
INTERIM REPORT

Visual Survey of Stewart Creek

Property:

**Stewart Creek
F.M. 423 to BNSF Railroad Bridge
Frisco, Texas**

**May 14, 2013
Project No. 0111C278A**

Prepared for:

**City of Frisco
c/o
Russell & Rodriguez, L.L.P.
1633 Williams Drive
Building 2, Suite 200
Georgetown, TX 78628**

Prepared by:

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May 14, 2013

City of Frisco
c/o Russell & Rodriguez, L.L.P.
1633 Williams Drive
Building 2, Suite 200
Georgetown, TX 78628
Attn : Mr. Kerry Russell

Re: Interim Report
Visual Survey of Stewart Creek
F.M. 423 to BNSF Railroad Bridge
Frisco, Texas
SWG Project No. 0111C278A

Dear Mr. Russell:

SWG is pleased to submit this interim report documenting the information collected during SWG's walking survey in Stewart Creek from March 28, 2013 to April 19, 2013. SWG's scope of work is being conducted in accordance with SWG's Proposal Number P0113C1098 dated March 26, 2013 (hereinafter, the "proposal").

Please note that this interim report documents SWG's observations in Stewart Creek. Since SWG's field activities are ongoing, this interim report does not represent a final report for the scope of services outlined in SWG's proposal.

We appreciate the opportunity to perform these services for the City of Frisco, c/o Russell & Rodriguez, L.L.P. Please contact either of the undersigned at (214) 350-5469 if you have questions regarding the information provided in the report.

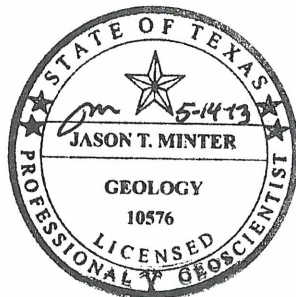
Sincerely,
SOUTHWEST GEOSCIENCE

Prepared by:

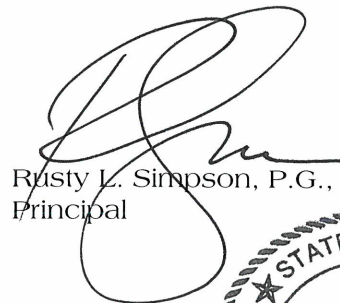


Jason T. Minter, P.G.
Manager, Environmental Field Services

Enclosure



Reviewed by:



Rusty L. Simpson, P.G., C.P.G.
Principal

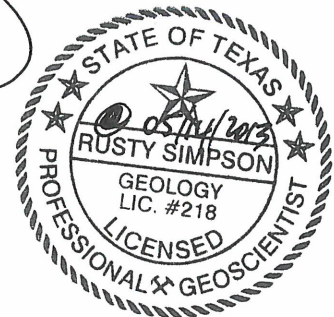


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 Dated March 27, 2013
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INTERIM REPORT

Visual Survey of Stewart Creek
F.M. 423 to BNSF Railroad Bridge
Frisco, Texas
SWG Project No. 0111C278A
May 14, 2013

1.0 INTRODUCTION

1.1 Site Description and Background

SWG has conducted a walking survey to identify and document the potential presence of visible battery chips and slag in Stewart Creek from Lake Lewisville east of F.M 423 to the western edge of the Burlington Northern Santa Fe (BNSF) railroad bridge in Frisco, Texas.

Based on property access limitations, SWG's walking survey excluded a portion of Stewart Creek located west of Legacy Drive and north of a high voltage utility easement located approximately 3,300 feet south of Stonebrook Parkway.

According the U.S. Army Corps of Engineers (USACE) website for Lewisville Lake (<http://www.swf-wc.usace.army.mil/lewisville/Realestate/Feeland/index.asp>), "[a]s a general rule, land around Lewisville Lake at an elevation of or below 535 feet is owned in fee by the U.S. Government." SWG's field activities included a visual survey of a segment of Stewart Creek in land potentially owned by the U.S. Federal Government generally terminating approximately 1.4 miles east of F.M 423.

Figure 1 presents the general boundaries and topography of the assessment area on the USGS topographic quadrangle maps of Frisco, Lewisville East and Hebron, Texas (Appendix A). For reference, the general location of the 535 feet above mean sea level contour line is depicted on Figure 1.

Several regulated facilities are located upstream and along the portion of Stewart Creek currently under evaluation. The following sections provide a brief overview of relevant regulatory history and potential sources of impact to Stewart Creek.

FORMER EXIDE TECHNOLOGIES, INC. FACILITY

The Former Exide Technologies, Inc. facility (Exide) is located east and upstream of the limit of SWG's current assessment area. Two tributaries of Stewart Creek flow through the former Exide facility, and portions of both of the natural channels of the tributaries have been altered in the past. Regulatory file reviews previously conducted by SWG for the former Exide facility have indicated that several remediation efforts have been implemented in Stewart Creek within the boundaries of the former Exide facility. These efforts were conducted in response to the documented presence of industrial impacts in Stewart Creek including the presence of slag and battery chips and elevated lead and cadmium concentrations in samples collected within and near the creek. In 1986 two dredging events were conducted to remove lead and cadmium impacted sediments from the creek channel. In 1999, 2,800 feet of Stewart Creek from old 5th Street going westward was 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), predecessor to the Texas Commission on Environmental Quality (TCEQ),

approved the proposed cleanup levels in a letter dated August 31, 1999. The 1999 efforts included removal of visible blast furnace slag wastes 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 former Exide facility by processing the slag for lead recovery through the on-site blast furnace. 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.

The former Exide facility is currently undergoing investigation and assessment activities.

FORMER STEWART CREEK WASTEWATER TREATMENT PLANT (VCP No. 2122)

The former Stewart Creek Wastewater Treatment Plant (FSCWWTP) facility is located immediately adjacent to the west of the BNSF railroad, which is west of the former Exide facility. The FSCWWTP property boundary crosses Stewart Creek to the north with a small portion of the creek bank on the north side being a part of the overall property. The FSCWWTP was an active wastewater treatment plant from 1979 until 1999 and received wastewater from the City of Frisco including the former Exide facility. In addition, waste treatment activities were also conducted on the FSCWWTP site by GNB (a historical business name that was a predecessor to Exide) in the past. SWG was contracted by the City of Frisco to conduct investigation activities on the FSCWWTP facility beginning in 2005. In 2008, the FSCWWTP facility was entered into the TCEQ Voluntary Cleanup Program (VCP 2122). Under an agreement between the City of Frisco and Exide Technologies, Inc., Exide continued the remaining investigation and remediation efforts at the FSCWWTP facility under review by the TCEQ VCP. An Affected Property Assessment Report (APAR) (containing a Screening Level Ecological Risk Assessment (SLERA) report) and Response Action Completion Report (RACR) were submitted to the TCEQ on April 1, 2013.

Based on the findings of the APAR and SLERA, sediment samples collected from the portion of Stewart Creek nearest the FSCWWTP indicated lead and cadmium concentrations in exceedance of the TCEQ Second Effects Levels for Ecological Receptors. The SLERA recommended "additional evaluation to address potential localized effects in sediment hot spot areas."

MUSEUM OF THE AMERICAN RAILROAD FACILITY (SWR#T2966)

The City of Frisco Museum of the American Railroad (MARR) site consists of an approximate 12-acre property that is located southwest of Cotton Gin Road and the BNSF railroad in Frisco, Texas. The site was historically an undeveloped parcel of land and is located northwest of the

former Exide plant. The southern boundary of the property abuts the FSCWWTP site, which is bisected by Stewart Creek further south of the site. Historical activities, including the potential construction of a full or partial road bed, apparently used “battery chips” for surface paving. Based on historical information pertaining to the discovery and remediation of battery chips from other areas within the City of Frisco, the suspected source of the battery chips is the former Exide (formerly GNB) battery recycling facility located southeast of the MARR facility. The battery chips likely resulted from the reclamation and recycling of lead acid batteries as part of the operations at the former Exide facility. The exact volume or timing of the placement or use of the battery chips is not documented, although battery chips are evident on the ground surface in several areas along the southern and eastern portions of the site, as well as in the southeastern portions of the site.

A Self Implementation Notice (SIN) was filed on September 28, 2011 to accommodate the expeditious assessment and removal of concentrated areas of battery chips along the former road, as well as associated soil impacts above applicable cleanup goals that may have occurred as a result of their placement on the site. An additional assessment of aerial photographs was conducted in which a historical road was observed trending along the southern and southeastern portion of the site, from Cotton Gin Road, and ultimately crossing over Stewart Creek. The presence of the potential historical road is significant as it is possible that the road was partially built up with battery chips, which were noted in the area of the potential historical road. A series of trenches were excavated to evaluate the potential presence of concentrated areas of battery chips along the former road observed in the historical aerials. While battery chips were observed in several trenches, some of which were observed at a specific depth (i.e., between 12 to 18 inches below grade surface), the results did not indicate the presence of concentrated battery chips along the entire road, and an area of focused assessment and corrective action efforts was established.

Based on the soil analytical results, only two chemicals of concern exceed their residential assessment levels (RALs) (arsenic and lead). Elevated levels of lead (up to 2,150 mg/Kg) were observed in the surface soils above the site-specific RAL of 250 mg/Kg in two locations. Arsenic was detected at levels slightly above the RAL of 24 mg/Kg in two areas; however, the representative concentration of arsenic within a one-eighth acre grid area was less than 24 mg/Kg based on additional sampling of grid locations and a statistical analysis.

Response actions were completed in 2011, resulting in a Remedy A, residential closure from the TCEQ. No further investigation or remediation was required by TCEQ in the MARR track area, or within Stewart Creek.

CITY OF FRISCO GRAND PARK AND GRAND LAKE PROJECT

In 2011, the City of Frisco contacted SWG regarding a planned development located west of the Dallas North Tollway and north of Stonebrook Parkway. Based on the above-referenced documented impacts and the potential presence of battery chips and slag in the proposed park area, the City of Frisco requested sediment sampling from the portion of Stewart Creek located within the proposed Grand Park Area. The conceptual development in 2011 included a series of lakes that were planned for construction by widening Stewart Creek in selected areas from the BNSF railroad bridge to Stonebrook Parkway. The following summarizes the results of SWG's investigation in 2011:

Limited Site Investigation – Sediment Sampling of Stewart Creek

SWG completed a Limited Site Investigation (LSI) for sediment sampling activities along Stewart Creek, at and along the proposed Grand Park project, from the eastern edge at the BNSF railroad bridge to Stonebrook Parkway in Frisco, Texas.

The objective of the LSI was to evaluate arsenic, cadmium, lead, selenium and sulfate concentrations along Stewart Creek in sediment samples collected from 30 sampling locations based on the layout of the proposed Grand Park project.

The findings and recommendations of the LSI were as follows:

- As part of the approved scope of work, eleven (11) sediment samples were collected between the BNSF railroad bridge and the Dallas North Tollway. Nineteen (19) sediment samples were collected between the Dallas North Tollway and Stonebrook Parkway.
- Sample locations were targeted in areas of soft sediment deposition/accumulation within the stream bed and documented using field GPS equipment. At each location, sediment samples were collected from the 0.0 to 0.5 foot depth interval; however, finer grained bed sediments were sampled preferentially over coarser grained bed sediments.
- The laboratory analytical results indicate that arsenic, cadmium, lead and sulfate concentrations were detected in each of the samples collected. Selenium concentrations were not detected above laboratory sample detection limits (SDLs).
- Based on the results of SWG's LSI, additional assessment is necessary to further evaluate the arsenic, cadmium and lead concentrations above the TCEQ ecological benchmarks and/or second effects levels for sediment and to further evaluate the presence of battery chips and potential slag observed during field activities.

SWG's LSI is included with this report as Appendix C.

Figure 1 presents the general boundaries and topography of the assessment area on the USGS topographic quadrangle map of Frisco, Lewisville East and Hebron, Texas (Appendix A). A map depicting the sediment sampling points and analytical results previous sediment sampling activities is included as Figure 2 (Appendix A), and a map depicting the northern sediment sample points and analytical results during SWG's previous sediment sampling activities is included as Figure 3 (Appendix A).

1.2 Scope of Work

SWG conducted a walking survey of Stewart Creek, from Lewisville Lake east of F.M. 423 to the western edge of the BNSF railroad bridge in Frisco, Texas. The proposed scope of work was based on the request of the City of Frisco to identify and document the presence of visible battery chips and slag in Stewart Creek. This scope of work was conducted in accordance with SWG's Proposal Number P0113C1098 dated March 26, 2013.

It should be noted that the information contained in this interim report is based on the results of

ongoing field activities to complete the scope of services outlined in SWG's proposal. Subsequent to the completion of the walking survey, SWG will conduct additional sediment sampling activities between F.M. 423 and Stonebrook Parkway to supplement the existing sediment sample results. Since SWG's field activities are ongoing, this interim report does not represent a final report for the scope of services outlined in SWG's proposal.

