg/L, respectively.

A total of four groundwater sampling events took place. Monitoring wells B4R and MW16 were dry in three of the four sampling events. The samples were analyzed for dissolved and total cadmium. Analytical results reported dissolved cadmium concentrations in all samples below the detection limit of 0.005 mg/L. Total cadmium was detected in two samples at 0.04 mg/L and 0.03 mg/L in MW12 and MW13, respectively. The remaining samples were below the laboratory method detection limit.

The groundwater samples were also sampled for dissolved and total lead. Dissolved lead concentrations ranged from below the detection limit of 0.001 mg/L to 0.028 mg/L in monitoring well B3R. However, none of the samples reportedly contained dissolved lead concentrations above the MCL of 0.05 mg/L. During the four sampling events, groundwater samples from four wells had concentrations above the MCL of 0.05 mg/L for total lead. These wells were B1N, B7N, MW12, and MW13. It should be noted that B1N was damaged during the fourth sampling event.

The pH concentration in the third sampling event (March 1991) ranged from 4.2 (well B2R) and 7.1 (well B9N). Five wells (B5N, B8N, MW12, MW13, and MW14) were sampled for TPH. The TPH concentrations in B8N, MW12, and MW14 were below 2.0 mg/L. The TPH concentrations in B5N and MW13 were detected at 2.0 mg/L.

- The fourth part of the investigation consisted of the surface water and sediment investigation. The purpose of this investigation was to determine the amount of contamination leaching from the sediment or surrounding soil that might migrate downstream and offsite. Eleven surface water and sixteen sediment samples were collected along Stewart Creek and its tributary. In the Stewart Creek segment, samples were collected from a point immediately east of Eagan Drive to the west-adjacent railroad. In the tributary segment, the samples were collected from a segment located approximately 775 feet north of Tract A. It should be noted that based on the included maps, it appears that the original tributary segment was located at least 100 feet southeast of the existing segment. According to the included maps, two of the sampling locations appeared to be located on Tract D of the Site. In the surface water sampling, the on-Site locations were marked as 10SW001 and 7SW001. In the sediment sampling, the on-Site locations were marked as 7-SS and 10-SS.

  In the surface water samples, total cadmium concentrations ranged from below detection limit (0.005 mg/L) to 0.190 mg/L (Sample ID No. 11SW001; at Eagan Drive and Stewart Creek intersection, west of Tract D). A dissolved cadmium concentration was detected in Sample ID No. 11SW001 at 0.03 mg/L; the remaining concentrations were below the detection limit. Total lead concentrations ranged from below a detection limit of 0.001 mg/L to 15.4 mg/L (Sample ID No. 11SW001) which exceeded the MCL of 0.05 mg/L. Dissolved lead concentrations ranged from

0.001 mg/L to 0.370 mg/L (Sample ID No. 11SW001). The pH concentrations ranged from 7.1 (Sample ID No. 11SW001) to 8.1 (Sample ID No. 6SW001).

In the sediment samples, cadmium concentrations ranged from 3.2 mg/Kg (Sample ID No. SS-6) to 97.60 mg/Kg (Sample ID No. SS-3). Lead concentrations ranged from 34 mg/Kg (Sample ID No. 5-SS-001) to 78,100 mg/Kg (Sample ID No. 3-SS-001). Only six samples were analyzed for pH. The pH concentrations ranged from 7.2 to 7.9 pH units. Additionally, six samples were analyzed for lead EP Toxicity. The concentrations detected ranged from 0.4 mg/L (Sample ID No. SS-8) to 3.7 mg/L (Sample ID No. SS-1)

- The fifth part of the investigation was designed to delineate the landfills. During this assessment, aerial photographs, interviews, and a drill rig were utilized to help determine the limits of the landfills.

  A total of 64 auger borings were advanced in the north landfill area (also known as the "North Disposal Area"). As a result, the estimated acreage of the North Disposal Area was calculated to be approximately 5.2 acres. Landfill materials in this area consisted of slag, construction debris, and normal household and industrial trash. Based on the two test pits that were installed, the depth of the North Disposal Area ranged from 10 to 20 feet bgs. Lake noted that "thinning of the cap was visible in some areas." In the south landfill (also known as the South Disposal Area), 30 auger borings were advanced. As a result, the estimated acreage of the South Disposal Area was calculated to be approximately 0.9 acre. No signs of erosion were noted. Based on a test pit that was installed, the depth of the South Disposal Area was approximately eight feet bgs. The materials encountered were rubber chips and blast furnace slag.

- Lake utilized their findings to establish a background concentration for lead and cadmium. Due to the elevated lead concentrations at the surface, Lake utilized the results of the 152 soil samples that were collected at depths greater than 12 inches for a more representative data. The mean lead concentration was calculated to be 31.8 mg/Kg. This method was also used to calculate the background for cadmium which resulted in a mean calculated value of 1.5 mg/Kg.

- Lake noted that the Stewart Creek dredging waste pile was closed in 1989 according to a TWC approved plan. The cover of this unit was noted to be in good condition.

- Groundwater gradient was measured to the west. According to Lake, there was no major aquifer located in the upper 250 feet beneath the facility. The surficial aquifer varied from 30 to 35 feet bgs across the Site.

Based on their findings, Lake recommended continued monitoring of the wells in WMA 1 to ensure the proper on-going management of the units. No further action was recommended for the Slag Landfill or the Stewart Creek Sediment Dredging Waste Pile which are in WMA 1. As for the North Disposal Landfill, Lake recommended that the cover of the landfill should be repaired where the cover was noted to be thinning.

In WMA 2, Lake also recommended continued monitoring of the wells surrounding this area. No further recommendations were noted for the Battery Storage Area, the Raw Material Storage Area, the Old Drum Storage Area, or the Product (rubber chip) Waste Pile in WMA 2. Regarding the diesel oil leak, Lake recommended that the retrieval sump should continue to be monitored and the oil should be removed as required.

In WMA 3, Lake recommended continued groundwater monitoring and repair of the South Disposal Landfill cover.

In WMA 4, Lake recommended resampling of Stewart Creek in areas where the detected levels of lead exceeded the action level of 1,000 mg/Kg in order to determine if additional actions are required.

Other general recommendations made by Lake were to prepare a soil sampling plan to determine the extent of contamination in the area east of the truck staging area entrance and west of the battery storage building where lead concentrations exceeded 1,000 mg/Kg. In addition, because surface water samples at the 5th Street culvert suggested a possible impact from runoff, additional investigation of the drainage channels along the road was recommended. Lastly, Lake recommended that truck staging activities along 5th street be restricted.

The appendices for this report included documents (e.g., correspondence, etc.) pertaining to the closure of the former battery storage area, North Disposal Area, South Disposal Area, old drum storage area, the Stewart Creek dredged sediment pile, and the product waste pile as follows:

- The former battery storage area housed palletized whole spent lead-acid batteries. Vehicle batteries in this area contained free liquids (battery acids). Closure activities generally consisted of removing the batteries, triple-rinsing the concrete pad, sampling the final rinse, and decontaminating the equipment. A copy of a closure certificate dated March 14, 1989 for the former battery storage area was included.

- A letter dated January 18, 1974 from the Texas Water Quality Board (TWQB) to Gould, Inc. indicated that an inspection by the agency on November 14, 1973 identified inadequate stormwater control at the facility. As a result, contaminated run-off from the battery plate storage area and the battery wrecking area entered Stewart Creek. The inspector also noted unauthorized cooling water discharge from the plant entering the creek. Solid waste disposal was identified to the south of the plant across the creek.

  A response from Gould, Inc. to the TWQB dated February 12, 1974 indicated Gould, Inc. would cease the use of the solid waste disposal area and proposed to cover and reseed to prevent stormwater runoff. Regarding the cooling water discharge, Gould, Inc. proposed to connect the discharge pipe to the City of Frisco sanitary sewer. Lastly, Gould, Inc. proposed to conduct an engineering study of the battery breaking area. (It should be noted that Gould, Inc. later proposed to install a cooling tower instead of the initial proposal to connect the pipe to the City's sanitary sewer.)

- The cleanup of the "old drum storage area" consisted of an excavation (approximately 12,800 square feet) down to four feet bgs and confirmation

sampling. A total of 470.41 tons of hazardous soil was loaded and transported to a disposal facility in Louisiana.

- A letter dated February 9, 1989 from Lake to the TWC discussed the closure plan for the sediment waste piles. The sediment material was classified as Class I Non-Hazardous waste. The sediment materials would be dispersed and compacted over an area of the existing closed North Disposal Area and capped with clay. This plan was approved by the TWC in a letter dated March 8, 1989.

- Hard rubber chips were stored in two locations at the facility – near the Battery Breaker Building on pavement and near a ramp leading over the railroad tracks (west of Battery Breaker Building). Closure of the battery chip piles generally consisted of removal of chips, triple rinse of the area, sampling of the final rinse water, and equipment decontamination.

- In a letter from Lake to the TWC dated April 29, 1988, Lake indicated that on April 11, 1988, diesel fuel was encountered in the subsurface while conducting site preparation for the installation of the stormwater containment wall. Based on interviews with employees and facility records, it was determined that the diesel was likely part of a leak which was discovered and remedied approximately five years earlier. The leak was reported to have occurred in the fittings of the underground line from the AST to a service island. The issue was resolved by removing the underground line from service and placing the fuel pump inside the secondary containment structure for the AST. Additional files on the diesel spill recovery indicated that the diesel was pumped into a mobile separation tank from where it was decanted and processed through the blast furnace. Separated water was processed through the wastewater treatment facility. From April 1988 to November 1990, approximately 687 gallons of oil was recovered.

- Additional information included well plugging reports, well logs, analytical reports, and the sieve and permeability analysis results.

Addendum to the RFI, GNB Incorporated, **prepared by Lake dated December 10, 1993.**

- The disclaimer on this letter report indicated that the "modifications outlined in this Addendum only address those items citied in the Notice of Deficiency Letter from the TWC dated August 26, 1993, as well as some typographical corrections on the amended pages. The information provided in this Addendum reflects those conditions at the facility on or before May 1991, when the RFI Report was submitted to the TWC for review. The modified text does not reflect the current conditions at the facility."

- Significant changes or additions to the May 1991 RFI report are as follows:

    - In regards to the eight wells installed by D&M and two wells by SWL that were installed prior to Lake's RFI, Lake concluded that these wells were unsuitable for assessing the groundwater quality of the surficial aquifer. The wells were screened across the water bearing zone such that the screen extended into the

underlying shale. During sampling events, the groundwater collected from each well did not represent the quality of water passing through the screen. The samples represented the groundwater that was collected in the bottom of the confined screen. Additionally, due to the swelling and contracting nature of the clay and shale surrounding the wells, the soil beneath the concrete slab contracted during the warm seasons and allowed surface run-off during storm events to migrate past the bentonite seals and into the wells. Due to the problems associated with these wells the groundwater data collected from these wells may not be characteristic of the true water quality in the surficial aquifer. Therefore, the groundwater data collected prior to the installation of the new wells proposed in the RFI Workplan are not considered reliable.

Miscellaneous Stained Soil Samples, GNB Battery Technology, **prepared by Delta Environmental Consultants (Delta), dated October 6, 1994.**

- Stained soil was identified adjacent to the flood wall near the GNB-Stewart Creek walking bridge. As a result, Delta collected three surface soil samples (MISOIL #1, #2, and #4) along the flood wall where water seepage through the wall had been observed. An additional sample, MISOIL #3 was collected from a similar unstained area.

- The soil samples were analyzed for ph, chloride, sulfate, calcium, and lead. The pH concentrations ranged from 6.32 (MISOIL #2) to 8.84 (MISOIL #4). Chloride concentrations ranged from 9.98 ug/g (MISOIL #3) to 2,350 ug/g (MISOIL #2). Sulfate concentrations ranged from 7.03 ug/g (MISOIL #4) to 175,000 ug/g (MISOIL #2). Calcium concentrations ranged from 37,000 ug/g (MISOIL #2) to 86,900 ug/g (MISOIL #4). Cadmium concentrations ranged from 4.6 ug/g (MISOIL #3) to 172 ug/g (MISOIL #2). Lead concentrations ranged from 299 ug/g (MISOIL #3) to 5,980 ug/g (MISOIL #1). It should be noted that the detected concentrations were reported in ug/g. This unit is equivalent to mg/Kg.

Stewart Creek Final Phase II RFI Report, GNB Technologies, Inc., **prepared by RMT/Jones & Neuse, Inc. (RMT) dated May 1996.**

- The purpose of this report was to provide the results of the investigation performed on Stewart Creek, to identify any additional areas of concern, and to recommend future actions to be performed on Stewart Creek.

- RMT's report referenced the Lake Phase I RFI discussed above. In addition, RMT referenced a 1994 Phase II RFI that was completed by Delta and a May 19, 1995 Sampling Event by RMT as follows:

  According to RMT, Delta (1994) collected 26 sediment samples along Stewart Creek to determine sediment background concentrations for lead and cadmium. The background levels were calculated to be 56.23 mg/Kg and 3.43 mg/Kg for lead and cadmium, respectively (based on a 95% confidence level of the background data). In addition to the background sampling, sediment samples were collected every 100 feet going downstream from the 5th Street and Stewart Creek intersection to a point approximately 7,700 feet downstream of 5th Street. The maximum lead concentration detected was 10,800 mg/Kg, which was located at the 1,100 feet

mark. The maximum cadmium concentration detected was 10.4 mg/Kg which was located at the 2,200 feet mark.

In regards to the 1995 investigation by RMT, three sediment samples were collected from Stewart Creek and analyzed for lead and cadmium. The samples were collected from approximately 1,000 feet downstream of the Bowman Road Bridge (Sample ID No. SD-109); in the area on the west side of the Bowman Road Bridge (Sample ID No. SD-10B); and in the stream north of the west-adjacent SCWWTP (Sample ID No. 111). The total lead concentrations detected for sample numbers SD-109, SD-110B, and SD-111 were 49 mg/Kg, 56 mg/Kg, and 63 mg/Kg, respectively. The total cadmium concentrations detected for sample numbers SD-109, SD-110B, and SD-111 were 3.3 mg/Kg, 3.4 mg/Kg, and 3.7 mg/Kg, respectively. Based on these results, it was proposed that the February 1996 sampling event be limited to the stream segment between the most downstream location sampled during the 1994 investigation (7,700 feet downstream of 5th Street) and the Stewart Creek West WWTP.

- The current investigation (February 1996) of Stewart Creek sampling activities were limited to the stream segment between the 7,700-foot marker and the Stewart Creek West WWTP. This sampling area was selected based on the results from the 1995 RMT investigation previously summarized.

- Concentrations of total lead during this investigation ranged from 9.6 mg/Kg to 25 mg/Kg, which were below the established background level of 56.23 mg/Kg.

- Concentrations of total cadmium during this investigation ranged from less than 0.70 mg/Kg to 6.9 mg/Kg, which were below the established background level of 56.23 mg/Kg. Four of these samples (from three locations – SD-06, SD-06-02, and SD-02-04) exhibited cadmium concentrations in excess of the established background concentration of 3.43 mg/Kg. RMT selected three sampling locations (SD-02-04, SD-04-01, and SD-06-03) based on the analytical results with the three samples having the lowest, middle, and highest cadmium concentrations for Synthetic Precipitation Leachate Procedure (SPLP) analysis. None of the samples contained detectable concentrations for the SPLP cadmium analyses.

Based on RMT's findings and previous investigation results, RMT concluded that remedial activities and stabilization should focus on the stream segment between GNB (currently the former Exide facility) and approximately 7,700 feet downstream of the Stewart Creek and 5th Street intersection.

Human Health and Ecological Risk Assessment and Corrective Measures Study Report, Stewart Creek, GNB Technologies, Inc., **prepared by JDC dated August 1998.**

- The Tier 1 ecological risk assessment was conducted to characterize the ecological setting at Stewart Creek and to assess the potential for impacts to ecological receptors from cadmium and lead detected in surface water and creek sediments in the Phase I and II RFIs. The human health risk assessment was conducted to assess the potential risk from human exposure to lead and cadmium. The objectives of the corrective measures study (CMS) were to evaluate the relative

abilities and effectiveness of potential remedies and identify a cost-effective remedial response action (or a combination of response actions) that will achieve the highest degree of long-term effectiveness.

- The JDC report referenced the May 1991 Phase I RFI by Lake, the 1994 Delta Phase II RFI, the May 1995 Phase II RFI by RMT and additional sampling by RMT in May 1995 and February 1996.

- The ecological assessment field activities were conducted by RMT on August 12, 1996. The focused study area was defined as the segment of Stewart Creek from 5th Street to a location 7,700 feet downstream. The ecological services included evaluations of general habitat, land use, identification of surface waters in the area, evaluation of fish and wildlife resources, evaluation of threatened and endangered species, evaluation for special habitats and other sensitive areas (e.g., wetlands), and evaluation of sensitive habitats and areas of concerns. JDC noted that based on the site visit and ecological characterization, aquatic organisms appear to be the ecological receptors of concern to cadmium and lead.

- JDC identified the following potential pathways of concern with respect to human exposure: incidental ingestion of sediments; inhalation of windblown particulates (sediments) when the creek was not flowing; and incidental ingestion of surface water.

- JDC noted that groundwater within the study area discharged into Stewart Creek and does not contain cadmium. Additionally, the groundwater does not contain total lead concentrations above the action level of 0.015 mg/L. Total lead in groundwater had not shown to contribute to surface water contamination based on the results of surface water samples. JDC indicated that it is unlikely that the lead concentrations in groundwater will contribute to future surface water contamination considering the levels of lead in groundwater compared to the levels of lead in sediment. According to JDC, GNB's permitted stormwater discharge was limited to a daily average limit of 0.17 mg/L of lead.

- Regarding the human health and ecological risk assessment, JDC concluded, "based on the ecological setting and the surface water data, it appears the levels of cadmium and lead in surface water do not pose a risk to ecological or human receptors. However, the constituents in sediments within GNB's facility boundaries pose a potential risk. Cadmium and/or lead levels at four locations downstream of the facility boundary may also pose an ecological risk. Lead levels in sediments at several locations within the facility may pose a risk to workers who are directly exposed to these stream sediments and windblown dust on a daily basis (note that GNB implements a rigorous employee safety program to prevent exposure to lead), but levels of cadmium and lead in sediments downstream of the facility were determined to meet acceptable levels for residential areas. Corrective measures are recommended for the 2,050-foot section of Stewart Creek within the GNB facility from a location 750 feet downstream from the former South 5th Street to the northwest facility boundary (approximately 2,800 feet downstream from the former South 5th Street) because the sediments in this portion of the creek consistently exceed the ecological screening levels for lead (218 mg/Kg) and/or cadmium (10 mg/Kg). The four locations downstream of the northwest facility boundary (6,500

feet, 7,000 feet, 7,200 feet, and 7,600 feet downstream of the former South 5th Street) that exceeded the sediment screening levels should also be evaluated."

- The conclusion above recommended that a Corrective Measures Study be conducted for Stewart Creek. The Corrective Measures Study was included in this report as follows:

  - JDC report discussed the advantages and disadvantages of the following corrective measure options: no remedial action (utilized as a baseline for comparison with other alternatives); blast furnace slag removal; in-situ stabilization; mechanical removal of soil and sediments; containment and dredging; and isolation barrier. Upon evaluating these options, JDC indicated that a combination of manual removal of the blast furnace slag and mechanical removal of soil and sediment were the most viable corrective measures to address contaminated sediments in Stewart Creek.

Phase II RFI Report, GNB Technologies, Inc., prepared by JDC dated August 1998.

- The scope of work in this RFI report addresses WMA 1, WMA 2, and WMA 3. Stewart Creek (WMA 4) was addressed as a separate project (See Human Health and Ecological Risk Assessment and Corrective Measures Study Report dated August 1998 above). The objective of this investigation was to develop and implement the necessary interim and final corrective measures for the WMAs.

- The Phase II RFI consisted of 1) shallow surface soil sampling (from zero to six inches) at the unpaved area east of the truck staging area and the area adjacent to the monitoring well B7R on June 4, 1998, and 2) a soil boring program at the railroad spur, the area adjacent to B7R (replaced B7N in 1993), and the South Disposal Area on June 18, 1998 to collect surface and subsurface soil samples to determine the full extent of the contamination. Soil sampling at these areas are discussed as follows:

  - Two soil samples (TS1 and TS2) were collected at two locations in proximity of the truck staging area (north of MW10) from the zero to six inch interval. The lead concentrations were detected at 84.6 mg/Kg (TS-1) and 53.3 mg/Kg (TS-2). JDC concluded, "No further investigation at the truck staging area is necessary; however, soil in the vicinity of monitoring well MW10 with lead concentrations that exceed 1,000 mg/Kg lead (based on the Phase I RFI results) should be addressed. It is recommended that possible interim corrective measures (stabilization measures) be evaluated for the surface soil at MW10."

  - Two soil samples (NTS1 and NTS2) were collected at two locations in proximity of the monitoring well B7R from the zero to six inch interval. Sample NTS1 was located approximately 147 feet east of B7R. Sample NTS2 was located approximately 12 feet south of B7R. The lead concentrations were detected at 381 mg/Kg (NTS-1) and 11,300 mg/Kg (NTS-2). JDC concluded, "it is recommended that stabilization measures be evaluated, and additional investigation conducted, to determine the extent of lead at concentrations above the proposed investigation limit of 500 mg/Kg in surface soil (above two feet) at this area."