1.3 Standard of Care

SWG's services were performed in accordance with standards customarily provided by a firm rendering the same or similar services in the area during the same time period. SWG makes no warranties, express or implied, as to the services performed hereunder. Additionally, SWG does not warrant the work of third parties supplying information used in the report (e.g. laboratories, regulatory agencies or other third parties). This scope of services was performed in accordance with the scope of work agreed with the client, as detailed in our proposal.

1.4 Additional Scope Limitations

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work and it should be noted that this information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, or not present during these services, and SWG cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during SWG's performance of the scope of work outlined in the proposal. Environmental conditions at other areas or portions of the Site may vary from those encountered at actual sample locations. SWG's findings and recommendations are based solely upon data available to SWG at the time of these services.

1.5 Reliance

This report has been prepared for the exclusive use of the City of Frisco, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of the City of Frisco and SWG. Any unauthorized distribution or reuse is at the client's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions and limitations stated in the proposal, interim report, and SWG's Agreement. The limitation of liability defined in the agreement is the aggregate limit of SWG's liability to the client and all relying parties unless otherwise agreed in writing.

2.0 FIELD ACTIVITIES

2.1 Walking Survey

SWG's walking survey was conducted from March 28, 2013 to April 19, 2013 by Mr. Tommy Kim and Mr. Jason Minter, P.G., SWG environmental professionals.

SWG's walking survey was initiated near Lewisville Lake east of F.M. 423 and progressed upstream, terminating at the BNSF railroad bridge east of Dallas North Tollway. The walking survey was conducted over several separate days due to weather events. In addition, due to

access restrictions, SWG's walking survey excluded a portion of Stewart Creek located west of Legacy Drive and north of a high voltage utility easement located approximately 3,300 feet south of Stonebrook Parkway.

The walking survey was limited to the creek channel, banks and potential erosional features along the bank where battery chips may have been placed historically as fill or road base material.

SWG's survey team utilized GPS equipment and digital cameras to document the potential presence of visible battery chips and slag in the channel sediments in and along the banks of Stewart Creek. The survey team walked through the creek and along the banks during relatively low (clear) water conditions to evaluate the presence of battery chips or potential slag within the creek and on banks. GPS coordinates were collected for individual pieces of battery chips or slag when encountered. If concentrated areas of battery chips or slag were encountered, the survey team recorded the locations in the GPS equipment. Select photographs of SWG's field observations along with a key map depicting the assessment area and the locations where the photographs were collected are provided as Appendix B.

Stewart Creek from Lewisville Lake to Stonebrook Parkway

SWG began the walking survey east of F.M. 423 near Lewisville Lake. The creek appeared to have been channelized in the area and was relatively deep. SWG evaluated the banks of the creek for approximately 1,200 feet until the survey team could enter the creek.

The first occurrence of potential slag material was observed in sediment approximately 3,200 feet east of F.M. 423. The material was black, vesicular and approximately 1 inch in diameter. A photograph of the suspected slag material is provided in a photograph corresponding to point 2 on the key map in Appendix B. The next occurrence of potential slag material was not observed in the creek sediments until approximately 1.25 miles east of F.M. 423 and 1,550 feet south of Lebanon Road; however, it should also be noted that this portion of the creek exhibited thicker sediment deposition than the upstream areas. Photographs of the suspected slag material in this area are presented at locations 6, 7 and 8 on the key map. Additionally, a 55-gallon steel drum was observed in the creek channel north of the wastewater treatment plant. The drum was not in good condition, and did not have any identifying marks or features to indicate its origin. The drum appeared to be rusted out on the bottom and contained sediment. A photograph of the drum is provided as location 9 on the key map.

The first observed occurrence of a battery chip encountered in Stewart Creek was approximately 1,200 feet east of 4th Army Memorial Road, northeast of the North Central Texas Municipal Water District wastewater treatment plant. A potential slag fragment was also observed in the vicinity of the battery chip. SWG's walking survey progressed to the high voltage utility easement representing the southern portion of the excluded area. Battery chips or potential slag material were not encountered in the remaining portions of Stewart Creek from location of the battery chip and potential slag to the utility easement. SWG's survey team exited the creek channel south of the utility easement and walked through City of Frisco property to return to the wastewater treatment plant. Along the way, SWG's survey team observed battery chips at the surface in two separate areas. Photographs of the battery chips are presented at locations 11, 12 and 13 on the key map in Appendix B.

SWG's survey team resumed creek channel observations east of the excluded segment of

Stewart Creek at Legacy Drive. Single occurrences of battery chips were observed in four separate areas and potential slag was observed with the battery chips in two of areas between Legacy Drive and Stonebrook Parkway. Photographs of the battery chips and potential slag are presented at locations 14 through 18 on the key map in Appendix B.

Stewart Creek from Stonebrook Parkway to Dallas North Tollway (Grand Park)

Single occurrences of battery chips and potential slag along with concentrated areas of battery chips and potential slag were observed in Stewart Creek north of Stonebrook Parkway on the Grand Park area. For field documentation purposes, areas where three or more occurrences of battery chips or potential slag material were readily observed in a depositional area or bank were designated as concentrated areas.

Four occurrences single battery chips and eight occurrences of concentrated battery chips and/or potential slag material were observed in the creek channel from the Stonebrook Parkway bridge to 750 feet north of Stonebrook Parkway.

Ten occurrences of concentrated battery chips and/or slag and six occurrences of single battery chips were observed from approximately 1,000 feet north of Stonebrook Parkway to approximately 1,900 feet north of Stonebrook Parkway. Within this segment, two areas containing numerous battery chips were encountered in the bank walls of the creek. Photographs of the battery chips observed in the creek bank walls are presented at locations 28 through 34 on the key map in Appendix B.

Two occurrences of concentrated battery chips, seven occurrences of single battery chips and one occurrence of potential slag were observed in a segment beginning approximately 2,130 feet north of Stonebrook Parkway extending north and east approximately 1,250 linear feet. Within this segment, a broken concrete creek crossing was encountered. Battery chips and brick were observed in the base material beneath the concrete surface. Additionally, a battery chip was observed apparently embedded in the concrete at the base of the concrete surface. Photographs of the concrete creek crossing and battery chip observed within the concrete are presented as points 42 and 43 on the key map in Appendix B.

Four occurrences of concentrated battery chips and potential slag material were observed in the Stewart Creek channel in a segment beginning approximately 250 feet west of the Dallas North Tollway bridge and back east to the bridge. A representative photograph of the battery chips observed in this segment is presented as point 49 on the key map in Appendix B.

Stewart Creek from Dallas North Tollway to BNSF Railroad Bridge

Two areas of concentrated of battery chips, a battery chip and a piece of potential slag were observed in the creek channel beneath the Dallas North Tollway bridge to approximately 100 feet east of the bridge. Representative photographs of the potential slag and battery chips are presented as points 51 through 53 on the key map.

Concentrated areas of battery chips and potential slag were observed in the final segment surveyed from the Dallas North Tollway bridge approximately 750 feet east of the Dallas North Tollway bridge to the BNSF railroad bridge. Additionally, battery chips were observed along the northern banks of this segment. In the vicinity of the BNSF railroad bridge, numerous occurrences of battery chips (including one battery chip containing a post) and concentrations

of larger potential slag material were observed. Representative photographs of the battery chips and potential slag observed in this segment are presented as points 54 through 57 on the key map in Appendix B.

2.2 Sediment Sampling

Subsequent to the completion of the walking survey, SWG will conduct additional sediment sampling activities between F.M. 423 and Stonebrook Parkway to supplement the existing sediment sample results.

Sediment samples will be collected from Stewart Creek in general accordance with the Texas Commission on Environmental Quality (TCEQ) *Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods (RG-415)*, revised August 2012. Sample locations will be targeted in areas of soft sediment deposition/accumulation within the stream bed and in areas of concentrated battery chips/potential slag based on the results of SWG's visual survey.

The results of SWG's sediment sampling and visual survey activities and will be documented in a final report in accordance with SWG's proposal.

3.0 FINDINGS AND RECOMMENDATIONS

The objective of the proposed scope of services was to identify and document the presence of visible battery chips and slag in Stewart Creek from Lewisville Lake east of F.M. 423 to the BNSF railroad bridge. This scope of work was conducted in accordance with SWG's Proposal Number P0113C1098 dated March 26, 2013.

It should be noted that the information contained in this interim report is based on the results of SWG's ongoing field activities to complete the scope of services outlined in SWG's proposal. Subsequent to the completion of the walking survey, SWG will conduct additional sediment sampling activities between F.M. 423 and Stonebrook Parkway to supplement the existing sediment sample results. Since SWG's field activities are ongoing, this interim report does not represent a final report for the scope of services outlined in SWG's proposal.

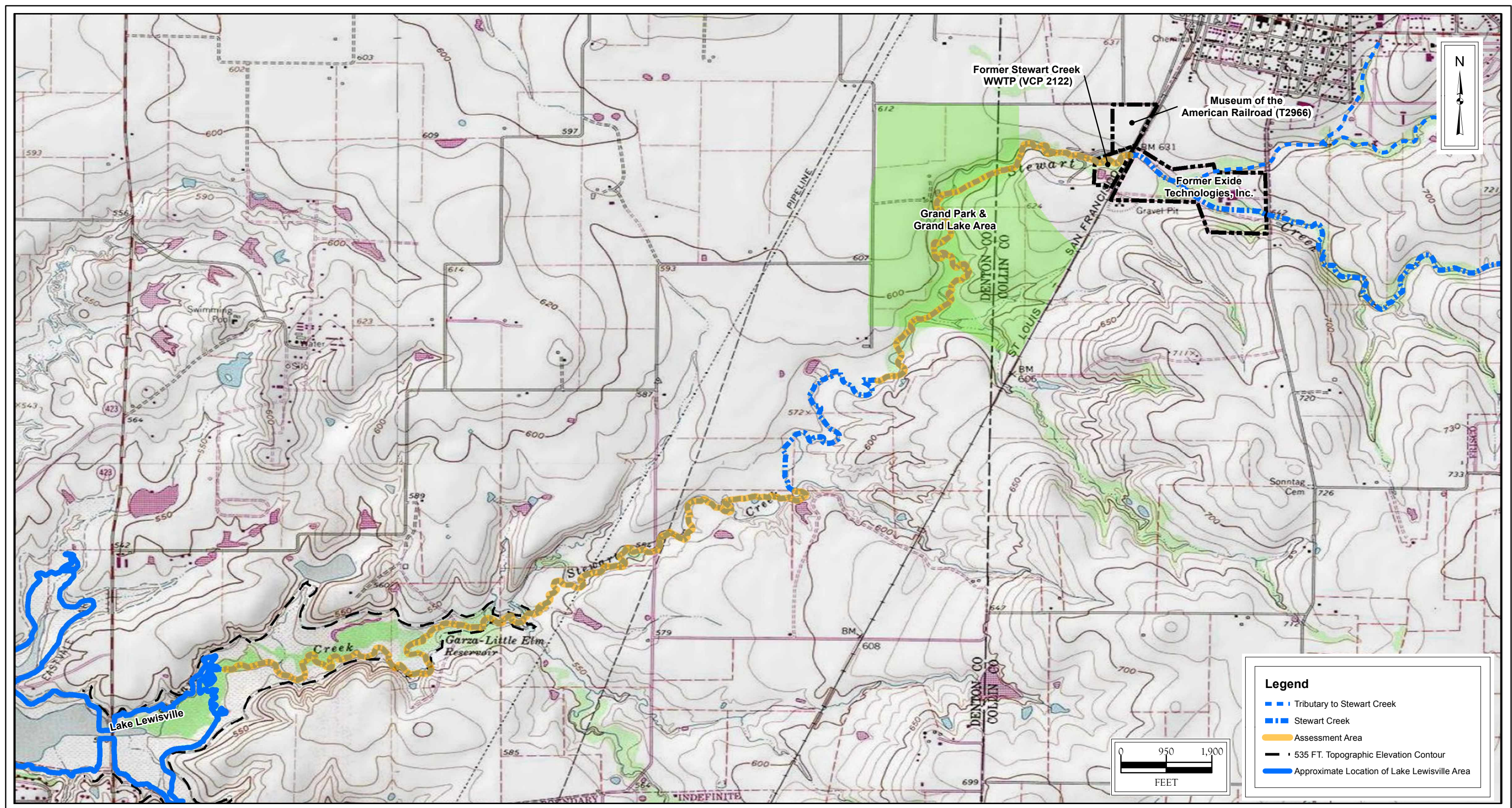
The findings and recommendations of this investigation are as follows:

- Regulatory file reviews previously conducted by SWG for the former Exide facility have indicated that several remediation efforts have been implemented in Stewart Creek within the boundaries of the former Exide facility. These efforts were conducted in response to the documented presence of industrial impacts in Stewart Creek including the presence of slag and battery chips and elevated lead and cadmium concentrations in samples collected within and near the creek.
- Based on the findings of the APAR and SLERA prepared for the Former Stewart Creek Wastewater Treatment Plant, sediment samples collected from the portion of Stewart Creek nearest the FSCWWTP indicated lead and cadmium concentrations in exceedance of the TCEQ Second Effects Levels for Ecological Receptors. The SLERA recommended "additional evaluation to address potential localized effects in sediment hot spot areas."