- Four soil borings (RRS #1 through RRS #4; 575 feet south of Tract M or 600 feet north of Tract A) were advanced to four feet bgs on the railroad spur located between WMA 1 and WMA 2. Nineteen discreet soil samples (including two duplicate samples) were collected for lead analysis. The samples were collected from the zero to six inch, six to 12 inch, 12 to 18 inch and 18 to 24 inch and 24 to 48 inch intervals. The maximum lead concentrations detected in each location were 13,300 mg/Kg (RRS #1 at 12 to 18 inch); 8,240 mg/Kg (RRS #2 at zero to six inch); 30,200 mg/Kg (RRS #3 at six to 12 inch); and 8,000 mg/Kg (RRS #4 at 12 to 18 inch). It should be noted that due to poor recovery, the upper six inches in RRS #1, RRS #3, and RRS #4 were not collected. JDC concluded, "the lead concentrations reported for the surface soil samples collected from boring RRS #1 appear anomalous because they increase with depth; therefore, it is recommended that this area be re-sampled. It is also recommended that possible interim corrective measures be evaluated at this area to minimize worker exposure to lead concentrations in surface soil that exceeds the proposed cleanup level."

- Eleven soil borings (SDA #1 through SDA #8, SDA #9-1, SDA #9-2, and SDA #10) were advanced to four feet bgs outside the known perimeter of the South Disposal Area. Due to bedrock at 18 inches in the location of SDA #9-1, soil boring SDA #9-2 was advanced north of SDA #9-1. Fifty-seven discreet soil samples (including five duplicate samples) were collected for lead analysis. The samples were collected from the zero to six inch, six to 12 inch, 12 to 18 inch and 18 to 24 inch and 24 to 48 inch intervals. The maximum lead concentrations detected in each location were 201 mg/Kg (SDA #1 at zero to six inch); 7,030 mg/Kg (SDA #2 at zero to six inch); 6,020 mg/Kg (SDA #3 at zero to six inch); 17,800 mg/Kg (SDA #4 at zero to six inch); 1,100 mg/Kg (SDA #5 at six to 12 inch); 317 mg/Kg (SDA #6 at zero to six inch); 274 mg/Kg (SDA #7 at zero to six inch); 1,240 mg/Kg (SDA #8 at six to 12 inch); 28,800 mg/Kg (SDA #9-1 at six to 12 inch); 20,500 mg/Kg (SDA #9-2 at zero to six inch); and 307 mg/Kg (SDA #10 at 18 to 24 inch). JDC concluded, "it is recommended that an investigation to determine the lateral extent of lead concentrations in surface soil be implemented at the areas north of the South Disposal Area where lead concentrations in the Phase II surface soil samples exceeded the proposed investigation limit of 500 mg/Kg (SDA #2, #3, #4, and #5). An investigation to determine the lateral extent of lead concentrations in surface soil in the vicinity of borings SDA #9-1 and SDA #9-2 and in subsurface soil at boring SDA #8 is not recommended."

- One soil boring (NTSB #1) was advanced to four feet bgs at the location of the Phase II RFI shallow surface soil sample NTS-2 to determine if lead impacts were present in the subsurface soil. Four soil samples (including one duplicate sample) were collected for lead analysis. The lead concentrations detected in the four samples were 57.8 mg/Kg (NTSB #1 at 24 to 30 inch); 85.2 mg/Kg (NTSB #1 at 36 to 42 inch); 93.5 mg/Kg (NTSB #1 at 42 to 48 inch); and 21.9 mg/Kg (NTSB #1 at 42 to 48 inch (duplicate)).

- JDC summarized the groundwater monitoring activities that had occurred since the Phase I RFI in 1990 and concluded that that the "total lead has been

completely characterized in groundwater; therefore, further investigation of the uppermost transmissive zone at the site was not necessary to determine the extent of inorganic constituents during the Phase II RFI. In addition, there is no potential for a drinking water supply well to be drilled on GNB property; therefore, the groundwater does not pose a current risk to humans. Although the concentrations of total lead in groundwater are present at low part per billion levels, the groundwater is addressed in the *Risk Assessment and CMS Report for Stewart Creek (JDC, 1998)* due to the hydrogeological setting (groundwater recharges the creek). It was determined through the risk assessment that lead concentrations in groundwater do not substantially contribute to risk."

Stewart Creek Corrective Measures Implementation Report (CMI), **JDC, July 13, 2000.**

- This report summarizes the remediation activities conducted for Stewart Creek at the GNB facility. Based on the preliminary inspection and sampling data from the CMI report, the entire 2,800 feet of Stewart Creek from old 5th Street going westward had to be remediated.

- The established cleanup levels for Stewart Creek were 91 mg/Kg (lead) and 4.23 mg/Kg (cadmium). The Texas Natural Resource Conservation Commission (TNRCC) approved the proposed cleanup levels in a letter dated August 31, 1999.

- According to JDC, visible blast furnace slag wastes were physically removed from the bed and banks of Stewart Creek. The soils were then mechanically removed to a depth of approximately one-foot from the channel and banks of Stewart Creek. Deeper excavations of two to three feet were required in areas of denser slag. The excavated soils were screened to recover broken slag before placing in stockpiles (approximately 200 cubic yards per stockpile). The recovered slag was recycled at the GNB facility by processing the slag for lead recovery through the on-site blast furnace.

  A grab sample was collected from each stockpile and analyzed for TCLP concentrations of lead and cadmium to determine the waste classification. JDC noted that most materials met the classification criteria for Class 2 Non-Hazardous waste and those that did not were treated with Enviroblend (a proprietary magnesium oxide blended product) to where they would meet Class 2 criteria. None of the treated materials were evaluated for re-use on-site. The stockpiled materials were loaded and transported off-site for disposal at either the BFI Landfill or the Waste Management Landfill in Lewisville, Texas.

  Some of the stockpile materials were also analyzed for total and SPLP lead and cadmium concentrations to determine if they could be reused as intermediate fill in the active Class 2 Non-Hazardous Landfill at the GNB facility. The reuse method was approved by the TNRCC in a letter dated November 8, 1999.

  The remediation activities were conducted within the creek channel in 300- to 500-foot segments. Following the removal of impacted materials, three discrete verification samples were collected from each 100-foot interval along the creek to confirm that the cleanup levels were met. Areas that did not meet the criteria were

excavated deeper and re-sampled until the verification samples determined that cleanup levels were achieved. The channel was then backfilled with clean on-site and imported soils as necessary to re-establish the grade of the creek bottom.

A total of 9,823 cubic yards of excavated materials were disposed of as Class 2 Non-Hazardous waste. Of these, approximately 1,062 cubic yards required treatment to meet Class 2 Non-Hazardous waste classification criteria. A total of approximately 634 cubic yards of the excavated materials met the re-use criteria. A total of 521.3 tons of slag was recovered for use in the blast furnace.

Industrial Hazardous Waste Storage/Processing/Disposal Facility Permit Renewal Application, Frisco Battery Recycling Center, Frisco, Texas, prepared by Conestoga-Rovers and Associates (CRA) dated September 2010.

- According to the application, the CSA was in service from 1990 to present; RMSB from 1979 to present; Slag Landfill from 1978 to 1996; North Disposal Area from 1974 to 1978; and South Disposal Area from 1970 to 1974.

- The application included a Water Well Report dated June 15, 2010; process flow diagrams for the facility; list of adjacent owners; various figures (e.g., wetlands map, soil survey map, facility overview, wind rose map, and topographic map); emergency contingency plan; an engineering report; closure plan dated August 2010 for the CSA and RMSB; former Exide facility's financial information; and air permit information.

- One of the included figures was an engineering survey that was completed by Lake in 1987. The figure depicted four areas that were noted to be borrow pits. SWG noted that none of the borrow pits were located on-Site.

TCEQ Investigation Report, Exide Technologies, prepared by TCEQ dated May 6, 2011 to June 29, 2011

- In May and June 2011, Ms. Dorothy Lewis and other TCEQ representatives visited the former Exide facility and conducted an Industrial and Hazardous Waste (IHW) Compliance Evaluation Investigation (CEI) and an IHW Sampling Investigation at the former Exide facility.

- The TCEQ explains that Exide was a secondary lead smelter that operated since 2000. The former Exide facility operated under the TCEQ Solid Waste Registration (SWR) No. 30516. Previous SWR numbers were 50206 and 83335. The facility also operated under the EPA ID No. TXD006451090, TCEQ Multisector General Permit (Stormwater Permit) No. TXR05AE28, Wastewater Permit No. WQ0002964000, Wastewater EPA ID No. TX0103292, TCEQ Air Per Nos. 1147A and 3048A, and Federal Operating Permit No. 01649.

- According to IHW Permit No. 50206 (renewed in 2001), Exide was authorized to store and process lead-acid batteries and other lead-bearing wastes in the following permitted areas: Battery Receiving and Storage Building (Battery Storage Area, also known as the CSA and the RMSB.

- The following summarizes the TCEQ review of Exide's process:

  Receiving Scales: Incoming loads of spent lead acid batteries and other lead-bearing wastes were inspected at the receiving scales. The former Exide facility rejected loads in which the majority of incoming material was not lead-bearing waste or if there was a spillage. The truck containing the spilled materials was sent to the Truck Staging Area. Accepted loads were directed to the Battery Storage Area.

  Battery Storage Area/CSA: The CSA had a covered storage space of approximately 18,150 square feet and a capacity of approximately 3,581 cubic yards. The batteries stored here contained free liquids (battery acids). The CSA was constructed of reinforced concrete floors and curbs designed to isolate leaks or spills from within the unit. Additionally, the curbing was designed to prevent the run-on of liquids from adjacent areas. The floor of the building was sloped to drain into one of two stainless steel sumps. The sumps were connected by a six inch PVC pipe which drains the liquids to a 15,000-gallon storage tank in the facility's Wastewater Treatment Plant (WWTP). Due to high volume of incoming loads, whole/undamaged batteries were temporarily stored in the Battery Storage building until processing. Damaged batteries were taken to the battery breaker for immediate processing. After the batteries were unloaded, the trucks went to one of two truck washing stations. Discharge from the washing stations went into the Acid Receiving tank in the facility's WWTP.

  Battery Breaker: The battery breaker shredded or crushed whole batteries and separated them into three components – metals (primarily lead), plastic, and sulfuric acid. The metals were separated from the plastics by a vibrating table and water bath (plastic parts float; metal parts sink). The plastics were screened and packaged for off-site recycling. Rinsate water and battery acids were pre-filtered prior to draining it into a sump that was piped to the facility's WWTP. The battery breaker area was also the area where shrink wrap and cardboard packaging were removed, placed into bailer, and treated with Free Flow-100®. Bales of treated wraps and packaging were stored in the Blast Furnace Area, then transported to the Truck Staging Area and placed in trailers for accumulation. The bales were later relocated to the Bale Stabilization Area where they were mixed with discarded contaminated personal protective equipment (PPE). The Bale Stabilization Area reportedly was a lot covered with soil and gravel. The former Exide facility reportedly sampled the wastes prior to off-site transport for disposal as Class 2 wastes.

  Raw Materials Storage Building: The RMSB was designed to be completely enclosed. The inside walls and exposed side of the steel plate were sealed with a high solids industrial epoxy coating. The wastes stored in this building reportedly passed a paint filter test (no free liquids). The RMSB was used to store lead-bearing wastes, coke (fuel for the blast furnace) and steel (fluxing agent for the reverbatory furnace). Since there were no free liquids (with the exception of dust suppression liquid), this waste management unit was not subject to leak detection and secondary containment requirements.

Reverb Furnace: The reverb furnace was heated by four burners, operated under oxidizing conditions and accounted for 60% of the lead production. The furnace produced "soft" lead (99.9% lead) which was tapped from the bottom of the furnace. During the refining process, the by-product dross (solid impurities floating on molten metal) was produced. The dross was returned to the blast furnace unless it was tin dross, which was transported to an off-site refinery. The oxidizing environment produces slag. For every two tons of soft lead produced, one ton of slag was produced. The slag contained approximately 45% to 55% lead and was used in the blast furnace. The associated scrubber water drains to the facility's WWTP.

Blast Furnace: The blast furnace was charged with reverb furnace slag, industrial batteries, scrap lead, lead dross, large lead plates, and return slag. Cast iron, shredded drums, lime rock and sand were used as fluxing agents. The blast furnace operates under a reducing environment and produced "hard" lead, intermediate blast furnace slag, bag house dust (flue dust), and off-gasses. For every three tons of hard lead produced, one ton of slag was produced. The slag was taken to the Slag Treatment Building. The flue dust was returned to the reverb furnace for use as feed.

Slag Treatment Building (STB): The STB was used to store and treat waste refractory bricks and waste blast furnace slag. These materials were crushed and mixed with Free Flow-100®, water and Portland cement. The water used for this treatment was obtained from the City of Frisco, wash down water, or condensate. The Portland cement was used to solidify the treated slag and adds additional protection against the leaching of lead in the landfill. When wash down water was not used in the slag treatment, it was pumped to the former Exide's WWTP. The TCEQ noted that before sample analysis results are returned, the treated slag was disposed in the Class 2 Non-Hazardous Landfill at the facility. However, the former Exide's standard operating procedure was to excavate the failed batch from the landfill and retreat it until the TCLP extraction met the Class 2 Non-Hazardous criteria of 0.75 mg/L. The TCEQ pointed out that the former Exide facility had not disposed of slag off-site since 1992.

Class 2 Non-Hazardous Landfill: The landfill consisted of nine cells, six of which reportedly have been closed. The landfill was equipped with two leachate collection sumps at the bottom of the landfill. The leachate was piped to a polypropylene leachate tank. This collected leachate was collected via a vacuum truck and processed in the WWTP. Landfill contact water was pumped to the solar evaporation pond with a high-density polyethylene (HDPE) liner and capacity of approximately 900,000 gallons. Sediments from the pond were recycled in the reverb furnace or disposed at an off-site landfill.

WWTP: Spent battery acid and rinse water from the battery breaker, water from the wet scrubber, waters from the CSA sumps, waters from the RMSB, and captured truck equipment washing waters were routed via hard pipe to the WWTP. The wastewater was filtered and passes through a chemical co-precipitation process. The wastewater was then clarified, filtered, and media polished before being sent to a Crystallizer. Land-bearing sludge was returned to the reverb furnace.

Crystallizer: The treated wastewater in this process was discharged the North Texas Municipal Water District (NTMWD) Stewart Creek West WWTP. The by-product, sodium sulfate, was collected and sold to Cooper Industries for re-use in the production of fiberglass or disposed off-site at a landfill. Purged water was returned to the WWTP for re-use.

Stormwater Collection/Retention System: Stormwater from the former Exide's manufacturing area was collected in this pond. Treatment of stormwater includes pH adjustment, precipitation of dissolved solids, and pressure filtration. Exide reportedly was permitted to discharge up to 0.36 million gallons per day of treated stormwater at Outfall-001 but reportedly had not discharged since 2009. The collected water was filtered and returned to the process to be used as make-up water in the scrubber. Sediments were returned to the reverb furnace.

- The TCEQ report indicated that in 1963, Burrs Metals (a division of GNB, Inc.), constructed a building to manufacture lead oxide. In 1970, GNB began recycling lead acid batteries and became a secondary lead smelter. On May 24, 1988, GNB was issued an IHW permit for the storage of hazardous wastes. In 2000, the former Exide acquired GNB.

  The former Exide facility had two closed pre-RCRA landfills known as the North Disposal Area and the South Disposal Area. The North Disposal Area had been filled in eight to 10 feet high and was closed in 1978. The South Disposal Area was closed in 1974.

- The TCEQ noted that in 2000, the former Exide facility renewed IHW Permit No. 50206 which required an additional RFI for the CSA, Slag Landfill, North Disposal Area, South Disposal Area, and Stewart Creek; however, there are ongoing investigations that are under the EPA and TCEQ oversights. According to the permit, the former Exide facility was not required to conduct any groundwater monitoring. The former Exide facility reportedly had not conducted any groundwater monitoring since 2002. Information on Part B of the Permit Renewal Application indicated that 20,000 to 40,000 tons of hazardous waste had been disposed at the facility. (It should be noted that the former Exide facility contracted PBW to conduct groundwater sampling on a number of the monitoring wells in January 2012.)

- A representative summary of the TCEQ findings during the May 2011 inspections are presented below. It should be noted that the TCEQ inspections noted other significant violations.

  - In the CSA, the TCEQ staff, Ms. Lewis observed significant deterioration of the floor and part of wall. Additionally, precipitation (rain water) had formed puddles and was not flowing toward the sumps. Ms. Lewis indicated that the facility's inspection logs noted the CSA was in good condition and was not in need of repair. However, the logs did not note the deterioration of the floor or the large crack in the wall.

  - In the RMSB, Ms. Lewis observed a pool of white liquid on the floor which appeared to drain away from the reverb furnace feed and form puddles. The puddles reportedly remain on the floor until they evaporate. Ms. Lewis noted

that there was no decontamination area within the containment building and there was a lack of measures to prevent the tracking of hazardous waste out of the unit by personnel and equipment.

- In the Slag Treatment Building, Ms. Lewis noted free liquid generated from equipment wash down and dust suppression activities. The water was in contact with the untreated piles of slag and refractory brick. A sump was used to collect the water but the quantity of water exceeded its capacity causing overflow. Ms. Lewis noted that the associated tank did not have secondary containment.

- Ms. Lewis collected a soil sample and a material resembling blast furnace slag from beneath the opening on the north side of the building that was used to transfer untreated refractory brick and blast furnace slag into building. Laboratory analytical results reported total lead concentrations at 47,100 mg/Kg and TCLP lead at 59.3 mg/L. The total cadmium concentration was 1,090 mg/Kg and TCLP cadmium was 9.28 mg/L.

- During an outside inspection of the south side of the tank, Ms. Lewis observed a white tinted liquid with a white solid halo along the edges flowing along the drainage swale towards the stormwater pipe near the flood wall. A white solid was observed in the associated soil and sediments. Ms. Lewis inquired about the origin of the liquid and was informed by Mr. James Messer, Environmental and Quality Control Manager for the former Exide facility, that the liquid could have been produced during street sweeping activities. Ms. Lewis collected a soil sample near the southwest corner of the Slag Treatment Building where the white solids were observed. Laboratory analytical results reported total lead concentrations at 39,700 mg/Kg and TCLP lead at 44.8 mg/L. Total cadmium concentration was 574 mg/Kg and TCLP cadmium was 1.74 mg/L.

- During investigation of the facility's landfill, Ms. Lewis collected two samples of treated slag and one sample of a material resembling mud that consisted of contact water and sediments. Laboratory analytical results indicated hazardous concentrations of lead (up to 36,200 mg/Kg total and 25.52 mg/L TCLP) and cadmium (up to 437 mg/Kg total and 1.57 mg/L TCLP) were present in the Class 2 Non-Hazardous Landfill.

- At the South Disposal Area, Ms. Lewis noted significant erosion on the south side exposing battery chips. Ms. Lewis observed the adjacent former shooting berm and noted large amounts of untreated slag and battery chips which reportedly appear to have originated from the South Disposal Area.

- In the Crystallizer area, Ms. Lewis identified a white solid and several battery chips in a drainage swale west of the Crystallizer area. Additionally, dead vegetation and a white solid were observed along a drainage pathway that began at the Crystallizer and ended at the culvert. Water from this drainage reportedly discharges to the City of Frisco. One soil sample was collected at the opening of the culvert. Total lead and TCLP lead was detected at concentrations of 694 mg/Kg and 3.92 mg/L, respectively. Sulfates were detected at a concentration of 6,040 mg/Kg.

- The flood wall for the former Exide facility and the Stewart Creek embankment were also inspected during the investigation. Dead vegetation was noted near a crack in the flood wall where a liquid was discharging. The Slag Treatment Building was located on the opposite side of the wall. One soil sample was collected from the embankment where the dead vegetation was observed and indicated total lead and TCLP lead at concentrations of 3,560 mg/Kg and 2.86 mg/L, respectively.

  A dark rust-colored stain was also noted along the wall where the stormwater pipe exited. The pipe appeared to be leaking due to worn out gaskets. A soil and rock sample along the embankment beneath the pipe was collected and detected lead and cadmium concentrations at 39,800 mg/Kg and 894 mg/Kg, respectively. TCLP lead and TCLP cadmium concentrations were 127 mg/L and 12.2 mg/L, respectively.

- A water sample from Stewart Creek was collected from an area off-site and west of the former Exide facility. Ms. Lewis observed battery chips along the embankment of the Creek. According to Mr. Messer, prior to promulgation of RCRA (1976), the City of Frisco used battery casings from the former Exide facility as road base throughout the city. No COCs were detected in the off-site grab water sample. Based on the provided map, this location was west of the west-adjacent railroad.

- The TCEQ summarized these findings as follows: "Review of sample results indicated elevated concentrations of lead and cadmium along the flood wall that could potentially impact the waters of Stewart Creek. However, according to the analytical sample results of the water samples collected from Stewart Creek, it does not appear that the lead and cadmium discharges from the facility have contaminated the Stewart Creek water. Analytical sample results indicate there are no detectable concentrations of lead or cadmium in the water. Elevated concentrations of lead and cadmium were also detected in the treated slag disposed in the landfill. Elevated concentrations of lead were also detected in soils near a culvert that discharges to the City of Frisco. Elevated concentrations of lead and cadmium were also detected around the outside of the Slag Treatment Building."

- Several conversations were documented in June 2011 between Ms. Lewis and the former Exide's representatives regarding the presence of off-site battery chips. Ms. Lewis also pointed out that battery chips may have been part of the old 5th Street roadway.

- The TCEQ report referenced that additional IHW Sampling and Investigation were conducted on June 28 and 29, 2011 at the facility. The findings were not discussed in this investigation report. SWG did not find a copy of the additional sampling in the TCEQ file.