- Historical activities at the MARR facility, including the potential construction of a full or partial road bed, apparently used “battery chips” for surface paving. Based on historical information pertaining to the discovery and remediation of battery chips from other areas within the City of Frisco, the suspected source of the battery chips is the former Exide (formerly GNB) battery recycling facility located southeast of the MARR facility.
- Battery chips and potential slag was observed in sediment in Stewart Creek. Frequent occurrences of concentrated battery chips and potential slag material were observed in the Stewart Creek channel in Grand Park from Stonebrook Parkway to the Dallas North Tollway bridge. In the vicinity of the BNSF railroad bridge, numerous occurrences of battery chips (including one battery chip containing a post) and concentrations of larger potential slag material were observed.
- Based on the results of SWG's visual survey, additional assessment is necessary to further evaluate the arsenic, cadmium and lead concentrations above the TCEQ ecological benchmarks and/or second effects levels for sediment and to further evaluate the presence of battery chips and potential slag observed during field activities.
- Following completion of SWG's investigation, and submittal of a final report to the City of Frisco, it is recommended that the City of Frisco, Exide, TCEQ, EPA, and USACE collaborate to determine how to best remediate the waste and contaminated environmental media.

APPENDIX A

Figures



Stewart Creek Sediment Sampling
Frisco, Collin County, Texas

SWG Project No. 0111C278A

Southwest
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Figure 1
Topographic Map
Frisco, Lewisville East and Hebron
Texas Quadrangles
Contour Interval = 10 Feet
1981



FIGURE 2
STEWART CREEK
SEDIMENT SAMPLE
POINTS

Southwest
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Stewart Creek Sediment Sampling
Frisco, Collin County, Texas

SW/G Project No. 0111C278A

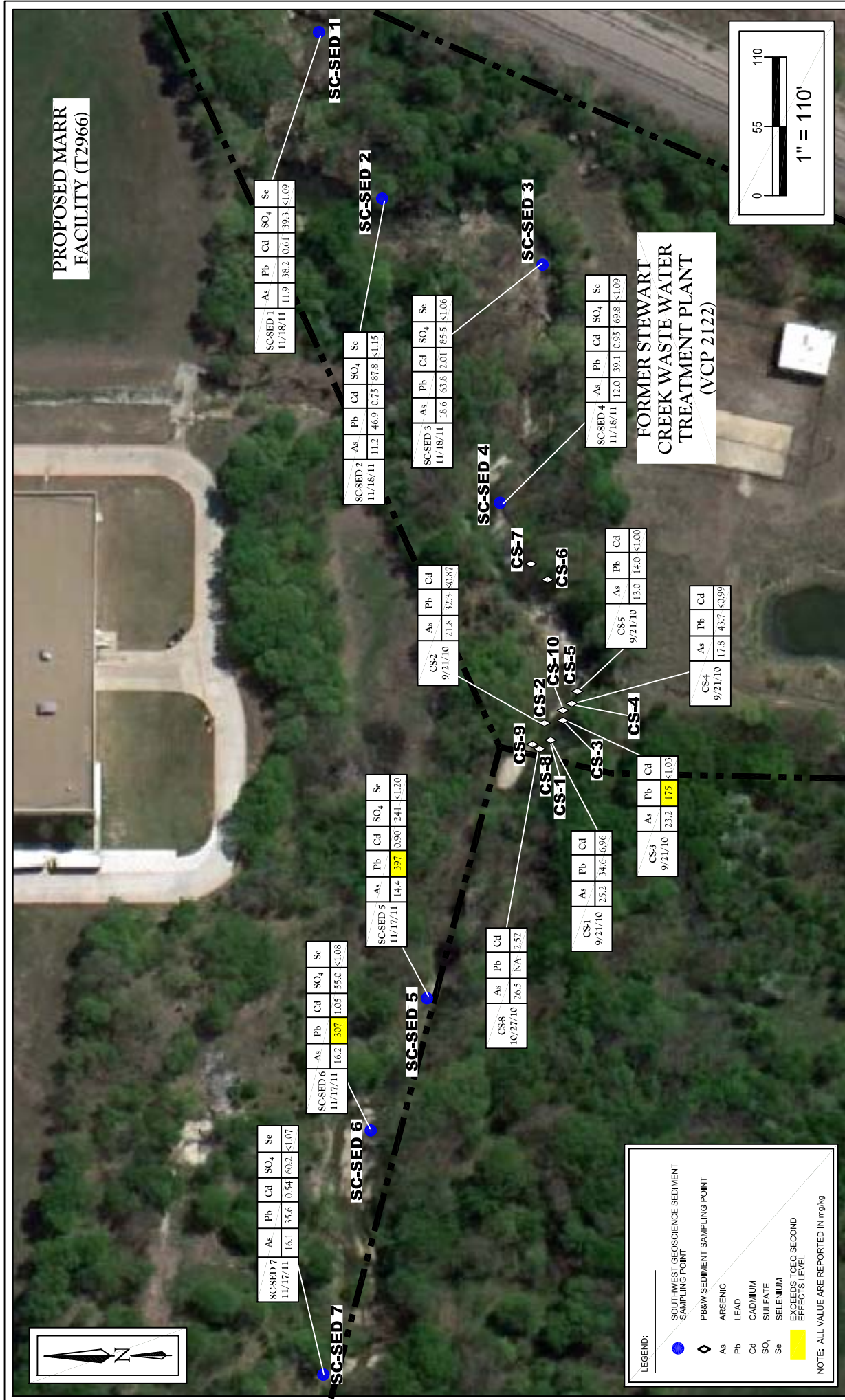
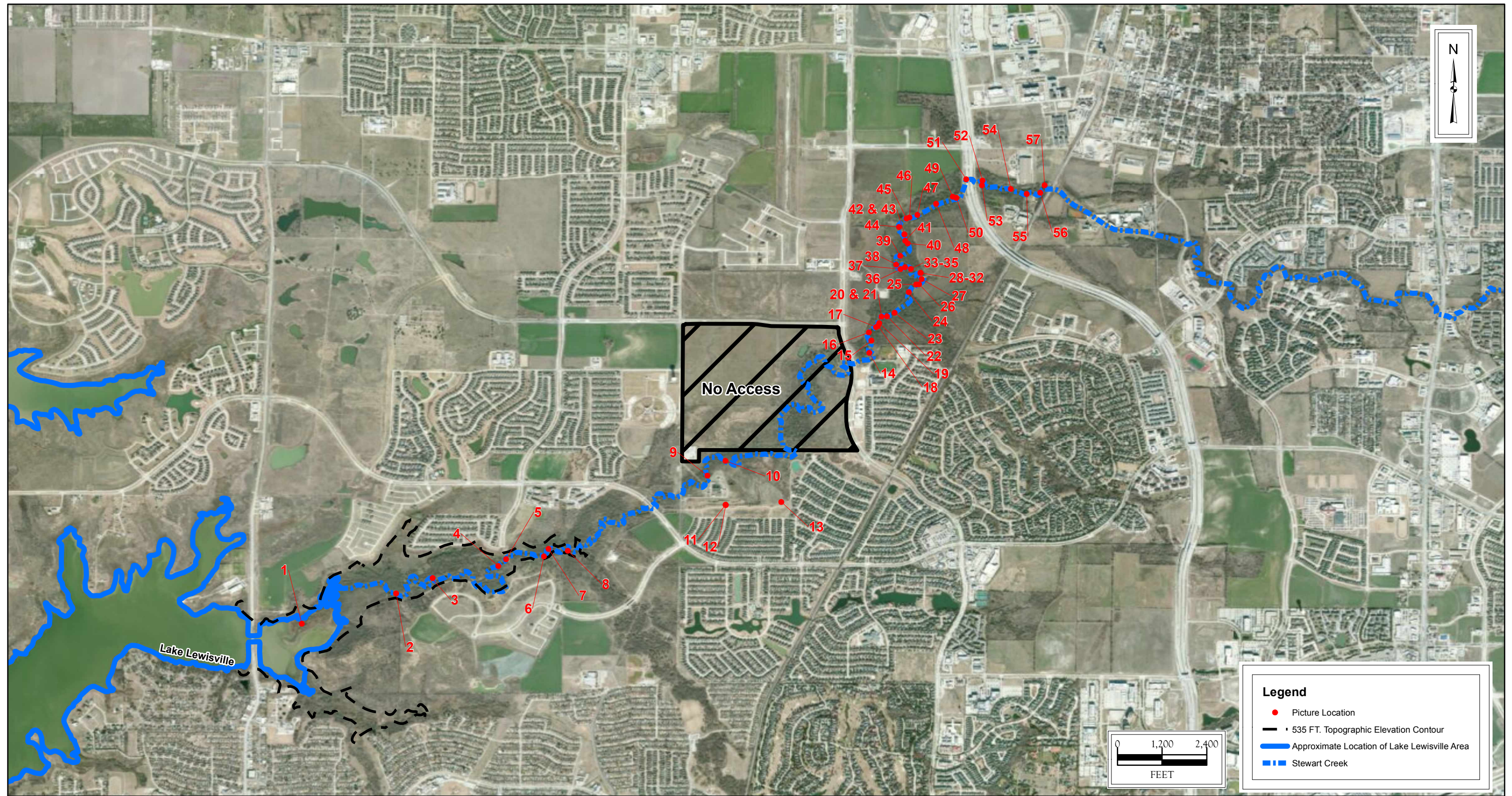


FIGURE 3
STEWART CREEK
NORTHERN SEDIMENT
SAMPLE POINTS



APPENDIX B

Key Map and Photographs



Stewart Creek Sediment Sampling
Frisco, Collin County, Texas

SWG Project No. 0111C278A

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Key Map to Photographs of
Stewart Creek Observations



1. Representative view of creek channel.



2. Potential slag.



3. Representative view of creek channel and sediment.



4. View of the creek.



5. View of creek and sediment.



6. Potential slag.



7. Potential slag.



8. Potential slag.



9. Abandoned corroded drum containing sediment.



10. General view of depositional area in the creek.



11. Battery chips located under trees near a residential neighborhood. This area contained multiple battery chips.



12. View from the battery chips area to the open fields, playground and residential neighborhood.



13. Battery chip located in an open field near a residential neighborhood.



14. Potential slag.



15. Potential slag and battery chip.



16. View of a battery chip located in the creek.



17. Potential slag.



18. Battery chip.



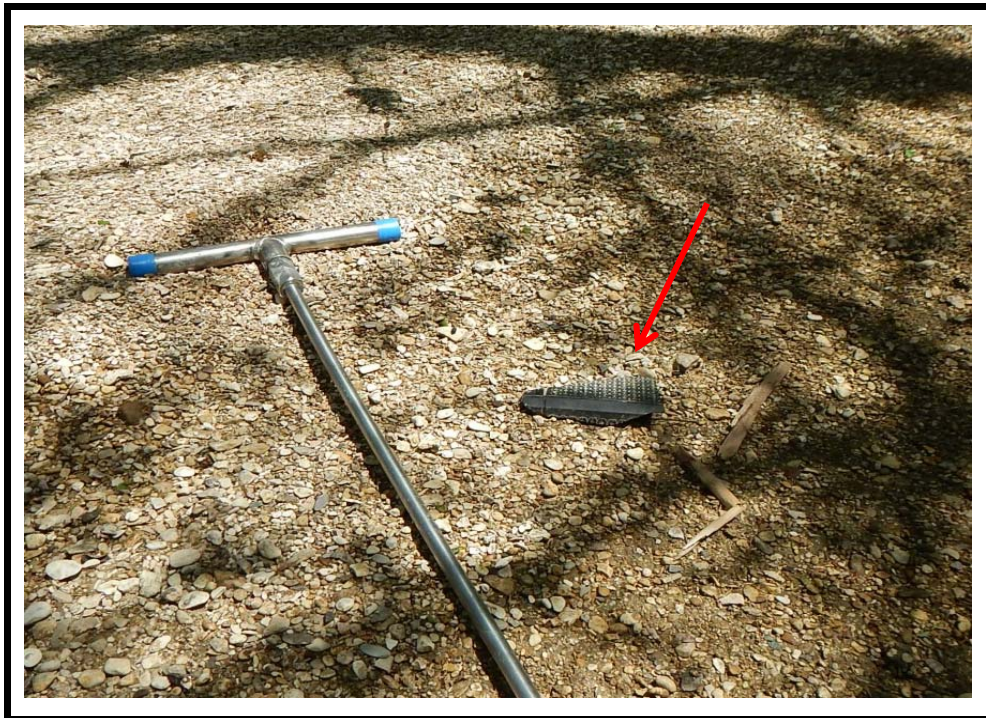
19. Battery chip.



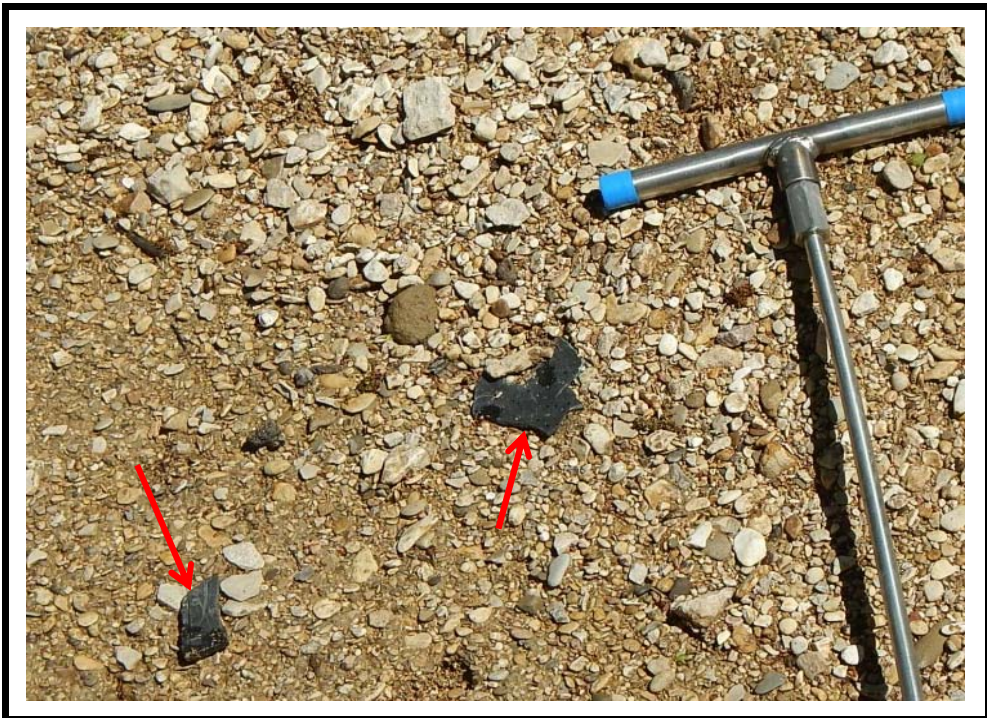
20. Battery chips.



21. Potential slag.



22. Battery chip.



23. Battery chips.



24. Potential slag.



25. Potential slag.



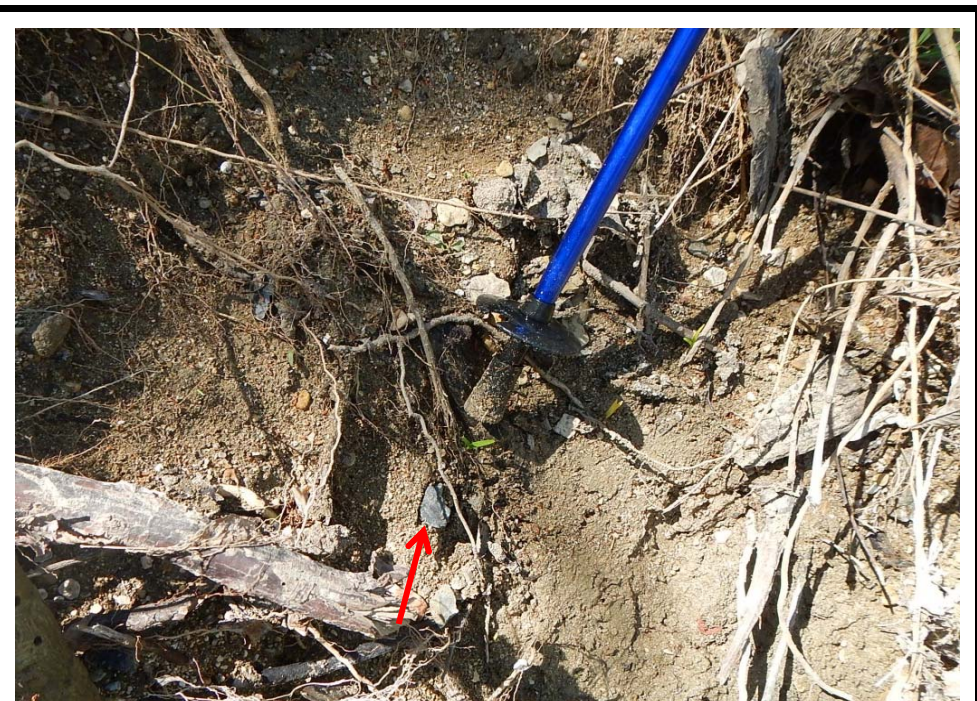
26. Battery chips.



27. Battery chip.



28. Area of battery chips along the wall.



29. Close up view of battery chip in the creek bank wall.



30. Another view of the battery chips in the creek bank wall.



31. Battery chip in the wall.



32. Battery chips on the creek bank wall.



33. Battery chip on a creek bank wall.



34. Battery chip.



35. Potential slag.



36. Battery chips.



37. Battery chips.



38. Battery chip.



39. Battery chips.



40. Battery chip.



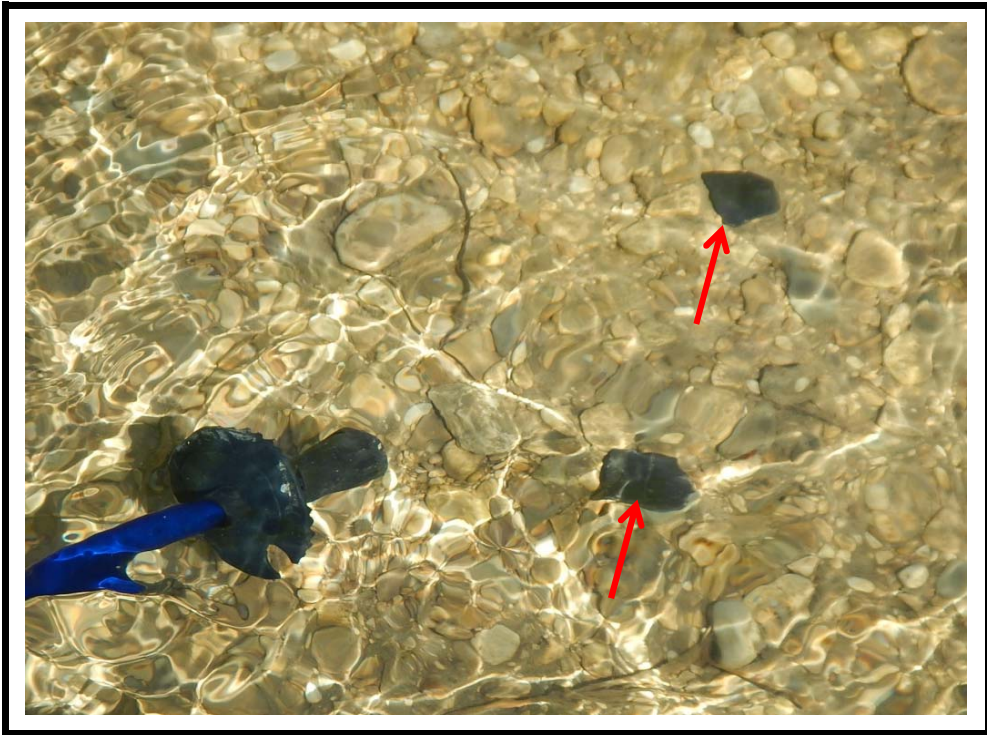
41. Battery chip.



42. View of a broken concrete crossing. Battery chips observed under crossing.



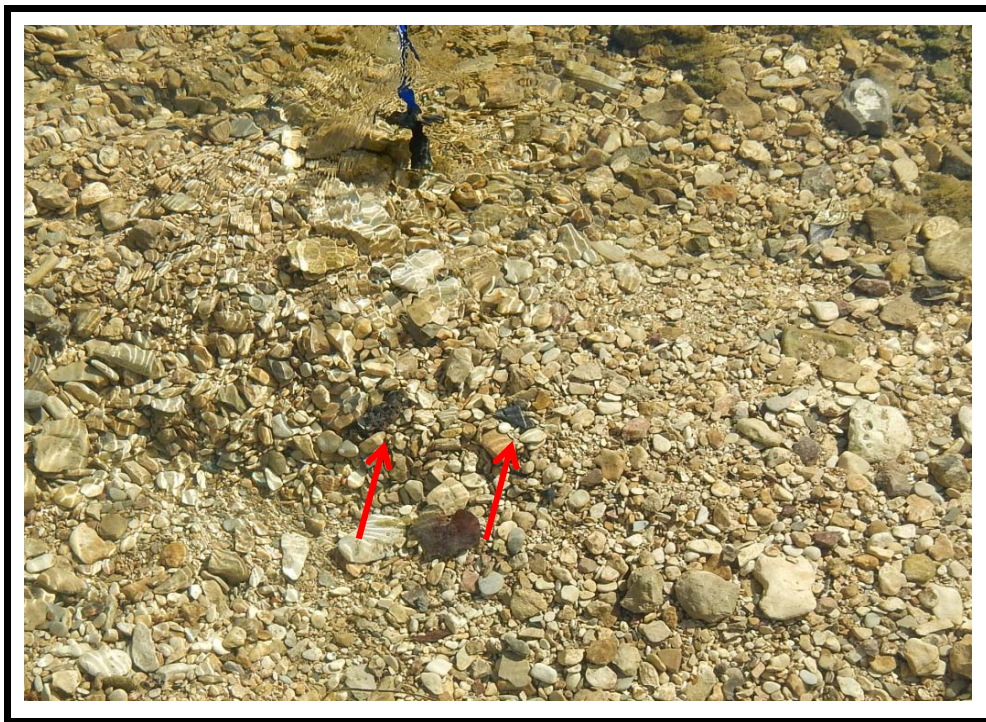
43. View of a battery chip embedded in the concrete surface of the bridge.



44. Battery chips in the creek.



45. Battery chip.



46. Battery chip and potential slag under water in the creek.



47. Battery chip.



48. Typical view of the creek and depositional areas.



49. Battery chips.



50. Typical view of the creek and depositional areas.



51. Potential slag.



52. Battery chip.



53. Battery chip.



54. Battery chip in the creek bank wall.



55. Potential slag.



56. Battery post.



57. Potential slag.

APPENDIX C

Limited Site Investigation –
Sediment Sampling of Stewart Creek
Dated March 27, 2013

LIMITED SITE INVESTIGATION
Sediment Sampling of Stewart Creek

Property:

Stewart Creek
BNSF Railroad Bridge to
Stonebrook Parkway
Frisco, Texas

March 27, 2013
Project No. 0111278

Prepared for:

City of Frisco
c/o
Russell & Rodriguez, L.L.P.
1633 Williams Drive
Building 2, Suite 200
Georgetown, TX 78628

Prepared by:

Southwest
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March 27, 2013

City of Frisco
c/o Russell & Rodriguez, L.L.P.
1633 Williams Drive
Building 2, Suite 200
Georgetown, TX 78628
Attn : Mr. Kerry Russell

Re: Limited Site Investigation
Sediment Sampling of Stewart Creek
BNSF Railroad Bridge to Stonebrook Parkway
Frisco, Texas
SWG Project No. 0111278

Dear Mr. Russell:

SWG is pleased to submit this Limited Site Investigation (LSI) report for the above-referenced Site. This investigation was performed in accordance with SWG's Proposal Number 01111316 dated September 21, 2011.

We appreciate the opportunity to perform these services for the City of Frisco, c/o Russell & Rodriguez, L.L.P. Please contact either of the undersigned at (214) 350-5469 if you have questions regarding the information provided in the report.

Sincerely,
SOUTHWEST GEOSCIENCE

Prepared by:



Jason T. Minter, P.G.
Manager, Environmental Field Services

Reviewed by:



Rusty L. Simpson, P.G., C.P.G.
Principal

Enclosure

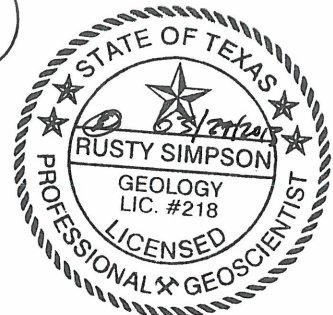
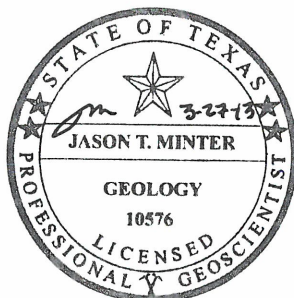


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LIMITED SITE INVESTIGATION

Sediment Sampling of Stewart Creek BNSF Railroad Bridge to Stonebrook Parkway Frisco, Texas SWG Project No. 0111278 March 27, 2013

1.0 INTRODUCTION

1.1 Site Description

SWG has completed a Limited Site Investigation (LSI) for sediment sampling activities along Stewart Creek, at and along the proposed Grand Park project, from the eastern edge at the BNSF railroad bridge to Stonebrook Parkway in Frisco, Texas.