The TCEQ report concluded that an Exit Interview Meeting was held between the TCEQ and the former Exide's representatives. Ms. Lewis pointed out the unauthorized discharge and disposal of hazardous waste, an unauthorized waste pile (untreated

slag), the failure to perform hazardous waste determinations and waste classifications, the deterioration of solid waste units, the failure to install a leak detection system and secondary containment for a tank, failure to control waste within a solid waste unit, permit violations, and recordkeeping violations. A Notice of Enforcement was issued in a letter dated September 2011.

Exide Technologies, Inc., Docket Number RCRA-06-2011-0966, prepared by EPA dated August 1, 2011.

- This letter was a Unilateral Administrative Order (Order) pursuant to Section 3013(a) of the RCRA Act, 42 U.S.C. §6934. The EPA noted that on December 14 – 18, 2009 and March 29, 2010, the EPA conducted a RCRA Corrective Action inspection at the former Exide facility. The inspection, along with a file review of historical records indicates potential soil, groundwater, sediment and surface water contamination resulting from activities at the facility.

- This Order required site assessment by the former Exide facility, including delineation of soil, sediment, surface water, and groundwater contamination associated with the Facility and identification of remediation options. Specifically, contamination which has the potential to impact human health and ecological health associated with Stewart Creek both on- and off-site needs to be assessed. Soil, sediment, surface water, and groundwater data should be evaluated against Texas Risk Reduction Program PCLs (and risk-based exposure levels for surface water) for both human health and ecological risks.

- According to EPA, the flood wall was constructed in 1988 as part of a run-off control system to route rainfall from the production area to the stormwater pond for treatment.

- A Notification of Hazardous Waste Activity was submitted in 2009. The former Exide facility classified itself as a LQG. Hazardous waste included ignitable, corrosive, cadmium, lead, selenium, benzene, tetrachloroethylene, and emission control dust/sludge from secondary lead smelting.

- This letter references the previous RFI investigations and Stewart Creek CMI presented above.

- Groundwater samples collected by the former Exide facility in 2002 identified lead in the surficial aquifer at concentrations exceeding the MCL (0.015 mg/L). Groundwater samples have not been collected at the facility since 2002.

- During the EPA's corrective action inspection in December 2009, several concerns were identified:

    - Exposed battery chips and slag in the North and South Disposal Areas;

    - Equipment containing process wastes was observed in a "Boneyard" on the west side of the facility. The equipment included a roller belt with battery chips, a kettle with refining dross, a "grizzly screen" containing slag pieces, a bail of

untreated cardboard and shrink wrap, and several "supersacks" containing what appeared to be building insulations. In addition, hydraulic equipment which had two full hydraulic tanks that were leaking hydraulic fluid onto the ground was observed;

- Liquid was leaking from a frac tank at the Crystallizer Unit. A visible drainage pathway was observed leading from the frac tank to the edge of a concrete ramp. The EPA noted that analytical results for the contents of the frac tank over the past year indicated that the contents of the tank were hazardous waste due to toxicity for selenium and cadmium on several occasions; and,

- Liquid appeared to be seeping from beneath the flood wall resulting in standing water and white crystalline substance on the ground between the wall and the creek.

- In March 2010, EPA collected samples of saturated soil and white crystalline substance between the flood wall and the creek and tested the pH of the standing water. The analytical results reportedly contained concentrations that exceeded the EPA's media-specific soil screening level for lead in industrial soil (800 mg/Kg) in three of the samples and elevated pH was observed. Additionally, it appears that three other samples (EX-SS-02 through -04) were collected. Sample EX-SS-02 (south of the slag treatment tank) contained a lead concentration of 1,370 mg/Kg with a pH of 10. Sample EX-SS-03 (near SW corner of slag treatment tank) contained a lead concentration of 1,040 mg/Kg with a pH of 9.4. Sample EX-SS-04 (near south wall of CSA) contained a lead concentration of 5,610 mg/Kg with a pH of 11.

Based upon their findings, the EPA ordered the former Exide facility to submit a Sampling and Analysis Workplan for "monitoring, testing, analysis, and reporting to ascertain the nature and extent of the hazard posed by the hazardous waste and/or hazardous constituents that are present at or may have been released from the Respondent's Facility."

Notice of Enforcement for CEI, 7471 5th Street, Frisco, Texas, prepared by TCEQ dated September 12, 2011.

This letter referenced the investigation that was conducted by Ms. Lewis in May and June 2011 (previously summarized). Copies of the alleged violations were included.

Sampling and Analysis Workplan, Exide Technologies, Frisco Recycling Center, 7471 5th Street, Frisco, Texas, prepared by CRA, dated November 2011 (Revised).

- This workplan was submitted in response to Section VI of the Administrative Order (Order) issued to the former Exide facility by the EPA in Docket No. RCRA-06-2011-0966 on August 1, 2011 (previously summarized). The goal of this workplan was to define the nature, location, extent, and movement of hazardous wastes and/or hazardous constituents, which are present at or have been released from the Site, through monitoring, testing, analysis, and reporting.

- The former Exide facility was reported as a secondary lead smelter and recycling facility since 1964. Features associated with the former Exide facility included the

Battery Receiving/Storage Building, battery breaker operations, raw materials storage, a laboratory, a blast furnace, a reverbatory furnace, an oxide production facility, refining operations, one active non-hazardous waste landfill, several closed landfills, a wastewater treatment plant, and a stormwater retention pond. Wastewater generated at the facility was treated on-site and recycled to the process. Stormwater runoff was collected in a retention pond, treated, and then recycled. The former Exide facility reportedly was permitted by the TCEQ to discharge wastewater to Stewart Creek; however, this reportedly has not occurred since 2009.

- The CRA workplan references the August 1983 hydrogeologic investigation by D&M; the 1987 soil sampling by SWL; the 1991 Phase I RFI; the 1998 Phase II RFI; 1998 Human Health and Ecological Risk Assessment and CMS for Stewart Creek by JDC; and the 2000 Stewart CMI report by JDC. (These reports were made available by the Client and are previously summarized)

- The CRA workplan described the following features/buildings at the former Exide facility: RMSB, CSA (also known as the Battery Receiving and Storage Building), Oxide Building; Battery Breaker Building, Blast Furnace Building, Slag Treatment Building, WWTP, Truck Staging Area, Bale Stabilization Area, reverb furnace, blast furnace, furnace scrubbers, Class 2 Industrial Non-hazardous Landfill, Crystallizer, stormwater collection and retention pond, and Boneyard.

- According to CRA, the EPA Order required a plan and timetable for investigation of the North Disposal Area, Slag Landfill, Boneyard, Bail Stabilization Area, Crystallization Unit frac tank, Stewart Creek flood wall, RMSB, and the South Disposal Area. As a result, the former Exide facility proposed additional soil investigation in these areas. In addition, CRA proposed trenching activities in proximity of the Former Shooting Range to determine if the slag and battery cases are limited to eastern face of the pile or if they are distributed throughout the pile. CRA also proposed to conduct additional sediment, surface water and groundwater sampling.

Executive Summary – Enforcement Matter – Case No. 42575, Exide Technologies, RN100218643, Docket No. 2011-1712-IHW-E.

- Attachments to this *Executive Summary* report are the *Penalty Calculation Worksheet* revised October 2008 and the *TCEQ Agreed Order (Docket No. 2011-1712-IHW-E)* signed December 7, 2012.

- According to the *Executive Summary*, the former Exide facility ceased operations as of November 30, 2012. The total penalty assessed was $592,868.

- The information in this report refers back to the findings of the investigations detailed in the *TCEQ Investigation Report* dated May to June 2011 which is summarized above.

- Several orders including the submission of an APAR and disposal of the former shooting range berm were listed in this report.

Consent Agreement and Final Order (CAFO) prepared by EPA filed December 18, 2012.

- The CAFO presented the following RCRA violations – 1) Unpermitted Storage of a Hazardous Waste; 2) Failure to Meet Design and Operating Standards for a Containment Building; and 3) Failure to Meet a Hazardous Waste Determination.

- The CAFO presented the following Clean Air Act (CAA) violations – 1) Failure to Install an Enclosure Hood on the Reverberatory Furnace Slag Tap; 2) Failure to Install an Enclosure Hood on the Reverberatory Furnace Charging Chute; 3) Failure to Control Fugitive Dust Emissions; 4) Failure to prepare and operate according to a Fugitive Dust Source Standard Operating Procedures Manual that Describes in Detail the Measures Put in Place to Control Fugitive Dust Emissions Sources; and 5) Failure to Maintain Required Records.

Additional information from the Client-provided files:

- A TWC letter dated November 30, 1988 requesting GNB to classify spent degreasing solvent and waste engine oil.

- A GNB, Inc. letter dated May 28, 1993 to the TWC addressing the violations that were noted by the TWC during inspections that were conducted on March 15 and 16, 1993. One of the items addressed noted, "all treated slag on the outside of the landfill sides have been removed to the inside of the landfill."

- The GNB May 28, 1993 *Annual Site Activity Report* discussed the amount of battery plant scrap that were received during that year and the closure costs for the RMSB, Battery Storage Building; and Covered RMSB. In addition, GNB pointed out that in 1992, a total of 904 pounds of Safety-Kleen parts cleaner and 4048 tons of intermediate blast furnace slag were generated and disposed off-site by GNB.

- A TNRCC letter dated June 21, 1995 discussing the results of the CEI that was conducted on May 24 and 25, 1995. The inspector noted that standing rainwater was identified in low areas of the Landfill Unit No. 7. The standing water was in contact with the stabilized slag.

The following information was available on the Exide website:

Results of Class 2 Non-Hazardous Waste Landfill Investigation, Exide Technologies, Inc., North Landfill, Frisco, Texas, prepared by W&M Environmental Group, Inc. (W&M) dated March 13, 2012.

- The objective of this investigation was to determine if the landfill material met the universal treatment standards (UTS). This investigation was initiated to address the landfill issue that was identified during the 2011 TCEQ inspection (summarized above). It was noted during the inspection that two "surface" samples from the landfill vicinity were collected and sampled but failed the UTS for lead (0.75 mg/L) and cadmium (0.11 mg/L) via TCLP analysis.

- The investigation area was limited to the active landfill cells (Numbers 10, 11 and 12). These cells were constructed in 2009.

- The investigation activities consisted of surface sampling, soil boring installations, and test pit excavations. The activities took place in June, August, October, and December 2011. A total of 197 samples were collected and analyzed via TCLP analyses for lead, cadmium and/or RCRA metals.

- Lead and cadmium concentrations in exceedance of the UTS were identified in multiple samples (various intervals) in each of the three cells. Arsenic, barium, chromium, selenium, silver and mercury concentrations did not exceed their respective UTS limits. (Due to the number of samples that exceeded their respective UTS limits for lead and cadmium, SWG did not include the detected concentrations in this summary. However, as noted above, a copy of this report is included in Appendix F.)

Based on their findings, W&M recommended that the truck washout process be modified and that the landfill materials at selected intervals be excavated, retreated, reanalyzed to ensure compliance with the disposal criteria, then redeposit back into the landfill. In addition, W&M recommended that the former Exide facility complete a thorough assessment of the slag treatment process/operations and update/revise the Landfill Operations Plan.

<u>The following information was provided by Exide and/or their consultant (PBW):</u>

Annual Soil Sampling for GNB Frisco, Texas, prepared by WMI dated March 1999.

- The purpose of the investigation was to evaluate the concentrations of total lead in the surface soil around the facility. According to WMI, there are 10 locations around the former Exide facility that are sampled annually. This report included results from 1993 to 1998.

- Based on the provided map, locations GNB-SS-01, GNB-SS-03, GNB-SS-04, GNB-SS-05, GNB-SS-06, GNB-SS-07, and GNB-SS-09 were located on-Site on Tracts M, G, E, D, C, B, and A, respectively.

- Four surface soil samples (zero to 0.25 inch) were collected at each sampling location. At each location, the samples were collected from four quadrants (NE, NW, SE, and SW). The grass and organic matter on top of the soil reportedly were removed prior to sampling.

- The lead concentrations in the 1999 surface soil samples ranged from 12 mg/Kg (GNB-SS-04A) to 134 mg/Kg (GNB-SS-06D). The mean lead concentrations for the on-Site sampling locations were 69.8 mg/Kg (GNB-SS-01), 67.8 mg/Kg (GNB-SS-03), 16 mg/Kg (GNB-SS-04), 77.8 mg/Kg (GNB-SS-05), 105.3 mg/Kg (GNB-SS-06), 57.3 mg/Kg (GNB-SS-07), and 32.8 mg/Kg (GNB-SS-09). The six-year average (1993 through 1998) lead concentrations were 134.6 mg/Kg (GNB-SS-01), 134 mg/Kg (GNB-SS-03), 61 mg/Kg (GNB-SS-04), 96.4 mg/Kg (GNB-SS-05), 178 mg/Kg (GNB-SS-06), 106.8 mg/Kg (GNB-SS-07), and 63 mg/Kg (GNB-SS-09).

- WMI concluded, "the mean soil lead concentrations for the sampling points were low and ranged from 16 to 105.3 mg/Kg. The soil lead concentrations were compared to the 95% UCL established from historical sampling (6-year time period between 1993 and 1998). The analysis indicated that the soil lead concentrations in 1999 were below the 95% UCL for all 10 sampling locations. Additionally, the soil lead concentrations at all sampling locations were well below the EPA and TNRCC cleanup standards established for lead in soil. The QA/QC data indicated that the laboratory data was both accurate and reproducible. In conclusion, the data indicates that the lead concentration of soil samples collected from 10 locations around the perimeter of the GNB facility have not significantly increased in 1999 (i.e., an increase based on statistical analysis). Visual observation of the data indicates a slight decreasing trend in soil lead for the most sampling locations over the 6-year sampling period."

- An excerpt to a "Neighborhood Soil Survey" by the EPA dated March 2010 was provided. Based on the excerpted information, it appears that surface soil sampling was conducted in areas located within one mile of the former Exide facility. SWG noted no on-Site soil sampling points. The maximum lead concentration detected was 256 mg/Kg which was identified in a sample at the nearby FISD Child Development Center.

Interoffice Memorandums, prepared by the TCEQ dated July 29, 2011 and August 2, 2011.

- The July 2011 Memorandum discussed the former Exide facility's Wastewater Permit No. WQ0002964000. The discharge route for this permit is to Stewart Creek followed by Lake Lewisville in Segment 0823 of the Trinity River Basing. According to the TCEQ, Stewart Creek did not have significant aquatic life and was assigned a dissolved oxygen level of 2.0 mg/L. Selenium levels reportedly were elevated. The TCEQ also noted that the discharge from this permit action is not expected to have an effect on any federal endangered or threatened aquatic or aquatic dependent species or proposed species or their critical habitat.

- The August 2011 Memorandum referred to Stewart Creek as an intermittent stream.

RCRA§ 3013 Administrative Order on Consent (AOC), Exide Technologies, Inc. – Frisco Battery Recycling Plant, prepared by EPA, dated May 3, 2012.

- The Administrative Order summarized the previous investigations and inspections that were associated with the former Exide facility. Based on their findings, the EPA concluded as follows:

  - "…there are potentially significant environmental or human health effects associated with the hazardous waste which is present at, or release at, or from, the Facility.";

  - "…the presence of hazardous waste that is or has been managed at the Facility and/or the release of hazardous waste which has been treated, stored, or

disposed of at the Facility may present a substantial hazard to human health or the environment."; and

- "…monitoring, testing, analysis and reporting set forth in this Consent Order are reasonable to ascertain the nature and extent of the hazard at the Facility."

Site Investigation Report (SIR), Exide Frisco Recycling Center, Frisco, Texas, **prepared by PBW dated July 12, 2012.**

- The SIR presents the findings of the investigation activities that were conducted at the former Exide facility in accordance with the *Sampling and Analysis Work Plan* dated November 2011 (previously summarized). PBW prepared this SIR on behalf of the former Exide facility pursuant to Paragraph 33 of the Administrative Order on Consent that was effective in May 2012.

- Based on information from the report and the attached figures, it appears that the assessed boundary was generally within the limits of the central-adjacent former Exide facility.

- Several maps and tables dated March 2012 presented information on sampling activities from January through March 2012 that were conducted at the the former Exide facility. Samples appeared to have been collected in proximity of a Background Study Area, the North Disposal Area, Slag Landfill, Raw Materials Storage Area, South Disposal Area, Boneyard, Bail Stabilization Area, Crystallization Unit and Frac Tank area, Stewart Creek Flood Wall, the former shooting range berm, and locations along Stewart Creek and its tributary. Additionally, groundwater samples were collected from the facility's monitoring wells. Results are as follows:

  - PBW collected 10 background samples at the zero to two foot interval from an area approximately 2,200 feet southwest of the Site. The maximum lead concentration detected was 302J mg/Kg (Sample ID 2012-BG-9). Cadmium was detected at a maximum concentration of 8.09J mg/Kg (Sample ID 2012-BG-9). Arsenic was detected at a maximum concentration of 14.8 mg/Kg (Sample ID 2012-BG-5).

  - In the North Disposal Area, PBW collected soil samples from six locations in January and February 2512 at various intervals up to 19 feet bgs. However, it should be noted that soil sample "2012-NDA-5" was collected but not submitted for laboratory analyses due to the presence of slag because the purpose of this sampling activity was to delineate and therefore another sample location was selected. The maximum lead concentration detected was 7,060J mg/Kg at the two to four foot interval (Sample ID 2012-NDA-1). Cadmium was detected at a maximum concentration of 26.6 mg/Kg at the two to four foot interval (Sample ID 2012-NDA-1).

  - In the Slag Landfill, PBW collected soil samples in January 2012 from three locations at various intervals up to 10 feet bgs. The maximum lead concentration detected was 7,970J mg/Kg at the two to four foot interval (Sample ID 2012-SL-1). Cadmium was detected at a maximum concentration of 50.2 mg/Kg at the two to four foot interval (Sample ID 2012-SL-1).

- In the Raw Materials Storage Area, PBW collected soil samples in January 2012 from four locations at various intervals up to 3.5 feet bgs. The maximum lead concentration detected was 2,950 mg/Kg at the 0.5 to 2.5 foot interval (Sample ID 2012-RMSA-2). Cadmium was detected at a maximum concentration of 3.85 mg/Kg at the one to three foot interval (Sample ID 2012-RMSA-3). In this area, PBW also analyzed the soil sample for TPH. The detected TPH concentrations were less than 13.5 mg/Kg.

- In the South Disposal Area, PBW collected soil samples in January 2012 from five locations at various intervals up to four feet bgs. The maximum lead concentration detected was 1,090 mg/Kg at the zero to two foot interval (Sample ID 2012-SDA-2). Cadmium was detected at a maximum concentration of 6.95J- mg/Kg at the zero to four foot interval (Sample ID 2012-SDA-2). It should be noted that a J- value is an estimated value that is biased low.

- In the Boneyard area, PBW collected soil samples in January 2012 from five locations at the zero to two foot interval. The maximum lead and cadmium concentrations detected were 47,000 mg/Kg and 65.9 mg/Kg, respectively (Sample ID 2012-BY-4).

- In the Bail Stabilization Area, PBW collected soil samples in January and March 2012 from 12 locations at the zero to two foot interval. The maximum lead concentration detected was 25,900 mg/Kg (Sample ID 2012-BSA-2). The maximum cadmium concentration detected was 935 mg/Kg (Sample ID 2012-BSA-3A).

- In the Crystallizer Area, PBW collected soil samples in January 2012 from two locations at the zero to two foot interval. The soil samples were analyzed for various metals and reported the following maximum concentrations: <0.293R mg/Kg (antimony), 7.18J mg/Kg (arsenic), 50.8J mg/Kg (barium), 0.806 mg/Kg (beryllium), 0.466 mg/Kg (cadmium), 9.52J mg/Kg (chromium), 33.2 mg/Kg (lead), 12.4J mg/Kg (nickel), <0.328 mg/Kg (selenium), <0.15 mg/Kg (silver), 54.5J mg/Kg (zinc), and 8,190 mg/Kg (sulfates). The "R" notation reportedly indicates the result was rejected.

- In the Stewart Creek Flood Wall area, PBW collected soil samples in January 2012 from nine locations at various intervals at the zero to two foot interval. The maximum lead concentration detected was 2,240J mg/Kg (Sample ID 2012-FWCS-1). Cadmium was detected at a maximum concentration of 234J mg/Kg (Sample ID 2012-FWCS-8). In this area, PBW also analyzed the soil sample for TPH. The maximum TPH concentration detected was 30.5J mg/Kg.

- In the former shooting range berm, PBW advanced three test trenches. The test trenches were approximately two feet deep and up to 23 feet in length. In general, materials identified during the trenching activities included bullets, clay pigeon fragments, battery casing fragments, and slag.

- Based on the provided map, it appears that 15 sediment samples were collected along Stewart Creek from immediately east of 5th Street to the railroad located

west of the former Exide plant. In addition, 10 sediment samples were collected from the tributary located north of the plant. The sampling points were located between 5th Street and where the tributary meets Stewart Creek. In the Stewart Creek segment, the maximum concentrations of lead and cadmium were 19.2J mg/Kg (Sample ID 2012-SED-13) and 2.08J- mg/Kg (Sample ID 2012-SED-4). In the tributary segment, the maximum concentrations of lead and cadmium were 28.2J mg/Kg (Sample ID 2012-SED-17) and 1.19J- mg/Kg (Sample ID 2012-SED-16), respectively.

- Surface water samples (15 total) were also collected from the Stewart Creek segment. The maximum concentrations of total lead and total cadmium were 0.0036J mg/L (Sample ID 2012-SW-8) and 0.001J mg/L (Sample ID 2012- SW-1), respectively. The maximum concentrations of dissolved lead and dissolved cadmium were 0.0046J mg/L (Sample ID 2012- SW-1) and 0.002J mg/L (Sample ID 2012- SW-2), respectively.

- Groundwater samples were collected from 12 monitoring wells. The maximum concentrations of total lead and total cadmium were 0.0761J- mg/L (B4R) and 0.00062J mg/L (B4R), respectively. The maximum concentrations of dissolved lead and dissolved cadmium were 0.00299J mg/L (MW16S) and <0.00035 mg/L (all but B4R and MW20), respectively. The maximum sulfate and TDS concentrations were 4,040 mg/L (MW20) and 7,980 mg/L (MW16S), respectively.

This SIR was submitted to the EPA by PBW on behalf of the former Exide facility. It should be noted that the EPA made comments throughout of the report; however, those comments are not discussed herein as they are reportedly being addressed by PBW on behalf of the former Exide facility.

VCP Application for the Exide Technologies J Parcel Area, Frisco, Texas, prepared by PBW for Exide Technologies, dated October 25, 2012.

- The Customer Reference Number is CN 600129787. The VCP Application included a *Soil Investigation Report* dated October 17, 2012 that was prepared by PBW. The purpose of the investigation was to determine if historical air emissions from the adjacent former Exide facility impacted soils at the Site. According to PBW, there were two phases of the soil investigation. The soil was collected on a grid system. Phase 1 consisted of collecting soil samples on 1-acre centers in areas of the Site located closer to the former Exide facility and on 4-acre centers in areas located farther from the former Exide facility. Phase 2 consisted for further evaluation of the soil in grids where elevated concentrations of COCs (lead and cadmium) were detected. The Phase 2 investigation was conducted on a one-fifth (1/5th) acre grid. The field activities were conducted in March of 2012 (Phase 1) and May of 2012 (Phase 2). Results from the investigations are as follows:

- Two maps depicted the results of the Phase 1 surface soil sampling. One hundred and seventeen (117) sampling points were installed across the Site. Detected lead concentrations ranged from <1.96 mg/Kg (Sample N-10 in Tract B) to 5,180 mg/Kg (Sample O-15 in Tract B). Cadmium concentrations ranged from <0.86J mg/Kg (Sample Q-13 in Tract B) to 28.6 mg/Kg (Sample O-15 in Tract B).

Of the 117 sample locations, 25 locations identified lead concentrations in exceedance of the City of Frisco cleanup goal of 250 mg/Kg. The samples were located in Tracts A through H and Tract M. None of the cadmium concentrations were detected above the Residential Critical PCL of 52 mg/Kg.

- Based on the findings of the Phase I surface soil sampling, PBW further evaluated three general areas of the Site to further delineate the affected areas. The three areas are 1) general proximity of the intersection of Eagan Drive and Parkwood Boulevard (Tracts E, F, G, H, and J); 2) area located southwest-adjacent of the former Exide facility's solar evaporation pond (Tract M); and 3) area located south and southeast of the former Exide facility's South Disposal Area (Tracts B, C, and D). Based on the analytical results, lead concentrations detected in exceedance of the City of Frisco cleanup goal of 250 mg/Kg were identified in Tracts B, C, D, and M. Cadmium was not analyzed during Phase 2 of the surface sampling event based on the results of Phase I.

PBW recommended further evaluation of the vertical extent of lead in soil.

6.0 REGULATORY DATABASE REVIEW

Information in this section is based on the specific references contained within each subsection, including commercially-available and proprietary regulatory databases, regulatory agency files, directories, and aerial photographs. In some of the following subsections, the words up-gradient, cross-gradient and down-gradient refer to the presumed groundwater flow direction in relation to the Site. These presumptions are made by the author and are based subjectively on regional hydrogeologic information, topographic maps, and local Site conditions rather than groundwater flow data.

SWG reviewed the EPA and TCEQ database information provided by EDR, a contract agency, for indications of RECs with regard to the Site.

Listed below are the databases searched, and the number of facilities with a potential for RECs listed within the search area. The search area encompassed distances of up to 1.0 mile from the perimeter of the Site as well as the Site itself. The database search report along with the date in which the databases were last updated is included as Appendix D.

Federal/State Databases	Database Description	Search Radius (Miles)	Facilities identified
NPL	The National Priorities List (NPL) is the USEPA's database of uncontrolled or abandoned hazardous waste facilities that have been listed for priority remedial actions under the Superfund Program.	1.0	0
CERCLIS/ NFRAP	The CERCLIS database is a compilation of facilities which the USEPA has investigated or is currently investigating for a release or threatened release of hazardous substances pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980. NFRAP (No Further Remedial Action Planned) refers to facilities that	0.5	1

Federal/State Databases	Database Description	Search Radius (Miles)	Facilities identified
	have been removed and archived from its inventory of CERCLA facilities.		
RCRIS / TSD	The USEPA maintains a database of Resource Conservation and Recovery Act (RCRA) facilities associated with treatment, storage, and disposal (TSD) of hazardous materials.	0.5	2
RCRIS Non-CORRACTS / Generators	The Resource Conservation and Recovery Information System (RCRIS) Non-CORRACTS Database is a compilation by the USEPA of RCRIS facilities which include RCRA facilities not associated with corrective action. This database includes facilities that generate hazardous waste as part of their normal business practices. Generators are listed as large, small, or conditionally exempt. Large quantity generators (LQG) produce at least 1000 kg/month of non-acutely hazardous waste or 1 kg/month of acutely hazardous waste. Small quantity generators (SQG) produce 100-1000 kg/month of non-acutely hazardous waste. Conditionally exempt small quantity generators (CESQG) are those that generate less than 100 kg/month of non-acutely hazardous waste.	0.25	1
RCRIS CORRACTS	The USEPA maintains a RCRIS CORRACTS database of RCRA facilities that are undergoing "corrective action". A "corrective action" order is issued when there has been a release of hazardous waste or constituents into the environment from a RCRA facility.	1.0	2
ERNS	The Emergency Response Notification System (ERNS) is a listing compiled by the USEPA on reported releases of petroleum and hazardous substances to the air, soil and/or water.	0.15	1
SPL	The TCEQ maintains a database of state equivalent national priority list (SPL) facilities in the State of Texas.	1.0	0
SCL	The TCEQ maintains a database of state equivalent CERCLIS (SCL) facilities in Texas.	0.5	0
CLI/SWF	The TCEQ maintains a database of Solid Waste Facilities located within Texas. The database information may include the facility name, class, operation type, area, estimated operational life, and owner.	0.5	2
AST/UST	The TCEQ has compiled a database of registered Aboveground & Underground Storage Tanks in the State of Texas which may include the owner and location of the ASTs/USTs.	0.25	9
LPST	The TCEQ provides a computer generated database of the Leaking Petroleum Storage Tanks in the State of Texas.	0.5	6
Other	The TCEQ Industrial Hazardous Waste Notice of Registration (IHW NOR) data includes information submitted by industrial and hazardous waste transporters, generators and one time shipments.	0.5	2
VCP/IOP	The TCEQ provides a computer database of registered Voluntary Cleanup Program (VCP) and Innocent Owner/Operator Program facilities in the State of Texas.	0.5	1

Significant facilities identified from SWG's review of the regulatory information provided in the database report are listed in the following table. Additional facilities that were identified within their respective search distances but were not considered by SWG to present potential RECs to the Site based on facility-specific information (e.g., distance, topographic relationship, etc.) are not further discussed.

SIGNIFICANT REGULATED FACILITIES IDENTIFIED			
Facility/Location	**Distance/ Direction/ Gradient**	**Regulatory Listing Information**	**Additional Information/ Comments**
Gould, Inc. / CAGNB Technologies, Inc. / Exide 7471 South 5th Street Note: This facility is no longer active and is undergoing remediation and investigation activities under oversight of the TCEQ and EPA.	Central-adjacent / Up-, Cross- and down-gradient	**CERC-NFRAP** -The facility reportedly is not on the NPL list. -The preliminary assessment began in 1984 but was classified as low priority for further assessment. **CORRACTS** -The EPA ID Number is TXD006451090. -The NAICS Code identified the facility as a secondary smelting, refining, and alloying of non-ferrous metal (except copper and aluminum) facility. -A1996 and 2001 statuses indicated migration of contaminated groundwater was under control. **RCRA-TSDF / RCRA-LQG** -The facility engaged in treatment, storage, or disposal of hazardous waste and was classified as a large quantity generator. -The facility was registered since at least 1990 as a generator. -Hazardous waste included ignitable hazardous waste, cadmium, lead, mercury, benzene, and, tetrachloroethylene. -Corrective action at the facility began since at least 1987. -Reported violations were associated with the containment building standards, general facility standards, state statutes and regulations, and preparedness and prevention. The violations dated back to as early as 1986. **CLI** Landfill 1 -The size of the landfill was not reported. -The location was reported to be adjacent to Permit No. 221 (see below). -The former landfill was closed in 1979. -The report indicated that the former landfill accepted household waste, construction/demolition, and brush debris. Landfill 2 -The second landfill was issued ID No. 221. -The landfill acreage reportedly is 5.60. **UST**	Additional details are included in the EDR report in Appendix D. The facility was not identified on the TCEQ online VCP database. No new information was identified on the TCEQ online LPST and PST databases. The online EPA Envirofacts database identified the former Exide facility on the following EPA Programs: Air, Water, Waste, Toxics, and Land. As a result, SWG completed a file review at the EPA office as presented in the discussion below. According to the Texas Water Development Board (TWDB) database, several groundwater monitoring wells were registered with the agency for the former Exide facility. The facility also operates under the TCEQ Multisector General Permit (Stormwater Permit) No. TXR05AE28, Wastewater Permit No. WQ0002964000, Wastewater EPA ID No. TX0103292, TCEQ Air Permit Nos. 1147A and 3048A, and Federal Operating Permit No. 01649.

SIGNIFICANT REGULATED FACILITIES IDENTIFIED			
Facility/Location	Distance/ Direction/ Gradient	Regulatory Listing Information	Additional Information/ Comments
		-The facility identification number is 28456. -One 2,000-gallon single-walled fiberglass-reinforced plastic (FRP) UST containing gasoline was installed in 1978 but was permanently filled in-place in 1993. -One 1,600-gallon steel UST containing gasoline was installed in 1970 but was removed in 1979. AST -One 30,000-gallon steel AST containing diesel was installed in 1980 and reportedly was out of use. -The AST reportedly was installed with a concrete containment. LPST -The facility was assigned LPST ID NO 106075. -The release was reported in 1993. -the vertical extent of the contamination reportedly was defined and the assessment results documented that groundwater was not affected. -Final concurrence was issued and the case was closed. IHW -The facility status is listed as an active LQG. -The facility reportedly filed for bankruptcy under Chapter 11 on April 15, 2002. -Reported waste units included waste pile, two closed landfills (North and South Disposal Area), RMSB, treatment tank for blast furnace slag, wastewater treatment facility, Stewart Creek dredged sediments pile, and battery receiving/storage building.. -Reported waste included blast furnace slag, battery cases, spent sulfuric acid, spent solvent from parts cleaning, and waste engine oil. -The Solid Waste Registration (SWR) Number is 30516. Previous SWR numbers are 50206 and 83335. GCC -The facility was listed for a historic groundwater contamination case. -The contaminants were lead, cadmium, and pH. ERNS -A fabric filter reportedly caught on fire. The fire lasted for two hours.	

SIGNIFICANT REGULATED FACILITIES IDENTIFIED			
Facility/Location	Distance/ Direction/ Gradient	Regulatory Listing Information	Additional Information/ Comments
		HMIRS -The facility was reported for two separate incidents of an overflow spillage. The first was a 1-gallon spill of sodium hydroxide solution and the second was a 2-gallon spill of sodium hydroxide solution. TRIS -This facility was listed due to reportable amounts of antimony, arsenic, dioxin and dioxin-like compounds, lead compounds and sulfuric acid (1994 and after "acid aerosols" only). TSCA -This facility was listed for manufacturing of lead, lead oxide, lead-refining, lead smelting, flue dust, lead-refining, dross, arsenic, antimony, copper, tin, slag and sulfuric acid sodium salt. ICIS -The database referenced several enforcement action including penalties. US FIN ASSUR -The insurance providers are Indian Harbour and Greenwich. EPA WATCH LIST -This facility was listed due to alleged violations either sufficient or high priority. SPILLS - A 300-gallon diesel spill occurred on April 13, 1988, No water way reportedly was affected. ENF -Multiple violations were listed for the former Exide facility. The violations included failure to meet the limit for one or more permit parameter, failure to submit a permit renewal, failure to maintain accurate notice of registration, exceedance of allowable emission rate, failure to provide non-compliance notification as required, and failure to prevent potential discharges by failing to maintain the cover over land disposal units, AIRS -This facility was listed for the AIRS due to emissions including sulfur dioxide, nitrogen oxide, non-methane organic compounds, carbon monoxide and lead.	

SIGNIFICANT REGULATED FACILITIES IDENTIFIED			
Facility/Location	Distance/ Direction/ Gradient	Regulatory Listing Information	Additional Information/ Comments
		TIER 2 -This facility was listed for the storing or manufacturing of hazardous materials including selenium, calcium alloys (pyrophoric), liquid nitrogen, nitric acid, sodium nitrate, sodium carbonate, lead, sulfur, diesel fuel, propane, arsenic, portland cement, hydrogen peroxide, sodium hydroxide, gasoline, sulfuric acid, antimony, batteries, secondary smelting and non-ferrous metals, ferric sulfate solution and liquid oxygen.	
City of Frisco / Stewart Creek Holding Pond / SCWWTP Note: This facility is no longer active and is undergoing remediation activities, under the TCEQ VCP.	West-adjacent of Tracts A and M / Down-gradient	CORRACTS - The EPA ID Number was TXT982813453. -The NAICS Code is not reported. -The facility was assigned a low corrective action priority. RCRA-TSDF / RCRA-NonGen The facility engages in treatment, storage, or disposal of hazardous waste and was classified as a large quantity generator. -The facility was registered since at least 1989 but reportedly was not a generator. -There are no reported violations. -A CEI was completed in 1993. VCP -The facility was assigned VCP ID No. 2122. -The facility type reportedly was a wastewater treatment holding pond. -The affected media was soil. Metals are the reported contaminants. -The Site acreage is 3.3.	This facility was not identified on the EPA Envirofacts, TCEQ LPST, or TCEQ PST online databases. The facility was listed on the TCEQ VCP database. According to the TWDB database, several groundwater monitoring wells were registered with the agency under the City of Frisco.

SIGNIFICANT REGULATED FACILITIES IDENTIFIED			
Facility/Location	Distance/ Direction/ Gradient	Regulatory Listing Information	Additional Information/ Comments
Green Supply 7850 5th Street	North-adjacent of Tracts I and J / Up- to cross-gradient	AST -One 4,000-gallon steel AST containing diesel was installed in 1998 and reportedly is in use. UST -The facility identification number is 1558. -One 4,000-gallon FRP UST containing gasoline was installed in 1985 but was removed in 1998. LPST -The facility was assigned LPST ID No. 113367. -The facility was reported in 1998 for a groundwater impacted release. The affected groundwater zone may have discharged between 500 feet and 0.25 miles of the UST/AST or source area to a surface water body used for human drinking water, contact recreation, or habitat to a protected or listed endangered plant and animal species. -Final concurrence was issued and the case was closed. TIER 2 -No pertinent information was provided in the database report.	This facility was not identified on the EPA Envirofacts, TCEQ VCP, or TWDB online databases. No new information was identified on the TCEQ PST or LPST databases. See further discussion below.
Circuit Fab 7990 5th Street	North-adjacent of Tracts I and J / Up- to cross-gradient	RCRA-NonGen / FINDS -The facility presently does not generate hazardous waste. -The facility was registered as a LQG in 1986. -The reported waste was wastewater treatment sludge from electroplating operations, -Reported violations were related to manifests and state statutes. IHW -The EPA ID No. was TXD130376973. -The facility is listed for plating and polishing activities. -The facility is listed as inactive. -The reported waste unit is the container storage area,	This facility was not identified on the TCEQ PST, TCEQ LPST, TCEQ VCP, or TWDB online databases. The online EPA Envirofacts database identified Circuit Fab on the Land program with the EPA. See further discussion below.
Boorhem-Fields Eubanks Street	North-adjacent of Tract M / Up- to cross-gradient	UST -The facility was assigned UST ID NO. 31490. -The owner was listed as Martin Marietta Materials. -One 10,000-gallon steel UST containing gasoline was removed in 1989. The installation date was not reported. -According the UST report, the facility also utilized six ASTs.	This facility was not identified on the EPA Envirofacts, TCEQ LPST, TCEQ VCP, or TWDB online databases. No new information was identified on the TCEQ PST database. See further discussion below.

SIGNIFICANT REGULATED FACILITIES IDENTIFIED			
Facility/Location	Distance/ Direction/ Gradient	Regulatory Listing Information	Additional Information/ Comments
Frisco RM 600 Eubanks Street	Within 1,000 feet of Tract M / up-gradient (exact location unknown)	UST -The facility was assigned UST ID NO. 36203. -One 10,000-gallon steel UST containing diesel was installed in 1983 but was removed in 1996. -The business owners were "Eubank Ready-Mix Concrete Company, Inc. and TXI Operations, LP.	This facility was not identified on the EPA Envirofacts, TCEQ LPST, TCEQ VCP, or TWDB online databases. No new information was identified on the TCEQ PST database. See further discussion below.
Xtreme Iron/Rodman 6831 Ash Street	650 feet north of Tract M / Up- to cross-gradient	UST -One 30,000-gallon, double-walled composite (steel with external FRP cladding) UST was installed in 1998 for fleet refueling. -The UST reportedly is a dual-compartment type. One compartment has a capacity of 25,000-gallons for diesel and the second compartment is 5,000-gallons for gasoline. -The tanks were registered under Facility ID No. 65320 under Xtreme Iron. -Historical operator or business names included Rodman Excavation Inc. and Rodman LLC. -Other facility identification numbers were No. 73124 (Rodman Excavation) and Nos. 73494 and 74837 (Rodman Utilities).	The facility was not identified on the EPA online Envirofacts database, the TCEQ online LPST registration, or the TCEQ online VCP database. Information from the TCEQ online PST registration and TWDB are presented in the discussion below.

6.1 Discussion

Exide

The former Exide facility is centrally adjacent to the Site. According to historical records, prior to development the location of the former Exide plant was vacant/agricultural land since at least 1938. In addition to vacant/agricultural use, a segment of Stewart Creek intersected the facility and was located beneath the area currently occupied by the existing former Exide buildings. The former Exide property remained vacant/agricultural land with a segment of Stewart Creek until approximately 1964 when a single industrial building was built for the former Burrs Metals (a division of GNB, Inc.). Burrs Metals was a lead oxide manufacturer. The previously mentioned intersecting segment of Stewart Creek appeared to have been re-routed to channel along the southern boundary of the plant during the development of the Burrs Metals facility. Additionally, a railroad spur extended from the St. Louis – San Francisco Railroad toward the Burrs Metals building. In approximately 1970, GNB began recycling lead acid batteries and became a secondary lead smelter. The production of lead smelting waste (e.g., slag and battery chips) reportedly began in 1970. In 2000, Exide Corporation acquired GNB and by 2001, the facility became known as Exide. The former Exide facility ceased operations in November 2012. The former Exide facility is undergoing investigation and remedial activities under the direction of the TCEQ and EPA. An Affected Property Assessment Report (APAR) is being performed under the direction of the TCEQ.

SWG's review of available aerial photographs from 1968 to 2006 depicted the expansion of the former Exide facility over the years. Expansion activities included the additions of four landfills (North Disposal Area, South Disposal Area, Slag Landfill, and the present day Class 2 Non-Hazardous Landfill), a stormwater retention pond, a Crystallizer plant, and multiple buildings associated with processing activities at the facility.

The former Exide facility was identified on multiple regulatory databases including the CERC-NFRAP, CORRACTS, LPST, and GCC. Based on its history and identification on the regulatory databases, SWG reviewed files at the City of Frisco and the EPA Region IV office. In addition, copies of the TCEQ files were made available by the Client for review. Information from the City of Frisco is summarized in Section 5.6 and 7.1. Information from the EPA is summarized in Section 7.3. The TCEQ files are summarized in Section 5.6 and 7.2.

Based on review of the historical and regulatory information, SWG identified multiple areas of concern associated with the former Exide facility. The areas of concern generally consisted of the former Exide's industrial activities, the former South Disposal Area, the former North Disposal Area, the former Slag Landfill, the existing Class 2 Non-Hazardous Landfill, the existing stormwater retention pond, the existing Crystallizer plant (inactive), the detected concentrations of COCs along the associated railroad, Crystallizer Road, and the potential presence of groundwater impact in the area. Discussions on these areas of concern are as follows:

- The adjacent former Exide facility conducted industrial activities associated with lead oxide manufacturing (1964 to 2012) and secondary lead smelting (1970 to 2012). The facility began with a single industrial building and an associated railroad spur off the St. Louis – San Francisco Railroad that was utilized for materials transportation. Improvements within the former Exide plant area include the truck/tire washing stations, maintenance shop, raw materials storage building (RMSB), reverberatory (reverb) furnace, blast furnace, covered storage area (CSA), battery breaker, slag treatment building, wastewater treatment plant, oxide building, battery storage building, bale stabilization area, and the office building. Previous regulatory inspections have identified various violations associated with the plant including improper storage and disposal of waste, evidence of leaks and spills, unauthorized discharges of wastes, cracks in the foundation and flood wall, and administrative concerns. Multiple surface and subsurface investigations have taken place at the facility since the 1980s to evaluate the potential impacts from select COCs.