A topographic map is included as Figure 1, and a Site Map is included as Figure 2, Appendix A.

1.2 Scope of Work

SWG conducted sediment sampling activities in Stewart Creek, from the eastern edge at the BNSF railroad bridge to Stonebrook Parkway in Frisco, Texas. The proposed scope of work was based on the request of the City of Frisco for sediment sampling and analysis along the proposed Grand Park project as shown on the attached Figure 1. This investigation was requested to evaluate chemicals of concern in sediment in the vicinity of the Grand Park project.

The objective of the proposed scope of services was to evaluate arsenic, cadmium, lead, selenium and sulfate concentrations along Stewart Creek in sediment samples collected from 30 sampling locations based on the layout of the proposed Grand Park project. This scope of work was performed in accordance with SWG's Proposal Number 0111316 dated September 21, 2011.

1.3 Standard of Care

SWG's services were performed in accordance with standards customarily provided by a firm rendering the same or similar services in the area during the same time period. SWG makes no warranties, express or implied, as to the services performed hereunder. Additionally, SWG does not warrant the work of third parties supplying information used in the report (e.g. laboratories, regulatory agencies or other third parties). This scope of services was performed in accordance with the scope of work agreed with the client, as detailed in our proposal.

1.4 Additional Scope Limitations

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work and it should be noted that this information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, or not present during these services, and SWG cannot represent that the site contains no hazardous substances, toxic materials,

petroleum products, or other latent conditions beyond those identified during this LSI. Environmental conditions at other areas or portions of the Site may vary from those encountered at actual sample locations. SWG's findings, and recommendations are based solely upon data available to SWG at the time of these services.

1.5 Reliance

This report has been prepared for the exclusive use of the City of Frisco, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of the City of Frisco and SWG. Any unauthorized distribution or reuse is at the client's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions and limitations stated in the proposal, LSI report, and SWG's Agreement. The limitation of liability defined in the agreement is the aggregate limit of SWG's liability to the client and all relying parties unless otherwise agreed in writing.

2.0 FIELD ACTIVITIES

As part of this LSI, sediment samples were collected from 30 total sampling locations based on the layout of the proposed Grand Park project, as shown on Figure 1. Sample collection activities were divided into two phases. The first phase was performed between the BNSF railroad bridge and the Dallas North Tollway. The second phase of sediment sampling was performed west of the Dallas North Tollway, along the proposed area of the Grand Park project. The sediment sampling activities were concentrated in depositional areas along Stewart Creek and conducted in general accordance with the Texas Commission on Environmental Quality (TCEQ) *Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods (RG-415)*, dated December 2003.

2.1 Sediment Sampling

SWG's LSI field activities were conducted from November 17, 2011 to November 18, 2011 by Mr. Tommy Kim, Mr. John Koehnen and Mr. Jason Minter, P.G., SWG environmental professionals. As part of the approved scope of work, Eleven (11) sediment samples were collected between the BNSF railroad bridge and the Dallas North Tollway bridge. Nineteen (19) sediment samples were collected between the Dallas North Tollway and Stonebrook Parkway. The sediment sample locations were designated SC-SED-1 (west of the BNSF railroad bridge) through SC-SED-30 (north of Stonebrook Parkway).

Sample locations were targeted in areas of soft sediment deposition/accumulation within the depositional features and documented using field GPS equipment. At each location, sediment samples were collected from the 0.0 to 0.5 foot depth interval; however, finer grained bed sediments were sampled preferentially over coarser grained bed sediments.

Figure 1 presents the general boundaries and topography of the Site on the USGS topographic quadrangle map of Frisco, Texas (Appendix A). A Site Map is included as Figure 2 (Appendix A).

Sediment samples were collected using a decontaminated split core sampler. Sampling equipment was cleaned using an Alconox® wash and potable water rinse prior to the beginning of the project and before collecting each sediment sample.

Battery chips were observed in the creek channel in two locations north of Stonebrook Parkway in the vicinity of SC SED-30 and SC SED-26. Additionally, potential slag was observed in the creek channel in the vicinity of the Dallas North Tollway bridge. Representative photographs of sediment sample locations including photographs of battery chips and potential slag are included as Appendix B.

2.2 Sediment Sampling Program

Sediment samples were collected and placed in laboratory prepared glassware, sealed with custody tape and placed on ice in a cooler which was secured with a custody seal. The sample coolers and completed chain-of-custody forms were relinquished to ERM's analytical laboratory in Allen, Texas for normal turnaround.

3.0 LABORATORY ANALYTICAL METHODS

The sediment samples were analyzed for arsenic, cadmium, lead and selenium utilizing EPA Method SW-846#6010B and sulfate utilizing EPA Method 300.0.

Laboratory results are summarized in the tables included in Appendix B. The executed chain-of-custody form and laboratory data sheets are provided in Appendix C.

4.0 DATA EVALUATION

SWG compared the arsenic, cadmium, lead and selenium concentrations detected in the sediment samples to the freshwater sediment benchmarks and second effects levels for sediment referenced in the TCEQ guidance document *Update to Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas RG-263 (Revised)*, dated January 2006. Based on SWG's review, the TCEQ has not established ecological benchmarks or second effects levels for selenium or sulfate.

Arsenic

The arsenic concentrations detected in the sediment samples ranged from 8.10 mg/Kg in SC-SED-18 to 47.2 mg/Kg in SC-SED-8. Arsenic concentrations detected in sediment at each location with the exception of SC-SED-18 exceeded the TCEQ ecological benchmark for sediment of 9.79 mg/Kg. SC-SED-8 exceeded the TCEQ second effects level for arsenic of 33 mg/Kg.

Cadmium

The cadmium concentrations detected in the sediment samples ranged from 0.43 mg/Kg in SC-SED-18 to 4.16 mg/Kg in SC-SED-9. Cadmium concentrations detected in sediment at eighteen locations exceeded the TCEQ ecological benchmark for sediment of 0.99 mg/Kg; however, none of the detected sediment concentrations exceeded the TCEQ second effects level for cadmium of 4.98 mg/Kg.

Lead

The lead concentrations detected in the sediment samples ranged from 20.5 mg/Kg in SC-SED-18 to 397 mg/Kg in SC-SED-5. The lead concentrations at seventeen locations exceeded the TCEQ ecological benchmark for sediment of 35.8 mg/Kg. Lead concentrations at SC-SED-5, SC-SED-6 and SC-SED-9 also exceeded the TCEQ second effects level for lead of 128 mg/Kg.

Selenium

Selenium concentrations were not detected above the laboratory sample detection limits (SDLs). The TCEQ has not established an ecological benchmark or a second effects level for selenium in sediment.

Sulfate

The sulfate concentrations detected in the sediment samples ranged from 31.0 mg/Kg in SC-SED-21 to 241 mg/Kg in SC-SED-5. The TCEQ has not established an ecological benchmark or a second effects level for sulfate in sediment.

5.0 FINDINGS AND RECOMMENDATIONS

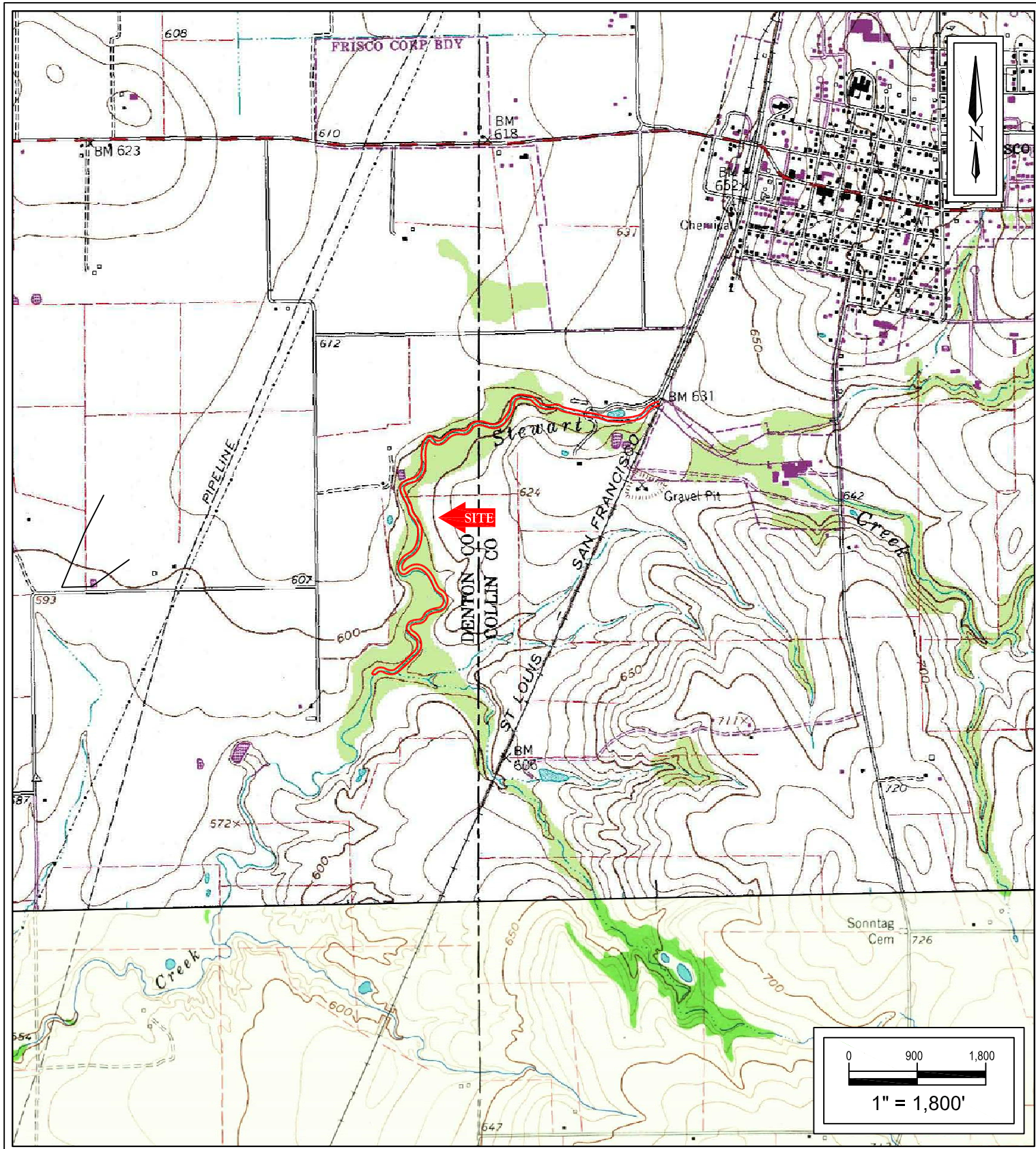
The objective of the proposed scope of services was to evaluate arsenic, cadmium, lead, selenium and sulfate concentrations along Stewart Creek in sediment samples collected from 30 sampling locations based on the layout of the proposed Grand Park project. The scope of work was performed in accordance with SWG's Proposal Number 01111316 dated September 21, 2011.

The findings and recommendations of this investigation are as follows:

- As part of the approved scope of work, Eleven (11) sediment samples were collected between the BNSF railroad bridge and the Dallas North Tollway. Nineteen (19) sediment samples were collected between the Dallas North Tollway and Stonebrook Parkway.
- Sample locations were targeted in areas of soft sediment deposition/accumulation within the stream bed and documented using field GPS equipment. At each location, sediment samples were collected from the 0.0 to 0.5 foot depth interval; however, finer grained bed sediments were sampled preferentially over coarser grained bed sediments.
- The laboratory analytical results indicate that arsenic, cadmium, lead and sulfate concentrations were detected in each of the samples collected. Selenium concentrations were not detected above laboratory SDLs.
- Based on the results of SWG's LSI, additional assessment is necessary to further evaluate the arsenic, cadmium and lead concentrations above the TCEQ ecological benchmarks and/or second effects levels for sediment and to further evaluate the presence of battery chips and potential slag observed during field activities.