- The industrial activities were also sources of air emission of toxic substances such as lead and cadmium. Wet scrubbers were installed at the plant to help remove particulates from the furnace off-gases. Regulatory records included information pertaining to the facility's air permit and air emission testing. In addition, SWG was provided with the *Annual Soil Sampling* report dated March 1999 that was completed by Whitehead & Mueller, Inc. (WMI). The purpose of the investigation was to evaluate the concentrations of total lead in the surface soil around the facility. According to WMI, there are 10 locations around the Exide facility that are sampled annually. Based on the provided map, locations GNB-SS-01, GNB-SS-03, GNB-SS-04,

GNB-SS-05, GNB-SS-06, GNB-SS-07, and GNB-SS-09 were located on-Site on Tracts M, G, E, D, C, B, and A, respectively. The mean lead concentrations for the on-Site sampling locations were 69.8 mg/Kg (GNB-SS-01), 67.8 mg/Kg (GNB-SS-03), 16 mg/Kg (GNB-SS-04), 77.8 mg/Kg (GNB-SS-05), 105.3 mg/Kg (GNB-SS-06), 57.3 mg/Kg (GNB-SS-07), and 32.8 mg/Kg (GNB-SS-09). The WMI report also included analytical results from the previous six-years (1993 through 1998). WMI calculated a six-year average for each sampling point. The six-year average (1993 through 1998) lead concentrations were 134.6 mg/Kg (GNB-SS-01), 134 mg/Kg (GNB-SS-03), 61 mg/Kg (GNB-SS-04), 96.4 mg/Kg (GNB-SS-05), 178 mg/Kg (GNB-SS-06), 106.8 mg/Kg (GNB-SS-07), and 63 mg/Kg (GNB-SS-09). To further evaluate the aerial deposition of lead and cadmium, Exide contracted PBW to conduct a surface soil investigation in the areas surrounding the former Exide plant which included the Site. In March 2012, 117 sampling points were installed across the Site. Lead concentrations ranged from <1.96 mg/Kg (Sample N-10 in Tract B) to 5,180 mg/Kg (Sample O-15 in Tract B). Cadmium concentrations ranged from <0.86 mg/Kg (Sample Q-13 in Tract B) to 28.6 mg/Kg (Sample O-15 in Tract B). Of the 117 sample locations, 29 locations identified lead concentrations in exceedance of the City of Frisco cleanup goal of 250 mg/Kg. The samples were located in Tracts A through H and Tract M. Further delineation of the surface soil by PBW in May of 2012 identified lead exceedances in Tracts B, C, D, and M.

- During the visual survey, SWG identified a drainage feature located adjacent and along the northern boundary of Tract A. Scattered battery chips were identified along the off-Site drainage feature. It should be noted that this drainage feature was located parallel and south-adjacent of Crystallizer Road where battery chips were also observed.

- The South Disposal Area, a closed pre-RCRA landfill, operated from 1970 to 1974 and was used for disposal of rubber chips and blast furnace slag. According to the RCRA Facility Investigation (RFI) by Lake (1991), the South Disposal Area was estimated to be approximately 0.9 acres. No municipal solid waste was identified by Lake during the investigation. The EPA Corrective Action inspection in 2009 identified exposed battery chips and slag which indicated that the cover of this landfill had some erosion. During the May/June 2011 TCEQ inspection, the inspector noted significant evidence of erosion which exposed battery chips along the slope.

  In addition, the inspector observed a berm (approximately 5,000 cubic feet) on the west side of the South Disposal Area. The berm reportedly was used as a shooting range for several years by the City of Frisco Police Department but was no longer in use. The inspector observed large amounts of untreated slag and battery chips in the berm. According to the inspector, the untreated slag and battery chips appeared to have originated from the South Disposal Area.

- Several groundwater-monitoring wells have been installed in proximity of the South Disposal Area since 1990. The monitoring wells in these areas included B1, B1N, B1R, B1S, B2, B2R, B3, B3N, B3R, B4, and B4R. Of these, monitoring wells B1R, B2R, B3R, and B4R have not been decommissioned. The latest groundwater sampling event (January 2012) by PBW included B3R and B4R; however, monitoring well B3R was dry during the investigation. Monitoring wells B1R, B2R, and B3R

have not been sampled since 1997. Lead and cadmium concentrations from the January 2012 sampling event were detected at 0.0761J- milligrams per liter (mg/L) and 0.00062J mg/L, respectively. Sulfate and TDS concentrations were 178 mg/L and 1,170 mg/L, respectively. Although low concentrations of COCs were present in groundwater, it should be noted that analyses were specifically for lead, cadmium, TDS and sulfate. Regulatory information on the former Exide facility indicated the use of petroleum products and other hazardous substances.

- The North Disposal Area, also a closed pre-RCRA landfill, operated from 1974 to 1978 and was used for disposal of rubber chips and blast furnace slag. Additionally, the North Disposal Area was used by the City of Frisco as a municipal solid waste landfill. According to the RFI by Lake (1991), the North Disposal Area was estimated to be approximately 5.2 acres. Landfill materials identified by Lake included construction debris, normal household and industrial trash. Lake noted that the cap on the North Disposal Area was thinning in several areas. Additionally, the EPA Corrective Action inspection in 2009 identified exposed battery chips and slag, which indicated that the cover of this landfill had some erosion.

  It should be noted that in 1986, dredging activities associated with the cleanup of Stewart Creek resulted in the piling of dredged materials on the southwestern portion of the North Disposal Area. In 1989, Lake's closure plan for the Stewart Creek dredging piles were approved by the Texas Water Commission (TWC; predecessor to TCEQ). The dredged sediment was pre-characterized as Class I Non-Hazardous waste. The sediment materials were dispersed above a section of the North Disposal Area were compacted and capped with clay.

- SWG noted that several groundwater-monitoring wells have been installed down-gradient of the North Disposal Area and Stewart Creek dredging pile area since 1990. The monitoring wells included B5, B5N, MW16, MW16S, and MW17. Monitoring well B5 has been decommissioned. The latest groundwater sampling event for the remaining wells was conducted in January of 2012 by PBW. The samples were analyzed for total and dissolved metals (specifically lead and cadmium), sulfate, and TDS. Relatively low concentrations of metals were detected. Sulfate concentrations ranged from 298 milligrams per liter (mg/L; in MW16) to 1,590 mg/L (MW17). TDS concentrations ranged from 1,380 mg/L (MW16) to 7,980 mg/L (MW16S).

- The former slag landfill was active from 1978 to 1996 and was used for disposal of blast furnace slag. It should be noted that the former Exide's "Boneyard" was located on top of the former slag landfill. Available regulatory files revealed that during the EPA corrective action inspection in December 2009, equipment containing process wastes was observed in the Boneyard. The equipment included a roller belt with battery chips, a kettle with refining dross, a "grizzly screen" containing slag pieces, a bail of untreated cardboard and shrink wrap, and several "supersacks" containing what appeared to be building insulation. In addition, hydraulic equipment including two full hydraulic tanks were observed to be leaking hydraulic fluid onto the ground was observed. In the *National Pollutant Discharge Elimination System* (*NPDES) Compliance Inspection Report* dated September 14, 2010, the inspector noted that numerous areas of slag, dross, batteries, fire extinguishers, and trash were observed in the Boneyard. In January 2012, PBW collected soil samples at three

locations from the former slag landfill area. Soil samples were collected at various intervals up to 10 feet bgs. The maximum lead concentration detected was 7,970J mg/Kg at the two to four feet bgs interval. Cadmium was detected at a maximum concentration of 50.2 mg/Kg at the two to four feet interval. In addition, PBW also collected five soil samples at the zero to two feet bgs interval from locations surrounding the Boneyard. The maximum lead and cadmium concentrations detected were 47,000 mg/Kg and 65.9 mg/Kg, respectively, which were located on the south side of the Boneyard.

Several groundwater-monitoring wells have been installed down-gradient of the former slag area since 1990. The monitoring wells were B8, B8N, B8R, and MW18. The latest groundwater sampling event (January 2012) by PBW was limited to MW18. Monitoring wells B8, B8N, and B8R have not been sampled since 1997. The January 2012 analytical results for MW18 identified lead and cadmium concentrations (total and dissolved) below their respective detection limits. Sulfate and TDS concentrations were 453 mg/L and 1,040 mg/L. respectively. It should be noted that the analyses were limited to select metals and that the location of MW18 was cross-gradient of the former slag landfill. Additionally, the information from the regulatory files indicated that the activities associated with the Boneyard were uncontrolled and have included the placement of equipment containing process waste and hydraulic fluid in this area. Information from the regulatory database report referenced the use of parts solvent at this facility.

- The stormwater retention pond was constructed in the 1990s and is located adjacent to the Site (Tract A). Stormwater run-off from the manufacturing area of the plant flows into a storm sewer drain that is connected to the pond. The stormwater treatment includes pH adjustment, precipitation of dissolved solids, and filtration. In the past, treated stormwater was discharged into Stewart Creek. Dried sediment was collected and returned to the reverb furnace.

  Although the retention pond is solely used for stormwater control, it should be noted that past regulatory inspections have identified evidence of improper storage and spills at the facility. In a NPDES compliance inspection conducted in September 2010, the inspector noted that metallurgical coke was stored outside in an uncovered area and the runoff trailed to an open storm sewer curb inlet. During the May/June 2011 TCEQ inspection, the inspector noted white liquid and solid at the plant area. The liquid reported was flowing toward a stormwater pipe. A soil sample collected nearby contained elevated concentrations of lead and cadmium at 39,700 mg/Kg and 574 mg/Kg, respectively. In addition, according to the regulatory information, the manufacturing activities at the facility have included the use of other petroleum products and/or hazardous substances (i.e., solvents). As noted above, investigations of various media associated with the facility were limited to select COCs.

- The present day Class 2 Non-Hazardous Landfill consists of the landfill disposal area, a solar evaporation pond and a leachate collection system. The landfill, which is owned and operated by the former Exide facility, consists of nine cells, six of which were reported by the TCEQ to have been closed. Leachate from the landfill is collected into a leachate tank and is pumped out and processed in the facility's WWTP. Landfill contact water is pumped to the solar evaporation pond. Sediments

from the pond are recycled in the reverb furnace or disposed at an off-site landfill. Based on the regulatory files, treated slag (with Enviroblend, Portland cement, etc.) is placed in this landfill. The treated slag is analyzed via Toxicity Characteristic Leaching Procedure (TCLP) extraction to meet the Class 2 Non-Hazardous criteria. However, according to the TCEQ inspection during May to June 2011, it was noted that the treated slag is disposed of in the landfill before the laboratory results are available. Exide's standard operating procedure is to excavate the failed batch from the landfill and retreat it until the TCLP extraction meets the Class 2 Non-Hazardous criteria. During the TCEQ inspection, a sample of the treated slag and one sample of a material resembling mud that consisted of contact water and sediments were collected. Laboratory analytical results indicated hazardous concentrations of lead (up to 36,200 mg/Kg total and 25.52 mg/L TCLP) and cadmium (up to 437 mg/Kg total and 1.57 mg/L TCLP) were present in the Class 2 Non-Hazardous Landfill.

- The Crystallizer plant is located east-adjacent and up-gradient of the Site (Tract A). The activities at the Crystallizer plant were the final phase of processing treated wastewater from the Exide facility. A by-product of the process was sodium sulfate, which was collected and sold to Cooper Industries for re-use in the production of fiberglass, or disposed of at DFW Recycling and Disposal. Information from the regulatory files has identified runoff, spills and battery chips in proximity of the Crystallizer plant.

  During the EPA's corrective action inspection in December 2009, liquid was leaking from a frac tank at the Crystallizer unit. A visible drainage pathway was observed leading from the frac tank to the edge of a concrete ramp. The EPA noted that analytical results for the contents of the frac tank over the past year indicated that the contents of the tank were hazardous waste due to toxicity for selenium and cadmium on several occasions. In the *NPDES Compliance Inspection Report* dated September 14, 2010, the inspector observed uncontrolled salt laden runoff from the Crystallizer plant and also that the frac tank was leaking. In the May/June 2011 TCEQ inspection, the inspector observed a white solid and several battery chips in a drainage swale west of the Crystallizer area. Additionally, dead vegetation and a white solid along a drainage pathway that began at the Crystallizer and ended at the culvert were observed. Water from this drainage reportedly discharges to the City of Frisco. However, it was not stated in the report whether the drainage discharged into the City's storm sewer or the sanitary sewer. One soil sample was collected at the opening of the culvert. Total lead and TCLP lead were detected at concentrations of 694 mg/Kg and 3.92 mg/L, respectively. Sulfates were detected at a concentration of 6,040 mg/Kg. In addition to the regulatory inspections, SWG was provided with analytical results associated with the January 2012 facility investigation by PBW. Two soil samples were collected from the Crystallizer plant area and at the zero to two feet bgs interval. The soil samples were analyzed for various metals and reported the following maximum concentrations: <0.293R mg/Kg (antimony), 7.18J mg/Kg (arsenic), 50.8J mg/Kg (barium), 0.806 mg/Kg (beryllium), 0.466 mg/Kg (cadmium), 9.52J mg/Kg (chromium), 33.2 mg/Kg (lead), 12.4J mg/Kg (nickel), <0.328 mg/Kg (selenium), <0.15 mg/Kg (silver), 54.5J mg/Kg (zinc), and 8,190 mg/Kg (sulfates). The "R" notation reportedly indicates the result was rejected. The "J" notation indicates an estimated value. It should be noted that the sampling point locations were north of the driveway for the Crystallizer plant. No samples appeared to have been collected along the drainage swale associated with

the Crystallizer plant. In addition, the previous investigations were limited to select COCs. Liquids have been noted to be leaking from the frac tank. The liquids originated from the plant where other potential COCs such as petroleum products and/or hazardous substances may have been used. To date, no groundwater assessments appear to have been conducted in the immediate vicinity of the Crystallizer plant.

It should be noted that during the surrounding area reconnaissance, a fill mound was located off-Site between Tract A and the adjacent Crystallizer plant. Mr. Eagan stated that the origin of the fill is soil that was scraped from around the Crystallizer plant to create a drainage swale for routing surface water to the adjacent drainage feature (located along the northern boundary of Tract A). According to available regulatory information, several regulatory inspections from 2009 through 2011 (presented in Section 5.6) by the EPA and TCEQ have identified run-off of liquids and solids from the adjacent Crystallizer plant area to its surrounding area. In addition, soil samples collected near the Crystallizer plant by the regulatory agencies have identified COC concentrations in exceedance of the Residential Critical PCLs.

- In the 1960s, a railroad spur off the west-adjacent St. Louis – San Francisco Railroad was built along the southern boundary of Tract M. This railroad spur appears to be a path for transportation of materials to and from the adjacent former Exide facility. During review of previous environmental reports (Section 5.6), SWG noted that in 1998, JD Consulting, L.P. (JDC) collected soil samples from four locations along a segment of this railroad for lead analysis. Although the sample locations were not located on-Site, laboratory analytical results reported elevated concentrations of lead at depths up to 48 inches bgs. The maximum lead concentration detected during the investigation was 30,200 mg/Kg at a depth of six to 12 inches bgs. In addition, in March 2012, PBW collected surface soil samples near the adjacent railroad spur. The detected lead concentrations were below the City of Frisco cleanup goal of 250 mg/kg. The detected cadmium concentrations were below the Residential Critical PCL of 52 mg/Kg. Although the detected lead and cadmium concentrations were below their respective PCLs during the March 2012 surface soil sampling event, it is possible that higher concentrations of the COCs may be present at deeper intervals based on the results from the 1998 soil sampling event. In addition, based on its historical use, materials may have spilled from the rail cars along the tracks.

- The north-adjacent Crystallizer Road is associated with the former Exide operations. During the visual survey, SWG noted that scattered battery chips were present on this off-Site road. The segment of Crystallizer Road located north of Tract A (within 50 feet) was noted to be unpaved. Based on available historical information, Crystallizer Road was constructed sometime between 1968 and 1972.

- Stewart Creek and its tributary have intersected the Exide plant since at least 1938. The creek and tributary were flowing during SWG's visual survey. The flow direction in these features is to the west. It should be noted that Stewart Creek and the tributary's original drainage paths appeared to have been altered over the years. Based on the aerial photographs, a segment of Stewart Creek was originally beneath the current location of the former Exide plant. Stewart Creek appeared to have been re-routed during construction of the original Burrs Metals. No information was found during this assessment as what materials were used to fill in the original

segment of Stewart Creek that is currently located beneath the former Exide plant. The original segment of Stewart Creek is a preferential migration pathway for contaminants present in the vicinity of the former creek channel.

Regulatory information indicated that in 1973, the TWQB conducted an inspection at the former Exide facility. The inspector identified inadequate stormwater control at the facility. As a result, contaminated run-off from the battery plate storage area and the battery wrecking area entered Stewart Creek. The inspector also noted unauthorized cooling water discharge from the plant entering the creek. Additional information reviewed for the former Exide facility indicated that untreated slag and battery chips from the plant were used to line the creek banks to prevent erosion in the 1960s. In 2000, remediation activities along Stewart Creek were conducted by JDC and the results were presented in a *Stewart Creek Corrective Measures Implementation Report.* The focus of the remediation efforts was the segment of Stewart Creek located between South 5th Street and the adjacent railroad to the west. The assessment activities generally consisted of the removal of soils and slag from Stewart Creek followed by verification sampling. Approximately 16,025 tons of material were removed from Stewart Creek. Following analytical data confirming that the cleanup levels were met, the creek bottom was backfilled with clean soils and graded as necessary. Although remediation efforts have been taken, it should be noted that the focus of the 2000 investigation was limited to metals, specifically lead and cadmium. The Notice of Registration (NOR) for Exide included other petroleum products and/or hazardous substances such as benzene and tetrachloroethylene. In addition, since 2000, there were regulatory inspections including a TCEQ inspection in May 2011 that identified "dead vegetation near a crack in the barrier wall (also known as the flood wall) where a liquid was discharging." The TCEQ staff collected a soil sample from the embankment where the dead vegetation was observed and analyzed it for lead (total and TCLP). The detected lead concentrations were 3,560 mg/Kg (total) and 2.86 mg/L (TCLP). The TCEQ staff also observed a staining along the wall where the stormwater pipe exited the wall (approximately 500 feet east-northeast of Tract A). The staff noted that the "pipe appeared to be leaking due to worn out gaskets." A sample of the soil and rock along the embankment beneath the pipe indicated lead and cadmium concentrations at 39,800 mg/Kg and 894 mg/Kg, respectively. It is unclear how long the seepage from the cracked wall or the pipe discharges had been occurring.

- During the visual survey, groundwater-monitoring wells were identified on Tract E (known as MW20), Tract G (known as MW19), and Tract M (known as LMW1 through LMW4). Based on SWG's review of the regulatory files, multiple groundwater-monitoring wells have been installed across the area (including the Site) at various times to evaluate the subsurface conditions and the potential impact from the adjacent former Exide's activities. To date, a number of these groundwater-monitoring wells have been decommissioned. However, there remain numerous active groundwater-monitoring wells that are located on- and off-Site. Figure 3 depicts the approximate location of the wells that were found in the regulatory files. Groundwater analytical results were not identified for all wells and it appears that the wells were sampled at various times by different consultants. The on-Site monitoring wells MW19 and MW20 were last sampled in January 2012 by PBW. SWG noted that the investigations were conducted to evaluate select COCs. Information from the regulatory database and files associated with the adjacent

Exide facility have documented other potential COCs such as petroleum products and/or hazardous substances (i.e., solvents) that were utilized or handled at the facility.

The former Exide facility began operation in 1964. From 1964 to 2012, the facility was a lead oxide manufacturer. Lead smelting operations began in 1970. Expansion activities since the 1960s included the addition of operation buildings at the plant, landfills, a retention pond and a Crystallizer plant. **Based on an industrial history of more than 40 years, documented violations, limited analytical program utilized in past investigations, proximity to the Site, and information from previous regulatory inspections, the adjacent former Exide facility presents a REC in connection with the Site.**

Stewart Creek Wastewater Treatment Plant

The west-adjacent SCWWTP is not an active facility. During the visual survey, the location of the former SCWWTP was gated. The area beyond the gate was noted to be vacant land surrounded by dense vegetation and consisted of a pond and a fenced-in area (with a building structure) that was used by the City of Frisco Police Department.

The City of Frisco opened the SCWWTP in 1979 to serve the downtown area and the GNB battery recycling facility (currently known as Exide). The SCWWTP utilized an activated sludge process with influent and effluent ponds and sludge drying beds. The Stewart Creek WWTP was operated by the North Texas Municipal Water District (NTMWD) under contract to the City until 1998 when the permit was transferred to NTMWD. The facility itself was owned by the City of Frisco. Due to high TDS in the GNB process wastewater, the Stewart Creek WWTP did not always meet its permitted discharge parameters. The GNB process wastewater also caused infrequent lead and cadmium spikes in the wastewater. The resultant metals buildup in the sludge drying beds required a temporary RCRA Interim Status permit for closure of the drying beds in the 1980s when the facility changed to a belt press operation. Once the Stewart Creek West WWTP was built, the Stewart Creek WWTP was used primarily to treat GNB's wastewater. Due to continuing toxicity problems related to the high TDS, GNB/Exide constructed a process wastewater recycling facility on its site. When the GNB/Exide recycling facility became operational in June 1999, the Stewart Creek WWTP was closed, the State and federal operating permits were relinquished, and the treatment facilities were demolished.

A series of soil and groundwater investigation activities were implemented at the facility from 2005 to 2009 by Southwest Geoscience. The objectives of the investigations were to evaluate the magnitude and extent of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH) and metals in the facility's soil and groundwater as a result of potential historic releases from the facility's WWTP. Additional soil, groundwater, holding pond sediment, holding pond water and Stewart Creek sediment investigations were performed by PBW, on behalf of Exide during the period from June 2010 through February 2511. Two self-implementation notices were filed in March 2012 and remediation efforts are currently on-going. Although concentrations of various metals (arsenic, cadmium and lead) have been detected in surface soil and the holding pond sediment at concentrations exceeding their respective critical PCLs, based on the facility's down-gradient location, the former SCWWTP does not present a REC in connection with the Site.

Green Supply:

Green Supply was located north-adjacent and up-gradient of the Site during SWG's visual survey. According to historical records, Green Supply has been in operation since 1984 as a distributor of plumbing supplies and fixtures.

The EDR regulatory databases identified Green Supply on the AST, UST, and LPST databases. Information from the regulatory databases and files obtained from the TCEQ identified one 4,000-gallon UST that was removed in 1998 that resulted in a groundwater impact. A Plan A Risk Assessment Report was submitted to the TNRCC in 1998 which included the installation of three groundwater-monitoring wells. Three additional wells were installed in 2001. According to the Site Closure Request Form dated April 2004, the soils that were excavated during the UST removal in 1998 were returned to the excavation. The remaining concentrations of benzene, toluene, ethylbenzene, total xylenes, total BTEX, and total petroleum hydrocarbons (TPH) in soil reportedly are 12 mg/Kg, 150 mg/Kg, 120 mg/Kg, 710 mg/Kg, 992 mg/Kg, and 2,450 mg/Kg, respectively. Between September 1998 and April 2004, a total of 11 groundwater monitoring events took place with samples collected from the six groundwater monitoring wells. The maximum concentrations of BTEX in groundwater at the time of the closure request reportedly were 0.29 mg/L (MW-5), 0.012 mg/L (MW-5), 0.15 mg/L (MW-1), and 0.016 mg/L (MW-2), respectively. MTBE and naphthalene concentrations reportedly were 22 mg/L and 0.120 mg/L, respectively. TPH was not detected above the laboratory detection limits. The remaining maximum concentrations reported at the time of the closure request were below the Target Cleanup Goals for the construction worker pathway. Based on information in the closure request, the groundwater gradient at this facility was to the southeast toward the Site. Additionally, the included isoconcentration maps depict impact from Green Supply to the Site. Green Supply reportedly received final concurrence and the case has been closed. Based on available information, it appears that a 4,000-gallon AST containing diesel was installed in 1998 subsequent the removal of the previously mentioned UST. During SWG's visual survey, SWG noted that the AST was not improved with a secondary containment or located within a covered area. Stormwater from this facility appeared to drain south onto the Site.

The north-adjacent and up-gradient Green Supply has been in business since 1984. Regulatory information has identified a release associated with the facility that impacted areas beyond the facility's limits. According to available regulatory information, the facility has received regulatory closure. To date, no assessments have been conducted on-Site to address potential impact from the documented release and industrial activities associated with Green Supply. **Based on the type of business, more than 20 years of industrial activities, documented release, up-gradient and adjacent location, SWG's visual survey, and lack of subsurface assessments on-Site, Green Supply presents a REC in connection with the Site.**

Circuit Fab:

Circuit Fab was located north-adjacent and up-gradient of the Site during SWG's visual survey. According to historical records, Circuit Fab was in operation from 1984 to 1988 and manufactured and plated circuit boards.

This facility was identified on the IHW and RCRA databases. Information from the regulatory databases and files obtained from the TCEQ indicated the facility handled/stored hazardous materials including wastewater treatment sludge, spent acid, copper sulfate solution, sulfuric acid, hydrochloric acid, and methanesulfonic acid. In the TCEQ file, SWG identified a letter from the TWC dated March 9, 1987 that discussed the TWC's inspection due to a complaint regarding waste discharge on the grounds behind the facility. The inspector noted that during the investigation, there was evidence of waste materials spillage from the open-top drums on the ground. Additionally, the spilled materials were drained away from the facility. In addition, a TWC letter dated March 30, 1988 discussed a fire that resulted in the release of hazardous substances including the acids, cleaners, and plating solutions. Although the quantity of materials released could not be determined, the TWC letter indicated that approximately 3,000 gallons of water was used to extinguish the fire. According to the TWC letter, the fluids caused significant surface contamination to the area surrounding the building and extended into an adjacent elementary school yard and other properties to the southeast corner of the property lines. Remedial efforts were taken to recover the fluids and collect the impacted surface solids (soils, etc.). The contaminated soil was classified as Class I Non-Hazardous waste and disposed off at the Greater Texoma Utilities Landfill.

Information from the EPA included a *Pre-CERCLIS Screening Assessment* that was conducted by the TCEQ for EPA in March 2010. The purpose of the assessment was to determine whether further steps in the investigation were required under CERCLA. The report discussed several investigations by the TWC in 1987 and 1988 which identified several violations associated with improper storage of drums, evidence of spillage going offsite and administrative violations. The report also discussed the 1988 fire incident discussed above. According to the report, a total of 9,450 gallons of hazardous waste was disposed by Petro/Chem Environmental Services on April 28, 1988 at Disposal Systems, Inc., in Deer Park, Texas subsequent to the fire. During the Pre-CERCLIS site visit on January 20, 2010, the TCEQ staff found no evidence of waste piles, drums, staining, stressed vegetation or visible evidence of discharges at the facility. Based on this investigation, it was concluded that the "site is not recommended for further evaluation under CERCLA"

The north-adjacent and up-gradient Circuit Fab was in business from 1984 to 1988. Regulatory information has identified a release associated with the facility that impacted areas beyond the facility's limits. The facility underwent a *Pre-CERCLIS Screening Assessment* that was conducted by the TCEQ and the facility was not recommended for further evaluation under CERCLA. To date, no assessments have been conducted on-Site to address potential impact from the documented release and industrial activities associated with Circuit Fab. **Based on the type of business, industrial use, documented release, up-gradient and adjacent location, and lack of subsurface assessments on-Site, Circuit Fab presents a REC in connection with the Site.**

<u>Frisco RM</u>
The Frisco RM facility was not identified during SWG's area survey. The associated address was reported as 600 Eubanks Street; however, Eubanks Street addresses are currently four-digits. SWG searched historical city directories and found no information regarding this facility. Additionally, the available city directory for Eubanks Street from 1986 to 2011 referenced the Eubanks Street addresses with four-digits while the TCEQ

file (presented below) from the 1990s referenced the address with three-digits. Based on this information, it appears that the referenced 600 Eubanks Street address was incorrect. SWG contacted the City of Frisco Planning & Zoning Department and spoke with Mr. Skye Thibodeaux who was unable to find any information on this address.

SWG reviewed available historical aerial photographs dated from 1938 to 2006 to determine the possible location of the Frisco RM facility along Eubanks Street to the north of the Site. The available photographs from 1938 to 1972 depicted the area to the north along the location of Eubanks Street to be vacant agricultural land. The 1984 and 1995 aerial photographs depicted an apparent batch plant facility located approximately 900 feet northwest of the Site. The subsequent available aerial photograph dated 2004 depicted this area to have been redeveloped with another industrial facility later identified as Rodman Excavating (discussed below). As referenced in the table above, the owners of Frisco RM were Eubanks Ready Mix Concrete and TXI Operations. The regulatory information indicated that one UST was installed in 1983 but was removed in 1996. The time frame of the batch plant from the historical aerial review appears to correspond with the time frame of the regulatory information. Based on the corresponding time frames and the referenced "ready mix concrete" ownership, it appears that the Frisco RM may have been the same batch plant that was depicted in the aerial photographs.

In addition, SWG contacted Ms. Nancy Garnett of TXI Operation who was listed as the owner's contact on the regulatory database. Ms. Garnett has been with TXI for approximately 22 years. Ms. Garnett indicated that the "Frisco RM" was a "Ready-Mix" facility; however, she has no knowledge of its exact location. She indicated that she noticed there was a 600 Eubanks Street listing but she has been unable to determine why that address was there. Ms. Garnett referred SWG to contact Mr. Don Bell, an environmental manager with TXI who works with their ready-mix facilities. According to Mr. Bell, TXI Operations sold the Frisco RM facility many years ago. Because of the transaction age, the file boxes associated with the Frisco RM facility reportedly have been destroyed. As a result, Mr. Bell was unable to confirm the location of this facility.

The Frisco RM facility was identified on the regulatory databases for having one 10,000-gallon UST containing diesel that was installed in 1983 and removed in 1996. The location of this former facility could not be determined during this assessment based on its address other than it was located along Eubanks Street which is up-gradient of the Site. However, based on the tank operation dates (1983 to 1996) and its ownership reference as a concrete ready-mix facility, it is likely that the Frisco RM facility was an apparent batch plant facility that was depicted in the 1984 and 1995 aerial photograph. Although no documented releases were reported, the exact location of the former UST in relation to the Site is unknown. No records of subsurface assessments were identified for the facility. To date, no assessments have been conducted on-Site to address potential impact from nearby and up-gradient facilities. Based on the lack of information pertaining to the operational history, distance, and up-gradient location, the former Frisco RM facility to the north-northeast presents a potential environmental concern in connection with the Site.

<u>Xtreme Iron/Rodman</u>
The Xtreme Iron is a heavy equipment (e.g., construction) rental facility. During the area survey, SWG noted multiple drums in the warehouse building at 6725 Ash Street. In

addition, SWG noted exterior storage of drums located approximately 1,375 feet northwest of the Site. The drums were not stored within secondary containment and were not in a covered area. It was not evident as to what the drums contained. Stormwater from this facility appeared to drain west-southwest (away from the Site).

According to historical records, other business names associated with Xtreme Iron included Rodman Excavation, Rodman Paving and Rodman Utilities. The associated business address range was 6811 Ash Street through 6841 Ash Street. Tank registration as discussed below was registered at 6831 Ash Street. Historical city directories listed the associated businesses since the late 1990s.

As referenced above, Xtreme Iron was identified on the UST database for one 30,000-gallon fuel UST. SWG obtained and reviewed available files from the TCEQ. The available tank files identified one 8,000-gallon diesel AST that was installed April 2000 but reportedly is out of use; five active 2,000-gallon diesel ASTs that were installed in September 2001; and three additional active 2,000-gallon diesel ASTs that were installed in October 2001. Records documenting a release from this facility were not identified and no records of subsurface assessments were identified in the file. In addition to the TCEQ file, SWG searched the TCEQ online PST database which identified a total of 23 ASTs. Two of 23 ASTs were installed in 1993 under Facility ID No. 65320. Of these, one is an active 10,000-gallon diesel tank and the other is an 8,000-gallon diesel tank that reportedly is out of use. Additionally, the previously referenced 30,000-gallon UST is listed under this facility registration (ID No. 65320). Thirteen of the 23 ASTs (diesel and gasoline) were installed in 2000 under Facility ID No. 73494 and had capacities ranging from 2,000-gallons to 6,000-gallons. The 13 ASTS reportedly are active and were either in a "v-shaped" containment or installed in earthen dikes. One of the 23 ASTs was an 8,000-gallon diesel UST that was installed in 2000 and reportedly is out of use. The remaining 7 ASTs (of 23) were registered under Facility ID 74837. No information on their statuses, capacities, or installation dates was noted. It should be noted that although the ASTs or UST were registered under different facility identification numbers, the address of each registration was 6831 Ash Street in Frisco, Texas.

SWG searched the TWDB Water Well Mapper and identified well registrations at 6725 Ash Street under Rodman Construction. Based on the well report, it appears that 11 wells were installed by Strata Core Drilling Company in March 2011 to depths of 12 feet bgs. The wells were plugged within 48 hours. It is unclear why the wells were installed and no analytical reports were found in the TCEQ file for this facility.

Xtreme Iron/Rodman facility appears to have been in operation since at least 1999 as a supplier of heavy equipment utilized for construction activities. Information from the TCEQ identified one 30,000-gallon duel compartment UST (gasoline and diesel) and a total of nine diesel ASTs with capacities ranging from 2,000- to 8,000-gallons for the facility. However, it should be noted that the TCEQ PST Registration database identified a total of 23 ASTs with similar capacities. Although no documented releases in connection with the UST or ASTs were identified during this assessment, the ASTs have been in operation for more than 10 years and it appears that several of the ASTs were installed in earthen dikes. Exterior storage of drums without secondary containment or under a covered area was noted during SWG's area reconnaissance. Stormwater runoff from this facility appears to discharge into a drainage swale and

appears to route the surface water onto the Site. To date, no assessments have been conducted on-Site to address potential impact from nearby and up-gradient facilities. Based on lack of information pertaining to the operational history, discrepancies between the TCEQ file and the PST registration database, distance, up-gradient location, and SWG's observations, the Xtreme Iron/Rodman facility presents a potential environmental concern in connection with the Site.

Boorhem-Fields/Martin Marietta

The Boorhem-Fields facility identified during the regulatory database review was not identified during the area survey. However, according to historical city directories, the Boorhem-Fields facility operated in the location of the existing Martin Marietta Materials facility at 6601 Eubanks Street. In addition, the regulatory database referenced the owner of Boorhem-Fields as Martin Marietta Materials. Based on the city directories and the regulatory database, it appears that the Boorhem-Fields and Martin Marietta facility are located at the same area. The Martin Marietta facility was located approximately 1,075 feet west and cross- to down-gradient of the Site. SWG observed the facility to be a stone, sand and gravel yard. Based on historical records, the Martin Marietta facility appeared to have been in operation since the late 1980s.

According to the regulatory database, one 10,000-gallon UST containing gasoline was removed from this facility in 1989. SWG obtained and reviewed available files from the TCEQ; however, no new information was identified. Additionally, no records pertaining to the specific location of the former UST or records indicating subsurface assessments subsequent to the removal of the UST were identified in the file. SWG made several attempts to contact the Martin Marietta facility for an interview; however, there has not been any response at the facility.

The north-adjacent Martin Marietta (also known as Boorhem-Fields) stone, sand and gravel yard located at 6601 Eubanks Street has been in operation since the late 1980s. Regulatory information indicated one 10,000-gallon fuel UST was removed from the facility in 1989. Although no documented releases were reported, the exact location of the former UST in relation to the Site is unknown. No records of subsurface assessments were identified for the facility. Stormwater runoff from this facility appears to discharge into a drainage swale that appears to route the facility's stormwater onto the Site. To date, no assessments have been conducted on-Site to address potential impact from nearby and up-gradient facilities. Based on lack of information pertaining to the operational history, distance, up-gradient location, and SWG's observations, the north-adjacent Martin Marietta facility presents a potential environmental concern in connection with the Site.

6.2 Unmapped Facilities

Unmapped facilities or non-geocoded facilities are those that do not contain sufficient address or location information to evaluate their listing locations relative to the Site. The EDR report listed 12 facilities as non-geocoded. SWG reviewed the facility locations and identified one facility, City of Frisco Landfill, to be located within one-half mile of the Site. This landfill was assigned with ID No. 221, which is consistent with the former Exide landfill presented in the table above. Based on distance, topographic

relationship, regulatory listing type, and/or other facility-specific information, the remaining unmapped facilities were not considered to present RECs to the subject Site.

7.0 LOCAL RECORDS REVIEW

The following subsections detail SWG's findings based on a review of various local agency databases and files.

7.1 City of Frisco

SWG conducted a file review at the City of Frisco for records regarding USTs/ASTs, solid and hazardous waste permits, flammable contents permits, investigation reports, and violations, and emergency response incidents/reports for the Site.

Information reviewed at the City generally consisted of maps (e.g., zoning, etc.), correspondence between the City and the former Exide facility, letters from concerned citizens, newspaper clippings, information on SCWWTP, records of incident reports at the facility, various permits (e.g., building, electrical, plumbing, etc.), public information request correspondence, and records pertaining to Bicentennial Park (located more than one mile from the Site). In addition, SWG submitted an open records request for any files associated with the Frisco RM facility (discussed in Section 5.6). To date, a response has not been received.

SWG also visited the City of Frisco Library to conduct additional research on the former Frisco Lake. Available information indicated Frisco Lake was constructed in 1902 when the builders of the adjacent railroad dammed up a segment of Stewart Creek. The purpose of the lake was to provide water for the steam locomotives. No information on how the lake was filled in was identified. However, SWG identified information indicating the agricultural history of the area consisted of cotton farming.

SWG submitted an open records request for the former "Frisco RM" facility that identified during the regulatory review. To date, a response from the City has not been received. The Frisco RM facility is discussed in Section 6.1.

7.2 Texas Commission on Environmental Quality

SWG contacted the TCEQ by letter for records regarding USTs/ASTs, solid and hazardous waste permits, flammable contents permits, investigation reports, and violations, and emergency response incidents/reports for the Site. The TCEQ responded with a letter dated April 18, 2012 listing the records that were available. SWG compared the list to the TCEQ records that were made available by the Client. The provided files reportedly were a duplicate copy of the TCEQ files. However, SWG obtained a copy of the LPST file associated with the fuel oil spill. Information on the LPST incident is as follows:

- The LPST identification number is 106075.
- A letter dated January 21, 1993 from United States Environmental Services, Inc. (USESI) to the TWC discussed the services related to the abandonment of one 2,000-

gallon UST that was used to store gasoline. USESI indicated that the UST was located in an area that was being remediated due to a past pipeline line associated with an AST containing fuel oil (likely diesel). The pipeline was buried approximately two feet bgs and ran adjacent to the gasoline tank. (Information regarding the fuel oil spill was identified in the client-provided documents that are summarized in Section 5.6.).

According to USESI, a tank tightness test was performed on the UST in September 1992 which indicated there were no leaks associated with the UST. On January 7, 1993, USESI collected soil samples from beneath the UST and pipeline to determine if there was a leak. USESI noted, "due to the fact that we knew that the area had been exposed to a diesel fuel leak and we were only sampling to determine if the gasoline tank or pipeline had leaked, it was determined that laboratory comparison of the soil samples to the gasoline and diesel fuel samples collected from their respective tanks would be appropriate." Laboratory results reportedly confirmed that only diesel was the contaminant. Based on this information, USESI requested closure from the TWC.

- The UST notification referenced two USTs. One was a 2,000-gallon, FRP tank containing gasoline. This tank was filled in with water on September 21, 1992. Four subsequent events between September 28, 1992 and November 3, 1992 took place to monitor the water level in the UST. There reportedly were no loss of liquid in the abandoned (in-place) UST.

  A second UST had a capacity of 1,600-gallons. This UST was a steel UST that also contained gasoline. The UST was filled in place with water in 1979.

- A letter from the TCEQ dated July 15, 2003 to GNB Technologies, Inc. confirming the completion of corrective action pertaining to LPST No. 106075. The letter states, "no further action is necessary".

SWG resubmitted a open records request to the TCEQ in October 2012 to determine if new information became available. A response from the TCEQ dated October 15, 2012 indicated information was available for the adjacent former Exide facility. SWG compared the list to the previous TCEQ response (April 18, 2012) and the available files that were provided by the City. Based on the available of information from the City and because the current response referenced generally the same information that was previously available, SWG did not conduct additional file review during this assessment.

In addition, SWG obtained and reviewed files for the following nearby facilities:

- Boorhem-Fields (PST No. 31490);
- Frisco RM (PST No. 36203);
- Xtreme Iron (PST Nos. 65320, 73124, 73494, and 74837);
- Green Supply (LPST No. 113367); and
- Circuit Fab (EPA ID No. TXD130376973).

Information regarding these facilities are summarized and presented in Section 6.1.

7.3 Environmental Protection Agency

SWG conducted a file review at the EPA office in Dallas, Texas for records regarding USTs/ASTs, solid and hazardous waste permits, flammable contents permits, investigation reports, and violations, and emergency response incidents/reports for the Site.

Information reviewed at the EPA generally consisted of maps, correspondence between the EPA and the former Exide facility, air permits, emission testing, and TPDES permits.

Information from the EPA included:

- A JDC letter report dated December 22, 1999 to the TNRCC provided a brief summary of the closed SWMUs as follows:

  - The former battery storage area was utilized to store batteries for recycling prior to the construction of the CSA. The former battery storage area was closed in accordance with an approved closure plan dated March 1988. A certification for the closure dated January 24, 1989 was subsequently submitted to the TWC.

  - The soil cleanup for the old drum storage area was conducted in 1987 in accordance with an Agreed Order issued on March 17, 1987. Following removal of the contaminated soils associated with this SWMU, the excavation was backfilled and asphalt-paved.

  - The Stewart Creek Sediment Dredging waste piles were generated from a sediment cleanup of Stewart Creek conducted in 1989. The waste piles were closed in accordance with a closure plan approved by the TWC on March 8, 1989 and as required by an Agreed Order issued on March 30, 1989. The closure involved utilizing the sediments as intermediate cover for the North Disposal Area followed by placing a clay cap over the sediments. Certification of the closure was submitted to the TWC on August 7, 1989.

  - The product waste piles were utilized to store rubber and plastic battery chips derived from batteries processed at the facility. The waste piles were closed in accordance with a closure plan approved by the TWC on January 22, 1988 and as required by an Agreed Order issued March 17, 1987. The waste piles were certified as closed in March 1988.

- A *NPDES Compliance Inspection Report* dated September 14, 2010 indicated multiple concerns as follows:

  - the concrete pads under some of the process areas were noted to be a concern due to the presence of numerous cracks;
  - exposed patches of slag material were identified among the tree line in the South Disposal Area;
  - sediment reportedly was being lost from the active outer cell slopes and closed cell areas of the Class II landfill;

- the solar aeration pond level appeared to have exceeded the two-foot freeboard level;
- numerous trash and debris piles were either noted near or next to the low water crossing over the unnamed tributary;
- numerous areas of slag, dross, batteries, fire extinguishers, and trash were observed in the Boneyard;
- numerous pieces of foam pipe insulation were observed on the bank of Stewart Creek;
- numerous cracks, seeps, and weeps were observed along the flood wall and salt deposition was noted on the bank of Stewart Creek;
- uncontrolled salt laden runoff from the Crystallizer plant and the frac tank was leaking; and
- metallurgical coke was stored outside in an uncovered area and runoff trails to an open storm sewer curb inlet that discharges to a marshy area connected to the tributary was noted.