APPENDIX A

Figures

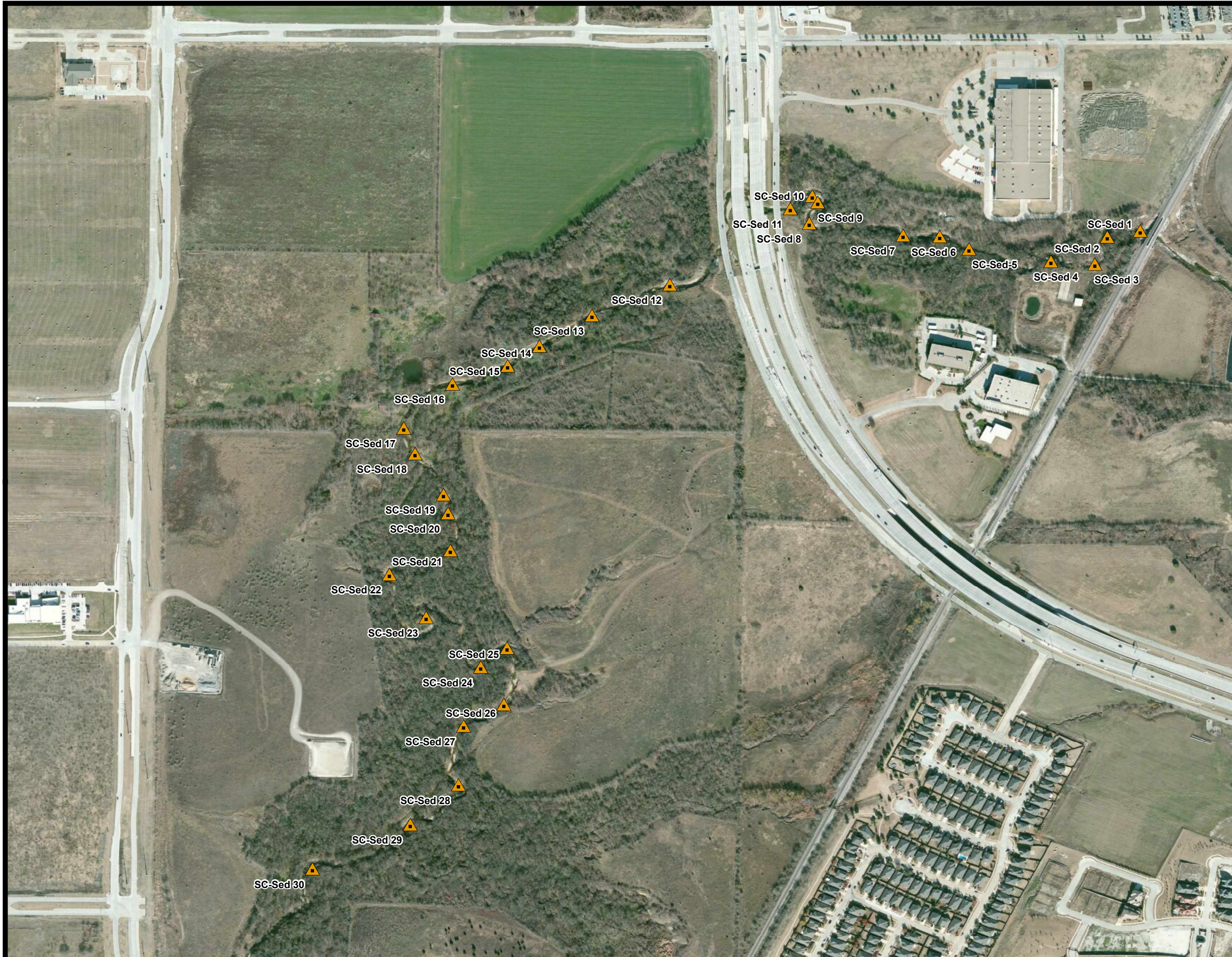


Sediment Sampling of Stewart Creek
Frisco, Texas

SWG Project No. 0111278

Southwest
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Figure 1
Topographic Map
Frisco & Hebron
Texas Quadrangle
Contour Interval = 10 Feet
1981



Legend

 Sediment Sample Locations (11/2011)

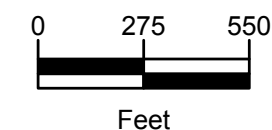


Figure 2
Site Map
Stewart Creek Sediment
Sampling Locations
November 2011

Sediment Sampling
of Stewart Creek

SWG Project No. 0111278

Southwest
GEOSCIENCE

APPENDIX B

Photographs



1.) Photo of Stewart Creek in the vicinity of sediment sample SC-SED 4.

November 18, 2011



2.) Photo of Stewart Creek in the vicinity of sediment sample SC-SED 7.

November 17, 2011



3.) Photo of Stewart Creek in the vicinity of sediment sample SC-SED 13.

November 18, 2011



4.) Photo of Stewart Creek in the vicinity of sediment sample SC-SED 19.

November 18, 2011



5.) Photo of Stewart Creek in the vicinity of sediment sample SC-SED 23.

November 18, 2011



6.) Photo of battery chips under water on top of sediment in Stewart Creek.

November 18, 2011



7.) Photo of Stewart Creek in the vicinity of sediment sample SC-SED 28.

November 18, 2011



8.) Representative photos of battery chips on a gravel deposit in Stewart Creek.

November 18, 2011



9.) Photo of potential slag observed near the Dallas North Tollway Bridge.

November 18, 2011

APPENDIX C

Table

TABLE 1
METALS and SULFATE SEDIMENT ANALYTICAL RESULTS
Stewart Creek East and West of the Dallas North Tollway
Frisco, Texas

Sample I.D.	Sample Date	Depth (feet)	Arsenic (mg/Kg)	Cadmium (mg/Kg)	Lead (mg/Kg)	Selenium (mg/Kg)	Sulfate (mg/Kg)
TRRP Ecological Benchmarks for Sediment			9.79	0.99	35.8	NE	NE
TCEQ Second Effects Levels for Sediment			33	4.98	128	NE	NE
TRRP Human Health Sediment Protective Concentration Levels			110	1,100	500	2,700	NE
SC-SED-1	11/18/11	0-0.5	11.9	0.61	38.2	<1.09	39.3
SC-SED-2	11/18/11	0-0.5	11.2	0.75	46.9	<1.15	87.8
SC-SED-3	11/18/11	0-0.5	18.6	2.01	63.8	<1.06	85.5
SC-SED-4	11/18/11	0-0.5	12.0	0.95	39.1	<1.09	69.8
SC-SED-5	11/17/11	0-0.5	14.4	0.90	397	<1.20	241
SC-SED-6	11/17/11	0-0.5	16.2	1.05	307	<1.08	55.0
SC-SED-7	11/17/11	0-0.5	16.1	0.54	35.6	<1.07	60.2
SC-SED-8	11/17/11	0-0.5	47.2	0.96	35.2	<1.10	52.7
SC-SED-9	11/17/11	0-0.5	20.5	4.16	162	<1.06	43.1
SC-SED-10	11/17/11	0-0.5	12.3	0.72	22.5	<1.01	45.0
SC-SED-11	11/17/11	0-0.5	29.4	1.11	46.8	<1.02	38.2
SC-SED-12	11/18/11	0-0.5	11.3	0.79	56.7	<1.26	172
SC-SED-13	11/18/11	0-0.5	31.1	0.84	33.7	<1.00	58.3
SC-SED-14	11/18/11	0-0.5	12.7	0.79	27.7	<0.97	48.2
SC-SED-15	11/18/11	0-0.5	12.9	1.54	35.3	<1.01	58.0
SC-SED-16	11/18/11	0-0.5	14.6	1.49	59.0	<1.00	35.6
SC-SED-17	11/18/11	0-0.5	18.3	1.19	43.1	<0.97	40.2
SC-SED-18	11/18/11	0-0.5	8.10	0.43	20.5	<0.91	190
SC-SED-19	11/18/11	0-0.5	19.5	1.47	37.6	<1.18	93.0
SC-SED-20	11/18/11	0-0.5	17.4	1.07	38.5	<1.03	54.2
SC-SED-21	11/18/11	0-0.5	18.0	2.19	49.5	<0.96	31.0
SC-SED-22	11/18/11	0-0.5	19.2	2.01	53.2	<0.93	78.5
SC-SED-23	11/18/11	0-0.5	16.1	3.69	34.2	<1.15	190
SC-SED-24	11/18/11	0-0.5	32.1	2.00	49.5	<1.03	39.8
SC-SED-25	11/18/11	0-0.5	15.1	1.03	21.6	<1.07	45.0
SC-SED-26	11/17/11	0-0.5	16.5	0.87	30.1	<1.07	66.3
SC-SED-27	11/17/11	0-0.5	14.3	1.09	31.8	<1.00	54.1
SC-SED-28	11/18/11	0-0.5	14.1	1.23	29.0	<0.96	63.0
SC-SED-29	11/18/11	0-0.5	18.2	1.75	35.9	<1.00	37.2
SC-SED-30	11/18/11	0-0.5	18.5	2.41	31.3	<0.98	58.9

mg/Kg - milligrams/Kilogram

(j) - Denotes an estimated value between the laboratory sample detection limit (SDL) and the laboratory method detection limit (MDL).

Shading indicates a concentration above the TRRP Ecological Benchmark for Sediment

Bold and shading indicates a concentration above the TCEQ Second Effects Level

Benchmarks obtained from the TCEQ guidance document *Update to Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas RG-263 (Revised)*, dated January 2006.

< - Not detected above laboratory SDL.

N/A - Not Applicable

NE - Not Established

APPENDIX D

Laboratory Data Reports and
Chain-of-Custody Documentation

**Environmental Laboratories**

Bethany Tech Center ♦ Suite 190
400 W. Bethany Rd. ♦ Allen, Texas 75013

State Certifications

Arkansas: 88-0647
Oklahoma: 8727



Louisiana: 02007
Kansas: E-10388
Texas: T104704232-11-2

Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz Scaggs

Page: Page 1 of 26
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/29/11 16:54

Attached is our analytical report for the samples received for your project. Below is a list of your individual sample descriptions with our corresponding laboratory number. We also have enclosed a copy of the Chain of Custody that was received with your samples and a form documenting the condition of your samples upon arrival. Please note any unused portion of the samples may be discarded upon expiration of the EPA holding time for the analysis performed or after 30 days from the above report date, unless you have requested otherwise.

ERMI Environmental Laboratories certifies that all results contained in this report were produced in accordance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) unless otherwise noted. The results presented apply to the samples analyzed in accordance with the chain-of-custody document(s) furnished with the samples. This report is intended for the sole use of the customer for whom the work was performed and must be reproduced, without modification, in its entirety.

Sample Identification

<u>Laboratory ID #</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
1111546-01	SC-SED 11	Solid	11/17/11 14:56	11/18/11 17:05
1111546-02	SC-SED 10	Solid	11/17/11 15:25	11/18/11 17:05
1111546-03	SC-SED 9	Solid	11/17/11 15:38	11/18/11 17:05
1111546-04	SC-SED 8	Solid	11/17/11 15:56	11/18/11 17:05
1111546-05	SC-SED 7	Solid	11/17/11 16:47	11/18/11 17:05
1111546-06	SC-SED 6	Solid	11/17/11 17:05	11/18/11 17:05
1111546-07	SC-SED 5	Solid	11/17/11 17:26	11/18/11 17:05
1111546-08	SC-SED 30	Solid	11/18/11 10:50	11/18/11 17:05
1111546-09	SC-SED 29	Solid	11/18/11 11:25	11/18/11 17:05
1111546-10	SC-SED 28	Solid	11/18/11 11:40	11/18/11 17:05
1111546-11	SC-SED 27	Solid	11/18/11 13:30	11/18/11 17:05
1111546-12	SC-SED 26	Solid	11/18/11 13:40	11/18/11 17:05
1111546-13	SC-SED 25	Solid	11/18/11 14:00	11/18/11 17:05
1111546-14	SC-SED 24	Solid	11/18/11 14:05	11/18/11 17:05
1111546-15	SC-SED 23	Solid	11/18/11 15:00	11/18/11 17:05
1111546-16	SC-SED 22	Solid	11/18/11 15:20	11/18/11 17:05
1111546-17	SC-SED 21	Solid	11/18/11 15:30	11/18/11 17:05
1111546-18	SC-SED 20	Solid	11/18/11 15:40	11/18/11 17:05
1111546-19	SC-SED 19	Solid	11/18/11 15:50	11/18/11 17:05

**Environmental Laboratories**

Bethany Tech Center ♦ Suite 190
400 W. Bethany Rd. ♦ Allen, Texas 75013

State Certifications

Arkansas: 88-0647
Oklahoma: 8727



Louisiana: 02007
Kansas: E-10388
Texas: T104704232-11-2

Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz Scaggs

Page: Page 2 of 26
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/29/11 16:54

The analytical data and results contained in this report, as well as their supporting data, conform with Texas Risk Reduction Program (TRRP), 30 TAC, Section 350, requirements and are of sufficient and documented quality to meet both TRRP objectives, TCEQ regulatory guidance No. RG-366/TRRP-13 and the project-based objective of achieving the lowest method detection limit (i.e., the TRRP Critical PCL where reasonably achievable or, if not reasonably achievable, the MQL). All information concerning analytical parameters, methods and protocols that might bear upon or otherwise affect the accuracy of the analytical data in this report have been provided or otherwise disclosed herein. The data were obtained using applicable and appropriate EPA SW-846 or Texas Commission on Environmental Quality approved analytical protocols, methodologies and quality assurance/quality control standards. **ERMI Environmental Laboratories** certifies that its quality control program is substantially and materially consistent with the International Organization for Standardization "Guide 25: General Requirements the Competence of Calibration and Testing Laboratories (ISO 25 3rd Edition, 1990)," as amended or the quality standards outlined in the National Environmental Laboratory Accreditation Program, as amended. The entire analytical data package for this report, including the supporting quality control data, will be retained and maintained for at least five (5) years (or such longer period of time as may be required by TRRP) from the report date at the offices of **ERMI Environmental Laboratories, 400 W. Bethany, Suite 190, Allen, Texas 75013.**

I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Thank you for the opportunity to serve your environmental chemistry analysis needs. If you have any questions or concerns regarding this report please contact our Customer Service Department at the phone number below.