- A letter from Baker Botts LLP to the EPA dated September 8, 2011 included maps depicting surface drainage at the former Exide plant and results from the second quarter of 2011 sampling of the stormwater outfall. The samples (Outfall GP-1 through Outfall GP-5) were collected in April 2011 and analyzed for various metals. The highest concentration of lead detected was 0.878 mg/L in Outfall GP-1. The highest concentration of cadmium detected was 0.00570 mg/L in Outfall GP-5.

SWG also submitted records request for other nearby facilities including Boorhem-Fields and Frisco RM. Responses from the EPA indicated no files were found. These facilities were identified during the regulatory database review and are further discussed in Section 6.1.

SWG resubmitted an open records request to the EPA in October 2012 to determine if new information became available. To, date a response from Mr. Terry Johnson of the EPA Multimedia Planning and Permitting Division was received. SWG inquired whether new information regarding the adjacent former Exide facility had become available since May 2012 (date of SWG's previous EPA file review). Mr. Johnson stated his section works primarily with the air compliance issues. Mr. Johnson stated that to his knowledge the former Exide facility was in the process of closing its plant down. Because the facility was located in a non-attainment area for lead, subsequent to closing, there would be a maintenance plan that will require air monitoring for lead for a period of three years. Mr. Johnson provided SWG with the most recent air-monitoring data and an aerial map that depicts the non-attainment area at the former Exide facility.

In addition to Mr. Johnson's response, SWG received a letter dated December 13, 2012 from Ms. Leticia Lane, Regional Freedom of Information Act Officer. Ms. Lane provided SWG with a disk that contained information responsive to SWG open records request. Information on the disk included copies of capital expenditure requests, correspondences, slug test results, the JDC *Phase II RFI* dated August 1998 (see Section 5.6), the CRA *Sampling and Analysis Work Plan* dated November 2011 (see Section 5.6), EPA and the former Exide facility meeting agendas, and geologic cross section maps prepared by PBW dated February 2512.

8.0 FINDINGS

8.1 Summary of Findings[2]

SWG has prepared Figure 3 in Appendix A to depict the approximate locations of the on-Site monitoring wells that were identified in the regulatory files for the Exide facility. The figures can be used as a reference to determine the relationship (distances, etc.) between the Site and where maximum concentrations of chemicals of concern (COCs) were identified during the investigations. During the previous investigations, the analyses that were conducted were limited to "select COCs", primarily lead and cadmium; however, SWG's review of available regulatory information (e.g., inspections and notice of registrations) for the former Exide facility identified other petroleum products and/or hazardous substances such as hydraulic fluid, solvents, and fuel. Groundwater analytical results were not identified for all wells and it appears that the wells were sampled at various times by different consultants. SWG did not include other sampling points (e.g., surface soil, sediment, etc.) that were not converted into monitoring wells because of the amount of sampling activities that were conducted to evaluate potential impacts from the former Exide facility to the surrounding areas, including the Site. However, SWG included excerpts (text and associated figures) from the previous investigation reports in Appendix F for reference.

It should also be noted that regulatory standards changed over time and the discussions below are related to regulatory standards at the time of the sampling events. Based on a Tier 2 PCL calculation for total lead, assuming clayey soil, the Tier 2 PCL for lead would exceed 250 mg/Kg; therefore, the Residential Critical PCL for lead in surface soil will default to the cleanup goal of 250 mg/Kg that was established by the City of Frisco. Based on SWG's review of available regulatory files for the adjacent former Exide facility, it is presumed that the Site will meet the Class 3 groundwater resource classification. SWG compared the detected cadmium concentrations to the TCEQ TRRP (30 TAC Chapter 350) Tier 1 Residential Critical PCLs for a 30-acre source area considering a Class 3 groundwater designation. The Critical PCL for cadmium is the Tier 1 residential total soil combined (^{Total} Soil $_{Comb}$) PCL of 52 mg/Kg. If Class 3 groundwater designation is not supported by additional investigation results or if the TCEQ concurrence is not received, the applicable Tier 1 Residential Critical PCLs could change. For the purpose of this Phase I ESA, the Residential Critical PCLs for lead and cadmium in surface soil are 250 mg/Kg and 52 mg/Kg, respectively.

<u>Site Description</u>:

The Site consists of 13 tracts of vacant land (Tract A through M) totaling approximately 170 acres. The Site generally consisted of vacant land with areas of dense vegetation, except Stewart Creek intersects the Site through Tracts C and D. Tributaries of Stewart Creek intersected the Site on the southwestern and northern portions. Drainage features were noted in Tracts A, D, and E. A segment of Eagan Drive (a private driveway owned by the former Exide facility) is located on portions of Tract E and F. Additional on-Site features include an intermittent pond, an intermittent natural spring,

[2] The order of presentation of items in this section generally follows the order of presentation in the previous sections of the report and does not infer any ranking of priority or degree of risk.

two barn structures, and a segment of the former 5th Street. Parkwood Drive, a public right-of-way, intersects Tract C through H and is not part of the Site.

Surrounding Area:

The Site is located within a mixed residential, commercial and industrial area. With the exception of the central-adjacent former Exide facility, the north-adjacent Green Supply, and the north-adjacent former Circuit Fab, the remaining surrounding properties do not present RECs in connection with the Site.

Site Observations:

During the visual survey, SWG did not observe evidence of existing/former USTs and/or ASTs; hazardous substances and/or petroleum products; release indicators (e.g., spills, sumps, drums, staining, etc.); and/or wastewater/effluent discharges (e.g., oil/water separators, wells, septic tanks, exterior pipe discharges, etc.) except as follows:

- Undocumented fill material was noted in Tracts G and J. The fill material generally consisted of soil mixed with limited concrete and asphalt debris. SWG also identified the presence of scattered battery chips in the undocumented fill. Mr. Larry Eagan, the former Plant Manager of the former Exide facility, was interviewed during this assessment regarding the operational history of the Site and the adjacent former Exide facility. Mr. Eagan did not have knowledge of the origin of the fill. Review of the 1984 aerial photograph identified significant land disturbance activities in close proximity to the fill material in Tract G and Tract J. **Based on the presence of an adjacent industrial facility and because scattered battery chips were noted, the undocumented fill presents a REC in connection with the Site.**

- Berms were identified in Tracts A, E, L, M. No evidence of disposal of solid waste or debris was identified in the proximity of the berms. Recent environmental investigation activities by PBW in March and May 2012 (Section 5.6) documented that the surface soils in some areas of the Site and nearby vicinity have been impacted with lead at concentrations exceeding the City of Frisco cleanup goal of 250 mg/Kg. However, SWG noted that the concentrations of lead detected in the surface soil samples collected in proximity of the on-Site berms were below the cleanup goal. It should be noted that the berms were constructed prior to recent investigation activities; therefore, it is possible that higher concentrations of the COCs may be present within the berm at deeper intervals. Based on the limited information, documented soil impact in the area, and the presence of an adjacent industrial facility, the on-Site berms present a potential environmental concern in connection with the Site.

- Undocumented fill material was noted in Tracts K and L. The fill material generally consisted of soil mixed with limited concrete and asphalt debris. No battery chips were identified in proximity of the fill material. Mr. Eagan did not have knowledge of the origin of the fill. Based on the presence of a nearby industrial facility, the undocumented fill in Tracts K and L present a potential environmental concern in connection with the Site.

- Significant amounts of surface debris were noted on the northwestern portion of Tract C. The debris consisted of demolished residential building debris, old appliances, some tires, cans, jars, concrete debris, and wood debris. It is unclear how long the debris has been present, the origin of the debris, or what other materials are located beneath the debris. It should be noted that the operation history of the adjacent former Exide facility included four landfills. These landfills are further discussed in Section 6.1. Additionally, land disturbance possibly related to a former gravel pit was also noted in the 1938 aerial photograph in close proximity to the surface debris in Tract C. This land disturbance feature appeared leveled in subsequent photographs. Further discussion on the land disturbance is presented in Section 5.4. Based on the limited information regarding the history of the debris, the presence of nearby landfills, and land disturbance from the 1938 aerial photograph, the on-Site surface debris presents a potential environmental concern in connection with the Site.

- An abandoned cistern was identified near the southeastern corner of Tract B and appeared to have been filled in place. Based on the survey provided by the City of Frisco, the northern portion of the cistern is located on-Site. No evidence of unusual staining or odors was identified in proximity of the abandoned cistern. The abandoned cistern was not identified during review of available historical aerial photographs and topographic maps. No information on its history was identified during this assessment. Additionally, no information was found during this assessment to determine what was used to fill in the cistern. Based on the adjacent industrial history and unknown origin of fill material, the cistern presents a potential environmental concern in connection with the Site.

<u>Historical On-Site Characteristics</u>:

The Site consisted of vacant/agricultural land, Stewart Creek, tributaries of Stewart Creek, an intermittent pond, an intermittent natural spring, and residential structures since at least 1938. Residential structures were generally located on the northern and central portion of the Site. The northern residential structures were gone by 1984. The structures in the central portion were identified during the visual survey and were noted to be either dilapidated or in poor condition. Significant features identified during review of historical records for the Site are discussed as follows:

- The 1938 aerial photograph depicted apparent stock ponds on the southwestern portion of the Site (Tract B). These ponds were no longer visible by the 1942 aerial photograph. An additional pond was noted in the 1968 aerial photograph in the northeastern portion of Tract B among vegetation. The location of this third pond corresponded to the location of an intermittent pond that was identified during the SWG's visual survey. It should be noted that the adjacent industrial activities associated with lead oxide manufacturing began in 1964. In 1970, secondary lead smelting activities began. As further discussed in Section 6.1, lead has been detected in areas surrounding the former Exide plant (including the Site), at concentrations in exceedance of the City of Frisco cleanup goal of 250 mg/Kg. The former and existing ponds are low lying areas where sediments could accumulate. Based on the adjacent industrial history and documented impact in the area, the former and existing ponds may present a potential environmental concern in connection with the Site.

- During the TCEQ inspection in May/June 2011, the inspector observed a berm (approximately 5,000 cubic feet) on the eastern portion of Tract A (west side of Exide's South Disposal Area). The berm was reportedly used as a shooting range for several years by the City of Frisco Police Department and was no longer in use. The inspector observed large amounts of untreated slag and battery chips in the berm. According to the inspector, the untreated slag and battery chips appeared to have originated from the former Exide facility's adjacent South Disposal Area. It should be noted that the figures attached to this TCEQ May/June 2011 inspection report depicted an additional berm area to the south of the South Disposal Area (north adjacent of Tract B). This area is depicted in Figure 3 in Appendix A.

  According to the regulatory files, several groundwater monitoring wells have been installed since 1990 in proximity of the shooting range berm and adjacent South Disposal Area (part of the former Exide facility). However, SWG noted that none of the wells were installed immediately down-gradient of the former shooting range berm. **Based on information from the TCEQ inspection and adjacent industrial history, the on-Site former shooting range berm presents a REC in connection with the Site.**

- A segment of South 5th Street has been present on-Site since at least 1938 and is currently an extension of Eagan Drive. The segment is located between Tract B and C. It is not known when this road was paved. SWG noted during the regulatory file review that during the TCEQ inspection in May/June 2011, Mr. James Messer, Environmental and Quality Control Manager for the former Exide facility, informed the TCEQ inspector that prior to promulgation of RCRA (1976), the City of Frisco used battery casings from the former Exide facility as road base throughout the City. However, according to Mr. Eagan, lead smelting did not begin until 1970 and South 5th Street was reportedly paved prior to 1970. In March and May 2012, PBW conducted surface soil sampling on-Site. The highest concentration of lead and cadmium detected was in Sample O-15, which was located along South 5th Street on Tract B. The detected lead and cadmium concentrations were 5,180 mg/Kg and 28.6 mg/Kg, respectively. Although cadmium was below the Residential Critical PCL, the detected lead concentration exceeded the City of Frisco cleanup goal of 250 mg/Kg. **Based on available information, the elevated concentration of lead detected along the 5th Street roadway presents a REC in connection with the Site.**

- Based on available aerial photographs, land disturbance features were identified on Tracts B, C, and D of the Site. The 1938 aerial photograph depicted the land disturbance on Tracts C and D but it was no longer visible by 1958. The 1958 aerial photograph depicted land disturbance on the southwestern portion of Tract B and was no longer visible by the 1968 aerial photograph. The land disturbance areas were noted during the time that the former gravel pit on Tract A was visible in the aerial photographs. Additionally, the land disturbance features appeared consistent with the former gravel pit; therefore, it is possible that these land disturbance features were also former small borrow pits. No information was found during this assessment to determine the materials used to fill in these land disturbance features. To date, no assessments have been conducted on-Site to address potential impact from the land disturbance features on Tracts B, C, and D. Based on

limited information regarding the land disturbance, presence of undocumented fill, and adjacent industrial history, the land disturbance feature on Tracts B, C, and D presents a potential environmental concern in connection with the Site.

- The 1984 aerial photograph depicted significant land disturbance activities in Tracts F, G, and J of the Site. The reason for the land disturbance is not known; however, it is possible that filling activities also took place in this area. Landfilling activities associated with the adjacent former Exide facility were taking place approximately 300 feet west-southwest of this land disturbance during the same time. Additionally, as noted in Section 3.7, undocumented fill was identified during SWG's visual survey in Tracts G and J among vegetation. Scattered battery chips were identified in proximity of the undocumented fill. Mr. Eagan did not have knowledge of the fill's origin. No information was found during this assessment to determine the materials used to fill in these land disturbance features. To date, no assessments have been conducted on-Site to address potential impact from the land disturbance features on Tracts F, G, and J. Based on limited information regarding the land disturbance, presence of undocumented fill, and adjacent industrial history, the land disturbance features on Tracts F, G, and J present a potential environmental concern in connection with the Site.

Historical Off-Site Characteristics:

- No RECs in connection with the historical use of off-Site properties were identified with the exception of the central-adjacent former Exide facility, the north-adjacent Green Supply, and the north-adjacent former Circuit Fab. These facilities are discussed in the regulatory summary below.

Regulatory:

Review of the EPA and TCEQ environmental database records revealed several regulated facilities that were identified in the vicinity of the Site. One (1) CERCLIS NFRAP facility, one (1) RCRA Generator facility, two (2) RCRIS Treatment, Storage, and Disposal facilities, two (2) CORRACTS facilities, one (1) ERNS report, two (2) Solid Waste facilities, nine (9) Registered Storage Tank facilities (above- and underground), six (6) Registered Leaking Petroleum Storage Tank facilities, two (2) Industrial Hazardous Waste facilities, and one (1) Voluntary Cleanup Program facility were identified within specified search radius of the Site. Based on the Site geology, topographic gradient, distance from the Site, and/or the regulatory status details, these facilities do not constitute RECs in connection with the Site except as follows:

- The former Exide facility is centrally adjacent to the Site. According to historical records, prior to development the location of the former Exide plant was vacant/agricultural land since at least 1938. In addition to vacant/agricultural use, a segment of Stewart Creek intersected the facility and was located beneath the area currently occupied by the existing former Exide buildings. The former Exide property remained vacant/agricultural land with a segment of Stewart Creek until approximately 1964 when a single industrial building was built for the former Burrs Metals (a division of GNB, Inc.). Burrs Metals was a lead oxide manufacturer. The previously mentioned intersecting segment of Stewart Creek appeared to have been re-routed to channel along the southern boundary of the plant during the

development of the Burrs Metals facility. Additionally, a railroad spur extended from the St. Louis – San Francisco Railroad toward the Burrs Metals building. In approximately 1970, GNB began recycling lead acid batteries and became a secondary lead smelter. The production of lead smelting waste (e.g., slag and battery chips) reportedly began in 1970. In 2000, Exide Corporation acquired GNB and by 2001, the facility became known as Exide. The former Exide facility ceased operations in November 2012. The former Exide facility is undergoing investigation and remedial activities under the direction of the TCEQ and EPA. An Affected Property Assessment Report (APAR) is being performed under the direction of the TCEQ.

SWG's review of available aerial photographs from 1968 to 2006 depicted the expansion of the former Exide facility over the years. Expansion activities included the additions of four landfills (North Disposal Area, South Disposal Area, Slag Landfill, and the present day Class 2 Non-Hazardous Landfill), a stormwater retention pond, a Crystallizer plant, and multiple buildings associated with processing activities at the facility.

The former Exide facility was identified on multiple regulatory databases including the CERC-NFRAP, CORRACTS, LPST, and GCC. Based on its history and identification on the regulatory databases, SWG reviewed files at the City of Frisco and the EPA Region IV office. In addition, copies of the TCEQ files were made available by the Client for review. Information from the City of Frisco is summarized in Section 5.6 and 7.1. Information from the EPA is summarized in Section 7.3. The TCEQ files are summarized in Section 5.6 and 7.2.

Based on review of the historical and regulatory information, SWG identified multiple areas of concern associated with the former Exide facility. The areas of concern generally consisted of the former Exide's industrial activities, the former South Disposal Area, the former North Disposal Area, the former Slag Landfill, the existing Class 2 Non-Hazardous Landfill, the existing stormwater retention pond, the existing Crystallizer plant (inactive), the detected concentrations of COCs along the associated railroad, Crystallizer Road, and the potential presence of groundwater impact in the area. Discussions on these areas of concern are as follows:

- The adjacent former Exide facility conducted industrial activities associated with lead oxide manufacturing (1964 to 2012) and secondary lead smelting (1970 to 2012). The facility began with a single industrial building and an associated railroad spur off the St. Louis – San Francisco Railroad that was utilized for materials transportation. Improvements within the former Exide plant area include the truck/tire washing stations, maintenance shop, raw materials storage building (RMSB), reverberatory (reverb) furnace, blast furnace, covered storage area (CSA), battery breaker, slag treatment building, wastewater treatment plant, oxide building, battery storage building, bale stabilization area, and the office building. Previous regulatory inspections have identified various violations associated with the plant including improper storage and disposal of waste, evidence of leaks and spills, unauthorized discharges of wastes, cracks in the foundation and flood wall, and administrative concerns. Multiple surface and subsurface investigations have taken place at the facility since the 1980s to evaluate the potential impacts from select COCs.

- The industrial activities were also sources of air emission of toxic substances such as lead and cadmium. Wet scrubbers were installed at the plant to help remove particulates from the furnace off-gases. Regulatory records included information pertaining to the facility's air permit and air emission testing. In addition, SWG was provided with the *Annual Soil Sampling* report dated March 1999 that was completed by Whitehead & Mueller, Inc. (WMI). The purpose of the investigation was to evaluate the concentrations of total lead in the surface soil around the facility. According to WMI, there are 10 locations around the Exide facility that are sampled annually. Based on the provided map, locations GNB-SS-01, GNB-SS-03, GNB-SS-04, GNB-SS-05, GNB-SS-06, GNB-SS-07, and GNB-SS-09 were located on-Site on Tracts M, G, E, D, C, B, and A, respectively. The mean lead concentrations for the on-Site sampling locations were 69.8 mg/Kg (GNB-SS-01), 67.8 mg/Kg (GNB-SS-03), 16 mg/Kg (GNB-SS-04), 77.8 mg/Kg (GNB-SS-05), 105.3 mg/Kg (GNB-SS-06), 57.3 mg/Kg (GNB-SS-07), and 32.8 mg/Kg (GNB-SS-09). The WMI report also included analytical results from the previous six-years (1993 through 1998). WMI calculated a six-year average for each sampling point. The six-year average (1993 through 1998) lead concentrations were 134.6 mg/Kg (GNB-SS-01), 134 mg/Kg (GNB-SS-03), 61 mg/Kg (GNB-SS-04), 96.4 mg/Kg (GNB-SS-05), 178 mg/Kg (GNB-SS-06), 106.8 mg/Kg (GNB-SS-07), and 63 mg/Kg (GNB-SS-09). To further evaluate the aerial deposition of lead and cadmium, Exide contracted PBW to conduct a surface soil investigation in the areas surrounding the former Exide plant which included the Site. In March 2012, 117 sampling points were installed across the Site. Lead concentrations ranged from <1.96 mg/Kg (Sample N-10 in Tract B) to 5,180 mg/Kg (Sample O-15 in Tract B). Cadmium concentrations ranged from <0.86 mg/Kg (Sample Q-13 in Tract B) to 28.6 mg/Kg (Sample O-15 in Tract B). Of the 117 sample locations, 29 locations identified lead concentrations in exceedance of the City of Frisco cleanup goal of 250 mg/Kg. The samples were located in Tracts A through H and Tract M. Further delineation of the surface soil by PBW in May of 2012 identified lead exceedances in Tracts B, C, D, and M.

- During the visual survey, SWG identified a drainage feature located adjacent and along the northern boundary of Tract A. Scattered battery chips were identified along the off-Site drainage feature. It should be noted that this drainage feature was located parallel and south-adjacent of Crystallizer Road where battery chips were also observed.

- The South Disposal Area, a closed pre-RCRA landfill, operated from 1970 to 1974 and was used for disposal of rubber chips and blast furnace slag. According to the RCRA Facility Investigation (RFI) by Lake (1991), the South Disposal Area was estimated to be approximately 0.9 acres. No municipal solid waste was identified by Lake during the investigation. The EPA Corrective Action inspection in 2009 identified exposed battery chips and slag which indicated that the cover of this landfill had some erosion. During the May/June 2011 TCEQ inspection, the inspector noted significant evidence of erosion which exposed battery chips along the slope.

  In addition, the inspector observed a berm (approximately 5,000 cubic feet) on the west side of the South Disposal Area. The berm reportedly was used as a

shooting range for several years by the City of Frisco Police Department but was no longer in use. The inspector observed large amounts of untreated slag and battery chips in the berm. According to the inspector, the untreated slag and battery chips appeared to have originated from the South Disposal Area.

Several groundwater-monitoring wells have been installed in proximity of the South Disposal Area since 1990. The monitoring wells in these areas included B1, B1N, B1R, B1S, B2, B2R, B3, B3N, B3R, B4, and B4R. Of these, monitoring wells B1R, B2R, B3R, and B4R have not been decommissioned. The latest groundwater sampling event (January 2012) by PBW included B3R and B4R; however, monitoring well B3R was dry during the investigation. Monitoring wells B1R, B2R, and B3R have not been sampled since 1997. Lead and cadmium concentrations from the January 2012 sampling event were detected at 0.0761J- milligrams per liter (mg/L) and 0.00062J mg/L, respectively. Sulfate and TDS concentrations were 178 mg/L and 1,170 mg/L, respectively. Although low concentrations of COCs were present in groundwater, it should be noted that analyses were specifically for lead, cadmium, TDS and sulfate. Regulatory information on the former Exide facility indicated the use of petroleum products and other hazardous substances.

- The North Disposal Area, also a closed pre-RCRA landfill, operated from 1974 to 1978 and was used for disposal of rubber chips and blast furnace slag. Additionally, the North Disposal Area was used by the City of Frisco as a municipal solid waste landfill. According to the RFI by Lake (1991), the North Disposal Area was estimated to be approximately 5.2 acres. Landfill materials identified by Lake included construction debris, normal household and industrial trash. Lake noted that the cap on the North Disposal Area was thinning in several areas. Additionally, the EPA Corrective Action inspection in 2009 identified exposed battery chips and slag, which indicated that the cover of this landfill had some erosion.

  It should be noted that in 1986, dredging activities associated with the cleanup of Stewart Creek resulted in the piling of dredged materials on the southwestern portion of the North Disposal Area. In 1989, Lake's closure plan for the Stewart Creek dredging piles were approved by the Texas Water Commission (TWC; predecessor to TCEQ). The dredged sediment was pre-characterized as Class I Non-Hazardous waste. The sediment materials were dispersed above a section of the North Disposal Area were compacted and capped with clay.

  SWG noted that several groundwater-monitoring wells have been installed down-gradient of the North Disposal Area and Stewart Creek dredging pile area since 1990. The monitoring wells included B5, B5N, MW16, MW16S, and MW17. Monitoring well B5 has been decommissioned. The latest groundwater sampling event for the remaining wells was conducted in January of 2012 by PBW. The samples were analyzed for total and dissolved metals (specifically lead and cadmium), sulfate, and TDS. Relatively low concentrations of metals were detected. Sulfate concentrations ranged from 298 milligrams per liter (mg/L; in MW16) to 1,590 mg/L (MW17). TDS concentrations ranged from 1,380 mg/L (MW16) to 7,980 mg/L (MW16S).

- The former slag landfill was active from 1978 to 1996 and was used for disposal of blast furnace slag. It should be noted that the former Exide's "Boneyard" was located on top of the former slag landfill. Available regulatory files revealed that during the EPA corrective action inspection in December 2009, equipment containing process wastes was observed in the Boneyard. The equipment included a roller belt with battery chips, a kettle with refining dross, a "grizzly screen" containing slag pieces, a bail of untreated cardboard and shrink wrap, and several "supersacks" containing what appeared to be building insulation. In addition, hydraulic equipment including two full hydraulic tanks were observed to be leaking hydraulic fluid onto the ground was observed. In the *National Pollutant Discharge Elimination System* (*NPDES) Compliance Inspection Report* dated September 14, 2010, the inspector noted that numerous areas of slag, dross, batteries, fire extinguishers, and trash were observed in the Boneyard. In January 2012, PBW collected soil samples at three locations from the former slag landfill area. Soil samples were collected at various intervals up to 10 feet bgs. The maximum lead concentration detected was 7,970J mg/Kg at the two to four feet bgs interval. Cadmium was detected at a maximum concentration of 50.2 mg/Kg at the two to four feet interval. In addition, PBW also collected five soil samples at the zero to two feet bgs interval from locations surrounding the Boneyard. The maximum lead and cadmium concentrations detected were 47,000 mg/Kg and 65.9 mg/Kg, respectively, which were located on the south side of the Boneyard.

  Several groundwater-monitoring wells have been installed down-gradient of the former slag area since 1990. The monitoring wells were B8, B8N, B8R, and MW18. The latest groundwater sampling event (January 2012) by PBW was limited to MW18. Monitoring wells B8, B8N, and B8R have not been sampled since 1997. The January 2012 analytical results for MW18 identified lead and cadmium concentrations (total and dissolved) below their respective detection limits. Sulfate and TDS concentrations were 453 mg/L and 1,040 mg/L. respectively. It should be noted that the analyses were limited to select metals and that the location of MW18 was cross-gradient of the former slag landfill. Additionally, the information from the regulatory files indicated that the activities associated with the Boneyard were uncontrolled and have included the placement of equipment containing process waste and hydraulic fluid in this area. Information from the regulatory database report referenced the use of parts solvent at this facility.

- The stormwater retention pond was constructed in the 1990s and is located adjacent to the Site (Tract A). Stormwater run-off from the manufacturing area of the plant flows into a storm sewer drain that is connected to the pond. The stormwater treatment includes pH adjustment, precipitation of dissolved solids, and filtration. In the past, treated stormwater was discharged into Stewart Creek. Dried sediment was collected and returned to the reverb furnace.

  Although the retention pond is solely used for stormwater control, it should be noted that past regulatory inspections have identified evidence of improper storage and spills at the facility. In a NPDES compliance inspection conducted in September 2010, the inspector noted that metallurgical coke was stored outside in an uncovered area and the runoff trailed to an open storm sewer curb inlet.

During the May/June 2011 TCEQ inspection, the inspector noted white liquid and solid at the plant area. The liquid reported was flowing toward a stormwater pipe. A soil sample collected nearby contained elevated concentrations of lead and cadmium at 39,700 mg/Kg and 574 mg/Kg, respectively. In addition, according to the regulatory information, the manufacturing activities at the facility have included the use of other petroleum products and/or hazardous substances (i.e., solvents). As noted above, investigations of various media associated with the facility were limited to select COCs.

- The present day Class 2 Non-Hazardous Landfill consists of the landfill disposal area, a solar evaporation pond and a leachate collection system. The landfill, which is owned and operated by the former Exide facility, consists of nine cells, six of which were reported by the TCEQ to have been closed. Leachate from the landfill is collected into a leachate tank and is pumped out and processed in the facility's WWTP. Landfill contact water is pumped to the solar evaporation pond. Sediments from the pond are recycled in the reverb furnace or disposed at an off-site landfill. Based on the regulatory files, treated slag (with Enviroblend, Portland cement, etc.) is placed in this landfill. The treated slag is analyzed via Toxicity Characteristic Leaching Procedure (TCLP) extraction to meet the Class 2 Non-Hazardous criteria. However, according to the TCEQ inspection during May to June 2011, it was noted that the treated slag is disposed of in the landfill before the laboratory results are available. Exide's standard operating procedure is to excavate the failed batch from the landfill and retreat it until the TCLP extraction meets the Class 2 Non-Hazardous criteria. During the TCEQ inspection, a sample of the treated slag and one sample of a material resembling mud that consisted of contact water and sediments were collected. Laboratory analytical results indicated hazardous concentrations of lead (up to 36,200 mg/Kg total and 25.52 mg/L TCLP) and cadmium (up to 437 mg/Kg total and 1.57 mg/L TCLP) were present in the Class 2 Non-Hazardous Landfill.

- The Crystallizer plant is located east-adjacent and up-gradient of the Site (Tract A). The activities at the Crystallizer plant were the final phase of processing treated wastewater from the Exide facility. A by-product of the process was sodium sulfate, which was collected and sold to Cooper Industries for re-use in the production of fiberglass, or disposed of at DFW Recycling and Disposal. Information from the regulatory files has identified runoff, spills and battery chips in proximity of the Crystallizer plant.

  During the EPA's corrective action inspection in December 2009, liquid was leaking from a frac tank at the Crystallizer unit. A visible drainage pathway was observed leading from the frac tank to the edge of a concrete ramp. The EPA noted that analytical results for the contents of the frac tank over the past year indicated that the contents of the tank were hazardous waste due to toxicity for selenium and cadmium on several occasions. In the *NPDES Compliance Inspection Report* dated September 14, 2010, the inspector observed uncontrolled salt laden runoff from the Crystallizer plant and also that the frac tank was leaking. In the May/June 2011 TCEQ inspection, the inspector observed a white solid and several battery chips in a drainage swale west of the Crystallizer area. Additionally, dead vegetation and a white solid along a drainage pathway that began at the Crystallizer and ended at the culvert were

observed. Water from this drainage reportedly discharges to the City of Frisco. However, it was not stated in the report whether the drainage discharged into the City's storm sewer or the sanitary sewer. One soil sample was collected at the opening of the culvert. Total lead and TCLP lead were detected at concentrations of 694 mg/Kg and 3.92 mg/L, respectively. Sulfates were detected at a concentration of 6,040 mg/Kg. In addition to the regulatory inspections, SWG was provided with analytical results associated with the January 2012 facility investigation by PBW. Two soil samples were collected from the Crystallizer plant area and at the zero to two feet bgs interval. The soil samples were analyzed for various metals and reported the following maximum concentrations: <0.293R mg/Kg (antimony), 7.18J mg/Kg (arsenic), 50.8J mg/Kg (barium), 0.806 mg/Kg (beryllium), 0.466 mg/Kg (cadmium), 9.52J mg/Kg (chromium), 33.2 mg/Kg (lead), 12.4J mg/Kg (nickel), <0.328 mg/Kg (selenium), <0.15 mg/Kg (silver), 54.5J mg/Kg (zinc), and 8,190 mg/Kg (sulfates). The "R" notation reportedly indicates the result was rejected. The "J" notation indicates an estimated value. It should be noted that the sampling point locations were north of the driveway for the Crystallizer plant. No samples appeared to have been collected along the drainage swale associated with the Crystallizer plant. In addition, the previous investigations were limited to select COCs. Liquids have been noted to be leaking from the frac tank. The liquids originated from the plant where other potential COCs such as petroleum products and/or hazardous substances may have been used. To date, no groundwater assessments appear to have been conducted in the immediate vicinity of the Crystallizer plant.

It should be noted that during the surrounding area reconnaissance, a fill mound was located off-Site between Tract A and the adjacent Crystallizer plant. Mr. Eagan stated that the origin of the fill is soil that was scraped from around the Crystallizer plant to create a drainage swale for routing surface water to the adjacent drainage feature (located along the northern boundary of Tract A). According to available regulatory information, several regulatory inspections from 2009 through 2011 (presented in Section 5.6) by the EPA and TCEQ have identified run-off of liquids and solids from the adjacent Crystallizer plant area to its surrounding area. In addition, soil samples collected near the Crystallizer plant by the regulatory agencies have identified COC concentrations in exceedance of the Residential Critical PCLs.

- In the 1960s, a railroad spur off the west-adjacent St. Louis – San Francisco Railroad was built along the southern boundary of Tract M. This railroad spur appears to be a path for transportation of materials to and from the adjacent former Exide facility. During review of previous environmental reports (Section 5.6), SWG noted that in 1998, JD Consulting, L.P. (JDC) collected soil samples from four locations along a segment of this railroad for lead analysis. Although the sample locations were not located on-Site, laboratory analytical results reported elevated concentrations of lead at depths up to 48 inches bgs. The maximum lead concentration detected during the investigation was 30,200 mg/Kg at a depth of six to 12 inches bgs. In addition, in March 2012, PBW collected surface soil samples near the adjacent railroad spur. The detected lead concentrations were below the City of Frisco cleanup goal of 250 mg/kg. The detected cadmium concentrations were below the Residential Critical PCL of 52 mg/Kg. Although the detected lead and cadmium concentrations were below

their respective PCLs during the March 2012 surface soil sampling event, it is possible that higher concentrations of the COCs may be present at deeper intervals based on the results from the 1998 soil sampling event. In addition, based on its historical use, materials may have spilled from the rail cars along the tracks.

- The north-adjacent Crystallizer Road is associated with the former Exide operations. During the visual survey, SWG noted that scattered battery chips were present on this off-Site road. The segment of Crystallizer Road located north of Tract A (within 50 feet) was noted to be unpaved. Based on available historical information, Crystallizer Road was constructed sometime between 1968 and 1972.

- Stewart Creek and its tributary have intersected the Exide plant since at least 1938. The creek and tributary were flowing during SWG's visual survey. The flow direction in these features is to the west. It should be noted that Stewart Creek and the tributary's original drainage paths appeared to have been altered over the years. Based on the aerial photographs, a segment of Stewart Creek was originally beneath the current location of the former Exide plant. Stewart Creek appeared to have been re-routed during construction of the original Burrs Metals. No information was found during this assessment as what materials were used to fill in the original segment of Stewart Creek that is currently located beneath the former Exide plant. The original segment of Stewart Creek is a preferential migration pathway for contaminants present in the vicinity of the former creek channel.

  Regulatory information indicated that in 1973, the TWQB conducted an inspection at the former Exide facility. The inspector identified inadequate stormwater control at the facility. As a result, contaminated run-off from the battery plate storage area and the battery wrecking area entered Stewart Creek. The inspector also noted unauthorized cooling water discharge from the plant entering the creek. Additional information reviewed for the former Exide facility indicated that untreated slag and battery chips from the plant were used to line the creek banks to prevent erosion in the 1960s. In 2000, remediation activities along Stewart Creek were conducted by JDC and the results were presented in a *Stewart Creek Corrective Measures Implementation Report.* The focus of the remediation efforts was the segment of Stewart Creek located between South 5th Street and the adjacent railroad to the west. The assessment activities generally consisted of the removal of soils and slag from Stewart Creek followed by verification sampling. Approximately 16,025 tons of material were removed from Stewart Creek. Following analytical data confirming that the cleanup levels were met, the creek bottom was backfilled with clean soils and graded as necessary. Although remediation efforts have been taken, it should be noted that the focus of the 2000 investigation was limited to metals, specifically lead and cadmium. The Notice of Registration (NOR) for Exide included other petroleum products and/or hazardous substances such as benzene and tetrachloroethylene. In addition, since 2000, there were regulatory inspections including a TCEQ inspection in May 2011 that identified "dead vegetation near a crack in the barrier wall (also known as the flood wall) where a liquid was discharging." The TCEQ staff collected a soil sample from the embankment where the dead vegetation

was observed and analyzed it for lead (total and TCLP). The detected lead concentrations were 3,560 mg/Kg (total) and 2.86 mg/L (TCLP). The TCEQ staff also observed a staining along the wall where the stormwater pipe exited the wall (approximately 500 feet east-northeast of Tract A). The staff noted that the "pipe appeared to be leaking due to worn out gaskets." A sample of the soil and rock along the embankment beneath the pipe indicated lead and cadmium concentrations at 39,800 mg/Kg and 894 mg/Kg, respectively. It is unclear how long the seepage from the cracked wall or the pipe discharges had been occurring.

- During the visual survey, groundwater-monitoring wells were identified on Tract E (known as MW20), Tract G (known as MW19), and Tract M (known as LMW1 through LMW4). Based on SWG's review of the regulatory files, multiple groundwater-monitoring wells have been installed across the area (including the Site) at various times to evaluate the subsurface conditions and the potential impact from the adjacent former Exide's activities. To date, a number of these groundwater-monitoring wells have been decommissioned. However, there remain numerous active groundwater-monitoring wells that are located on- and off-Site. Figure 3 depicts the approximate location of the wells that were found in the regulatory files. Groundwater analytical results were not identified for all wells and it appears that the wells were sampled at various times by different consultants. The on-Site monitoring wells MW19 and MW20 were last sampled in January 2012 by PBW. SWG noted that the investigations were conducted to evaluate select COCs. Information from the regulatory database and files associated with the adjacent Exide facility have documented other potential COCs such as petroleum products and/or hazardous substances (i.e., solvents) that were utilized or handled at the facility.

The former Exide facility began operation in 1964. From 1964 to 2012, the facility was a lead oxide manufacturer. Lead smelting operations began in 1970. Expansion activities since the 1960s included the addition of operation buildings at the plant, landfills, a retention pond and a Crystallizer plant. **Based on an industrial history of more than 40 years, documented violations, limited analytical program utilized in past investigations, proximity to the Site, and information from previous regulatory inspections, the adjacent former Exide facility presents a REC in connection with the Site.**

- The north-adjacent and up-gradient Green Supply has been in business since 1984. Regulatory information has identified a release associated with the facility that impacted areas beyond the facility's limits. According to available regulatory information, the facility has received regulatory closure. To date, no assessments have been conducted on-Site to address potential impact from the documented release and industrial activities associated with Green Supply. **Based on the type of business, more than 20 years of industrial activities, documented release, up-gradient and adjacent location, SWG's visual survey, and lack of subsurface assessments on-Site, Green Supply presents a REC in connection with the Site.**

- The north-adjacent and up-gradient Circuit Fab was in business from 1984 to 1988. Regulatory information has identified a release associated with the facility that impacted areas beyond the facility's limits. The facility underwent a *Pre-CERCLIS*

Screening Assessment that was conducted by the TCEQ and the facility was not recommended for further evaluation under CERCLA. To date, no assessments have been conducted on-Site to address potential impact from the documented release and industrial activities associated with Circuit Fab. **Based on the type of business, industrial use, documented release, up-gradient and adjacent location, and lack of subsurface assessments on-Site, Circuit Fab presents a REC in connection with the Site.**

- The north-adjacent Martin Marietta (also known as Boorhem-Fields) stone, sand and gravel yard located at 6601 Eubanks Street has been in operation since the late 1980s. Regulatory information indicated one 10,000-gallon fuel UST was removed from the facility in 1989. Although no documented releases were reported, the exact location of the former UST in relation to the Site is unknown. No records of subsurface assessments were identified for the facility. Stormwater runoff from this facility appears to discharge into a drainage swale that appears to route the facility's stormwater onto the Site. To date, no assessments have been conducted on-Site to address potential impact from nearby and up-gradient facilities. Based on lack of information pertaining to the operational history, distance, up-gradient location, and SWG's observations, the north-adjacent Martin Marietta facility presents a potential environmental concern in connection with the Site.

- The Frisco RM facility was identified on the regulatory databases for having one 10,000-gallon UST containing diesel that was installed in 1983 and removed in 1996. The location of this former facility could not be determined during this assessment based on its address other than it was located along Eubanks Street which is up-gradient of the Site. However, based on the tank operation dates (1983 to 1996) and its ownership reference as a concrete ready-mix facility, it is likely that the Frisco RM facility was an apparent batch plant facility that was depicted in the 1984 and 1995 aerial photograph. Although no documented releases were reported, the exact location of the former UST in relation to the Site is unknown. No records of subsurface assessments were identified for the facility. To date, no assessments have been conducted on-Site to address potential impact from nearby and up-gradient facilities. Based on the lack of information pertaining to the operational history, distance, and up-gradient location, the former Frisco RM facility to the north-northeast presents a potential environmental concern in connection with the Site.

- Xtreme Iron/Rodman facility appears to have been in operation since at least 1999 as a supplier of heavy equipment utilized for construction activities. Information from the TCEQ identified one 30,000-gallon duel compartment UST (gasoline and diesel) and a total of nine diesel ASTs with capacities ranging from 2,000- to 8,000-gallons for the facility. However, it should be noted that the TCEQ PST Registration database identified a total of 23 ASTs with similar capacities. Although no documented releases in connection with the UST or ASTs were identified during this assessment, the ASTs have been in operation for more than 10 years and it appears that several of the ASTs were installed in earthen dikes. Exterior storage of drums without secondary containment or under a covered area was noted during SWG's area reconnaissance. Stormwater runoff from this facility appears to discharge into a drainage swale and appears to route the surface water onto the Site. To date, no assessments have been conducted on-Site to address potential impact from nearby and up-gradient facilities. Based on lack of information pertaining to the operational

history, discrepancies between the TCEQ file and the PST registration database, distance, up-gradient location, and SWG's observations, the Xtreme Iron/Rodman facility presents a potential environmental concern in connection with the Site.

9.0 CONCLUSIONS

We have performed a *Phase I Environmental Site Assessment* in conformance with the scope and limitations of ASTM Practice E-1527-05 of the approximate 170-acre property located near the intersection of Eagan Drive and 5th Street, the *property*. Any exceptions to, or deletions from, this practice are described in Section 1.1 of this report. **This assessment revealed no evidence of RECs in connection with the property except for the following:**

<u>On-Site</u>

- The undocumented fill in Tracts G and J;
- the former shooting range berm; and
- the elevated concentration of lead along the 5th Street roadway.

<u>Off-Site</u>

- the central-adjacent former Exide facility;
- the north-adjacent Green Supply; and
- the north-adjacent former Circuit Fab;

In addition to the RECs identified above, SWG identified several issues that were considered to present potential environmental concerns in connection with the Site. Detailed discussions on these issues are presented in their respective sections of this report. These issues are as follows:

<u>On-Site</u>

- The berms located in Tracts A, E, L, and M (Section 3.7);
- the undocumented fill in Tracts K and L (Section 3.7);
- the surface debris (concrete, wood, tires, cans, jars, etc.) located in Tract C (Section 3.7);
- the abandoned cistern located in Tract B (Section 3.8);
- the former and existing ponds located in Tract B (Section 5.4); and
- the historical land disturbance features located on Tracts B, C, D, F, G, and J (Section 5.4).

<u>Off-Site</u>

- The Boorhem-Fields/Martin Marietta facility to the north (Section 6.1);
- the Frisco RM facility to the north (Section 6.1); and
- the Xtreme Iron/Rodman facility to the north (Section 6.1).