Respectfully submitted,

Kendall K. Brown
President



Environmental Laboratories

Bethany Tech Center ♦ Suite 190
400 W. Bethany Rd. ♦ Allen, Texas 75013

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Arkansas: 88-0647
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Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz Scaggs

Page: Page 3 of 26
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/29/11 16:54

Laboratory ID #:
1111546-01

Sample Type
Grab

Matrix

Solid

Sample Date/Time
11/17/11 1456

Sample Collected By
Jason Minter/John
Koehnman/Tommy Kim

Customer

Sample Description
SC-SED 11

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	38.2	1.22	1	mg/kg dry	1.00	I2	1K21052	11/21/11 2207	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	82	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	52.08	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	29.4	0.40	0.25	mg/kg dry	5.21	M4	1K28039	11/28/11 2050	SPS	Q-21, R-01
Cadmium	1.11	0.47	0.221	mg/kg dry	5.21	M4	1K28039	11/28/11 2050	SPS	R-01, J
Lead	46.8	0.89	0.42	mg/kg dry	5.21	M4	1K28039	11/28/11 2050	SPS	Q-21, R-01
Selenium	ND	1.02	0.4	mg/kg dry	5.21	M4	1K28039	11/28/11 2050	SPS	R-01



Environmental Laboratories

Bethany Tech Center ♦ Suite 190
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Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz Scaggs

Page: Page 4 of 26
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/29/11 16:54

Laboratory ID #:

1111546-02

Sample Type

Grab

Matrix

Solid

Sample Collected By

Jason Minter/John
Koehnan/Tommy Kim

Customer

Sample Description

SC-SED 10

Sample Date/Time

11/17/11 1525

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	45.0	1.27	1	mg/kg dry	1.00	I2	1K21052	11/21/11 2223	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	79	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	49.50	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	12.3	0.40	0.25	mg/kg dry	4.95	M4	1K28039	11/28/11 2058	SPS	R-01
Cadmium	0.72	0.47	0.221	mg/kg dry	4.95	M4	1K28039	11/28/11 2058	SPS	R-01, J
Lead	22.5	0.88	0.42	mg/kg dry	4.95	M4	1K28039	11/28/11 2058	SPS	R-01
Selenium	ND	1.01	0.4	mg/kg dry	4.95	M4	1K28039	11/28/11 2058	SPS	R-01

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<u>Laboratory ID #:</u> 1111546-03	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 9		<u>Sample Date/Time</u> 11/17/11 1538		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	43.1	1.30	1	mg/kg dry	1.00	I2	1K21052	11/21/11 2240	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	77	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	51.02	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	20.5	0.42	0.25	mg/kg dry	5.10	M4	1K28039	11/28/11 2106	SPS	R-01
Cadmium	4.16	0.49	0.221	mg/kg dry	5.10	M4	1K28039	11/28/11 2106	SPS	R-01
Lead	162	0.93	0.42	mg/kg dry	5.10	M4	1K28039	11/28/11 2106	SPS	R-01
Selenium	ND	1.06	0.4	mg/kg dry	5.10	M4	1K28039	11/28/11 2106	SPS	R-01

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<u>Laboratory ID #:</u> 1111546-04	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 8		<u>Sample Date/Time</u> 11/17/11 1556		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	52.7	1.36	1	mg/kg dry	1.00	I2	1K21052	11/21/11 2345	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	74	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	50.51	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	47.2	0.43	0.25	mg/kg dry	5.05	M4	1K28039	11/28/11 2134	SPS	R-01
Cadmium	0.96	0.51	0.221	mg/kg dry	5.05	M4	1K28039	11/28/11 2134	SPS	R-01, J
Lead	35.2	0.96	0.42	mg/kg dry	5.05	M4	1K28039	11/28/11 2134	SPS	R-01
Selenium	ND	1.10	0.4	mg/kg dry	5.05	M4	1K28039	11/28/11 2134	SPS	R-01



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<u>Laboratory ID #:</u> 1111546-05	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 7		<u>Sample Date/Time</u> 11/17/11 1647		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	60.2	1.38	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0002	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	72	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	48.54	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	16.1	0.42	0.25	mg/kg dry	4.85	M4	1K28039	11/28/11 2142	SPS	R-01
Cadmium	0.54	0.50	0.221	mg/kg dry	4.85	M4	1K28039	11/28/11 2142	SPS	R-01, J
Lead	35.6	0.94	0.42	mg/kg dry	4.85	M4	1K28039	11/28/11 2142	SPS	R-01
Selenium	ND	1.07	0.4	mg/kg dry	4.85	M4	1K28039	11/28/11 2142	SPS	R-01



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<u>Laboratory ID #:</u> 1111546-06	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 6		<u>Sample Date/Time</u> 11/17/11 1705		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	55.0	1.38	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0018	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	72	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	49.02	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	16.2	0.43	0.25	mg/kg dry	4.90	M4	1K28039	11/28/11 2151	SPS	R-01
Cadmium	1.05	0.50	0.221	mg/kg dry	4.90	M4	1K28039	11/28/11 2151	SPS	R-01, J
Lead	307	0.95	0.42	mg/kg dry	4.90	M4	1K28039	11/28/11 2151	SPS	R-01
Selenium	ND	1.08	0.4	mg/kg dry	4.90	M4	1K28039	11/28/11 2151	SPS	R-01



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<u>Laboratory ID #:</u> 1111546-07	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 5		<u>Sample Date/Time</u> 11/17/11 1726		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	241	1.44	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0051	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	69	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	52.08	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	14.4	0.47	0.25	mg/kg dry	5.21	M4	1K28039	11/28/11 2159	SPS	R-01
Cadmium	0.90	0.56	0.221	mg/kg dry	5.21	M4	1K28039	11/28/11 2159	SPS	R-01, J
Lead	397	1.05	0.42	mg/kg dry	5.21	M4	1K28039	11/28/11 2159	SPS	R-01
Selenium	ND	1.20	0.4	mg/kg dry	5.21	M4	1K28039	11/28/11 2159	SPS	R-01



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<u>Laboratory ID #:</u> 1111546-08	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 30		<u>Sample Date/Time</u> 11/18/11 1050		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	58.9	1.23	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0107	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	81	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	49.50	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	18.5	0.39	0.25	mg/kg dry	4.95	M4	1K28039	11/28/11 2206	SPS	R-01
Cadmium	2.41	0.45	0.221	mg/kg dry	4.95	M4	1K28039	11/28/11 2206	SPS	R-01
Lead	31.3	0.86	0.42	mg/kg dry	4.95	M4	1K28039	11/28/11 2206	SPS	R-01
Selenium	ND	0.98	0.4	mg/kg dry	4.95	M4	1K28039	11/28/11 2206	SPS	R-01

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<u>Laboratory ID #:</u> 1111546-09	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 29		<u>Sample Date/Time</u> 11/18/11 1125		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	37.2	1.25	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0124	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	80	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	50.00	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	18.2	0.39	0.25	mg/kg dry	5.00	M4	1K28039	11/28/11 2214	SPS	R-01
Cadmium	1.75	0.46	0.221	mg/kg dry	5.00	M4	1K28039	11/28/11 2214	SPS	R-01
Lead	35.9	0.87	0.42	mg/kg dry	5.00	M4	1K28039	11/28/11 2214	SPS	R-01
Selenium	ND	1.00	0.4	mg/kg dry	5.00	M4	1K28039	11/28/11 2214	SPS	R-01



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<u>Laboratory ID #:</u> 1111546-10	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 28		<u>Sample Date/Time</u> 11/18/11 1140		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	63.0	1.22	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0156	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	82	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	49.50	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	14.1	0.38	0.25	mg/kg dry	4.95	M4	1K28039	11/28/11 2222	SPS	R-01
Cadmium	1.23	0.45	0.221	mg/kg dry	4.95	M4	1K28039	11/28/11 2222	SPS	R-01, J
Lead	29.0	0.84	0.42	mg/kg dry	4.95	M4	1K28039	11/28/11 2222	SPS	R-01
Selenium	ND	0.96	0.4	mg/kg dry	4.95	M4	1K28039	11/28/11 2222	SPS	R-01



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<u>Laboratory ID #:</u> 1111546-11	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 27		<u>Sample Date/Time</u> 11/18/11 1330		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	54.1	1.22	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0213	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	82	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	51.02	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	14.3	0.39	0.25	mg/kg dry	5.10	M4	1K28039	11/28/11 2230	SPS	Q-20, Q-22, R-01
Cadmium	1.09	0.46	0.221	mg/kg dry	5.10	M4	1K28039	11/28/11 2230	SPS	R-01, J
Lead	31.8	0.87	0.42	mg/kg dry	5.10	M4	1K28039	11/28/11 2230	SPS	Q-21, Q-22, R-01
Selenium	ND	1.00	0.4	mg/kg dry	5.10	M4	1K28039	11/28/11 2230	SPS	R-01



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<u>Laboratory ID #:</u> 1111546-12	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 26		<u>Sample Date/Time</u> 11/18/11 1340		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	66.3	1.33	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0229	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	75	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	50.51	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	16.5	0.42	0.25	mg/kg dry	5.05	M4	1K28039	11/28/11 2238	SPS	R-01
Cadmium	0.87	0.50	0.221	mg/kg dry	5.05	M4	1K28039	11/28/11 2238	SPS	R-01, J
Lead	30.1	0.94	0.42	mg/kg dry	5.05	M4	1K28039	11/28/11 2238	SPS	R-01
Selenium	ND	1.07	0.4	mg/kg dry	5.05	M4	1K28039	11/28/11 2238	SPS	R-01



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<u>Laboratory ID #:</u> 1111546-13	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 25		<u>Sample Date/Time</u> 11/18/11 1400		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	45.0	1.28	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0335	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	78	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	52.08	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	15.1	0.42	0.25	mg/kg dry	5.21	M4	1K28039	11/28/11 2246	SPS	R-01
Cadmium	1.03	0.49	0.221	mg/kg dry	5.21	M4	1K28039	11/28/11 2246	SPS	R-01, J
Lead	21.6	0.93	0.42	mg/kg dry	5.21	M4	1K28039	11/28/11 2246	SPS	R-01
Selenium	ND	1.07	0.4	mg/kg dry	5.21	M4	1K28039	11/28/11 2246	SPS	R-01



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<u>Laboratory ID #:</u> 1111546-14	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 24		<u>Sample Date/Time</u> 11/18/11 1405		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	39.8	1.25	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0351	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	80	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	51.55	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	32.1	0.41	0.25	mg/kg dry	5.15	M4	1K28039	11/28/11 2315	SPS	R-01
Cadmium	2.00	0.48	0.221	mg/kg dry	5.15	M4	1K28039	11/28/11 2315	SPS	R-01
Lead	49.5	0.90	0.42	mg/kg dry	5.15	M4	1K28039	11/28/11 2315	SPS	R-01
Selenium	ND	1.03	0.4	mg/kg dry	5.15	M4	1K28039	11/28/11 2315	SPS	R-01



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Report of Sample Analysis

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<u>Laboratory ID #:</u> 1111546-15	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 23		<u>Sample Date/Time</u> 11/18/11 1500		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	190	1.38	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0408	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	73	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	52.08	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	16.1	0.45	0.25	mg/kg dry	5.21	M4	1K28039	11/28/11 2330	SPS	R-01
Cadmium	3.69	0.53	0.221	mg/kg dry	5.21	M4	1K28039	11/28/11 2330	SPS	R-01
Lead	34.2	1.00	0.42	mg/kg dry	5.21	M4	1K28039	11/28/11 2330	SPS	R-01
Selenium	ND	1.15	0.4	mg/kg dry	5.21	M4	1K28039	11/28/11 2330	SPS	R-01



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<u>Laboratory ID #:</u> 1111546-16	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 22		<u>Sample Date/Time</u> 11/18/11 1520		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	78.5	1.18	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0440	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	85	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	49.50	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	19.2	0.37	0.25	mg/kg dry	4.95	M4	1K28039	11/28/11 2337	SPS	R-01
Cadmium	2.01	0.43	0.221	mg/kg dry	4.95	M4	1K28039	11/28/11 2337	SPS	R-01
Lead	53.2	0.82	0.42	mg/kg dry	4.95	M4	1K28039	11/28/11 2337	SPS	R-01
Selenium	ND	0.93	0.4	mg/kg dry	4.95	M4	1K28039	11/28/11 2337	SPS	R-01



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Laboratory ID #:
1111546-17

Sample Type
Grab

Matrix

Solid

Sample Date/Time
11/18/11 1530

Sample Collected By
Jason Minter/John
Koehnan/Tommy Kim

Customer

Sample Description
SC-SED 21

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	31.0	1.19	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0457	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	84	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	50.51	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	18.0	0.38	0.25	mg/kg dry	5.05	M4	1K28039	11/28/11 2346	SPS	R-01
Cadmium	2.19	0.44	0.221	mg/kg dry	5.05	M4	1K28039	11/28/11 2346	SPS	R-01
Lead	49.5	0.84	0.42	mg/kg dry	5.05	M4	1K28039	11/28/11 2346	SPS	R-01
Selenium	ND	0.96	0.4	mg/kg dry	5.05	M4	1K28039	11/28/11 2346	SPS	R-01



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Report of Sample Analysis

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<u>Laboratory ID #:</u> 1111546-18	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 20		<u>Sample Date/Time</u> 11/18/11 1540		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	54.2	1.29	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0513	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	77	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	50.00	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	17.4	0.41	0.25	mg/kg dry	5.00	M4	1K28039	11/28/11 2354	SPS	R-01
Cadmium	1.07	0.48	0.221	mg/kg dry	5.00	M4	1K28039	11/28/11 2354	SPS	R-01, J
Lead	38.5	0.91	0.42	mg/kg dry	5.00	M4	1K28039	11/28/11 2354	SPS	R-01
Selenium	ND	1.03	0.4	mg/kg dry	5.00	M4	1K28039	11/28/11 2354	SPS	R-01



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Report of Sample Analysis

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<u>Laboratory ID #:</u> 1111546-19	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 19		<u>Sample Date/Time</u> 11/18/11 1550		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	93.0	1.47	1	mg/kg dry	1.00	I2	1K21052	11/22/11 0546	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	68	0.040	0.2	%	1.00	W3	1K22006	11/22/11 1125	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	50.00	DB1	1K28039	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	19.5	0.46	0.25	mg/kg dry	5.00	M4	1K28039	11/29/11 0002	SPS	R-01
Cadmium	1.47	0.55	0.221	mg/kg dry	5.00	M4	1K28039	11/29/11 0002	SPS	R-01, J
Lead	37.6	1.03	0.42	mg/kg dry	5.00	M4	1K28039	11/29/11 0002	SPS	R-01
Selenium	ND	1.18	0.4	mg/kg dry	5.00	M4	1K28039	11/29/11 0002	SPS	R-01

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Texas: T104704232-11-2**Report of Sample Analysis**Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
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ATTN: Liz ScaggsPage: Page 22 of 26
Project: SC Sediment Sampling
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Print Date/Time: 11/29/11 16:54**Conventional Chemistry Parameters - Quality Control**

Analyte(s)	Result	*SDI	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Blank (1K21052-BLK1)										
Prepared: 11/21/11 09:13 Analyzed: 11/21/11 20:12										
Sulfate (Total) as SO ₄	ND	1.00	mg/kg wet							
Laboratory Control Sample (1K21052-BS1)										
Prepared: 11/21/11 09:13 Analyzed: 11/21/11 20:28										
Sulfate (Total) as SO ₄	48.4	1.00	mg/kg wet	50.0		97	90-110			
Laboratory Control Sample Duplicate (1K21052-BSD1)										
Prepared: 11/21/11 09:13 Analyzed: 11/21/11 20:45										
Sulfate (Total) as SO ₄	48.2	1.00	mg/kg wet	50.0		96	90-110	0.4	20	
Matrix Spike (1K21052-MS1) 1X										
Prepared: 11/21/11 09:13 Analyzed: 11/21/11 21:01										
					Source: 1111493-01					
Sulfate (Total) as SO ₄	15900	101	mg/kg dry	5050	11000	96	90-110			
Matrix Spike (1K21052-MS2) 1X										
Prepared: 11/21/11 09:13 Analyzed: 11/22/11 06:02										
					Source: 1111546-11					
Sulfate (Total) as SO ₄	117	1.36	mg/kg dry	68.0	54.1	92	90-110			
Matrix Spike Duplicate (1K21052-MSD1) 1X										
Prepared: 11/21/11 09:13 Analyzed: 11/21/11 21:18										
					Source: 1111493-01					
Sulfate (Total) as SO ₄	15900	101	mg/kg dry	5050	11000	97	90-110	0.1	20	
Matrix Spike Duplicate (1K21052-MSD2) 1X										
Prepared: 11/21/11 09:13 Analyzed: 11/22/11 06:19										
					Source: 1111546-11					
Sulfate (Total) as SO ₄	119	1.36	mg/kg dry	68.0	54.1	95	90-110	2	20	
Blank (1K22006-BLK1)										
Prepared & Analyzed: 11/22/11 11:25										
% Solids	ND	0.040	%							



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Report of Sample Analysis

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Conventional Chemistry Parameters - Quality Control

Analyte(s)	Result	*SDI	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Duplicate (1K22006-DUP1)										
Prepared & Analyzed: 11/22/11 11:25					Source: 1111546-01					
% Solids	77	0.040	%		82			6	7	
Duplicate (1K22006-DUP2)										
Prepared & Analyzed: 11/22/11 11:25					Source: 1111546-11					
% Solids	79	0.040	%		82			3	7	

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Texas: T104704232-11-2**Report of Sample Analysis**Southwest Geoscience
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Analyte(s)	Result	*SDI	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Blank (1K28039-BLK1)										
Prepared & Analyzed: 11/28/11 08:21										
Acid Digestion of Sludges/Solids	Completed	N/A	-							
Arsenic	ND	0.06	mg/kg wet							
Cadmium	ND	0.07	mg/kg wet							
Lead	ND	0.14	mg/kg wet							
Selenium	ND	0.16	mg/kg wet							
Laboratory Control Sample (1K28039-BS1)										
Prepared & Analyzed: 11/28/11 08:21										
Acid Digestion of Sludges/Solids	Completed	N/A	-				0-0			
Arsenic	23.0	0.06	mg/kg wet	24.5		94	80-120			
Cadmium	23.9	0.07	mg/kg wet	24.5		97	80-120			
Lead	22.0	0.14	mg/kg wet	24.5		90	80-120			
Selenium	44.3	0.16	mg/kg wet	49.0		90	80-120			
Laboratory Control Sample Duplicate (1K28039-BSD1)										
Prepared & Analyzed: 11/28/11 08:21										
Acid Digestion of Sludges/Solids	Completed	N/A	-				0-0		0	
Arsenic	23.9	0.06	mg/kg wet	25.0		96	80-120	4	20	
Cadmium	24.9	0.07	mg/kg wet	25.0		100	80-120	4	20	
Lead	23.1	0.14	mg/kg wet	25.0		92	80-120	5	20	
Selenium	46.4	0.16	mg/kg wet	50.0		93	80-120	5	20	
Matrix Spike (1K28039-MS1)										
Prepared & Analyzed: 11/28/11 08:21										
Acid Digestion of Sludges/Solids	Completed	N/A	-		ND		0-0			
Arsenic	41.8	0.78	mg/kg dry	30.8	29.4	40	75-125			R-01, Q-02
Cadmium	28.9	0.91	mg/kg dry	30.8	1.11	90	75-125			R-01
Lead	67.0	1.73	mg/kg dry	30.8	46.8	65	75-125			Q-02, R-01
Selenium	48.2	1.97	mg/kg dry	61.7	ND	78	75-125			R-01

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Project: SC Sediment Sampling
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Analyte(s)	Result	*SDI	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Matrix Spike (1K28039-MS2)										
Prepared & Analyzed: 11/28/11 08:21					Source: 1111546-11					
Acid Digestion of Sludges/Solids	Completed	N/A	-		ND		0-0			
Arsenic	40.0	0.76	mg/kg dry	30.0	14.3	86	75-125			R-01
Cadmium	29.6	0.89	mg/kg dry	30.0	1.09	95	75-125			R-01
Lead	51.2	1.68	mg/kg dry	30.0	31.8	65	75-125			Q-02, R-01
Selenium	52.6	1.92	mg/kg dry	60.0	ND	88	75-125			R-01
Matrix Spike Duplicate (1K28039-MSD1)										
Prepared & Analyzed: 11/28/11 08:21					Source: 1111546-01					
Acid Digestion of Sludges/Solids	Completed	N/A	-		ND		0-0		0	
Arsenic	42.3	0.79	mg/kg dry	31.5	29.4	41	75-125	1	20	Q-02, R-01
Cadmium	33.5	0.93	mg/kg dry	31.5	1.11	103	75-125	15	20	R-01
Lead	63.9	1.76	mg/kg dry	31.5	46.8	54	75-125	5	20	Q-02, R-01
Selenium	58.0	2.01	mg/kg dry	62.9	ND	92	75-125	18	20	R-01
Matrix Spike Duplicate (1K28039-MSD2)										
Prepared & Analyzed: 11/28/11 08:21					Source: 1111546-11					
Acid Digestion of Sludges/Solids	Completed	N/A	-		ND		0-0		0	
Arsenic	57.1	0.74	mg/kg dry	29.4	14.3	145	75-125	35	20	Q-02, Q-04, R-01
Cadmium	32.1	0.87	mg/kg dry	29.4	1.09	105	75-125	8	20	R-01
Lead	65.4	1.65	mg/kg dry	29.4	31.8	114	75-125	24	20	Q-04, R-01
Selenium	53.0	1.88	mg/kg dry	58.8	ND	90	75-125	0.8	20	R-01



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Report of Sample Analysis

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Notes and Definitions

The results presented in this report were generated using those methods given in 40 CFR Part 136 for Water and Wastewater samples and in SW-846 for RCRA/Solid Waste samples.

J	This value is above the method detection limit but below the reporting limit.
Q-02	The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. The recovery of this analyte in the LCS(s) was within the acceptable range.
Q-04	The RPD of this analyte between the MS(s) was outside of the acceptable range. The RPD of this same analyte between the LCS(s) was within the acceptable range.
Q-20	The recovery of this analyte in the MS was higher than the acceptable range. This indicates a high bias to the result presented.
Q-21	The recovery of this analyte in the MS was lower than the acceptable range. This indicates a low bias to the result presented.
Q-22	The RPD between the MS(s) sample analyses was outside the acceptable range. This indicates the result was not as precise as expected.
R-01	The higher reporting limit is due to dilutions required for analysis as a result of a high concentration of target and/or non-target parameters in this sample.
ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
MS/MSD	Matrix Spike/Matrix Spike Duplicate
RPD	Relative Percent Difference
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
ug/kg	micrograms per kilogram
ug/l	micrograms per liter
exc	Not covered under scope of NELAP accreditation.
F*	Calculated factor rounded to 3 significant figures. Concentration factor when <1.00 and dilution factor when >1.00.
Inst	Instrument Identification
Anlst	Analyst Initials
SDL	Sample Detection Limit
MQL	Method Quantitation Limit
naa	This analysis/parameter is not accreditable under the current NELAP program

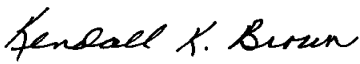
Laboratory Data Package Cover Page

This data package for Laboratory Job Number 1111546 consists of:

- ☒ This signature page, the laboratory review checklist, and the following reportable data:
- ☒ **R1** Field chain-of-custody documentation;
- ☒ **R2** Sample identification cross-reference;
- ☒ **R3** Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☒ **R4** Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☒ **R5** Test reports/summary forms for blank samples;
- ☒ **R6** Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☒ **R7** Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☒ **R8** Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) the amount of analyte measured in the duplicate,
 - b) the calculated RPD, and
 - c) the laboratory's QC limits for analytical duplicates.
- ☒ **R9** List of method quantitation limits (MQLs) for each analyte for each method and matrix;
- ☒ **R10** Other problems or anomalies.
- ☒ The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release Statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Kendall K. Brown		President	11/29/11
Name (Printed)	Signature	Official Title (Printed)	Date



Laboratory Review Checklist: Reportable Data

Laboratory Name:		ERM Environmental Laboratories		LRC Date:		11/29/11	
Project Name:		SC Sediment Sampling		Laboratory Job Number:		1111546	
Reviewer Name:		Leslie Underwood		Prep Batch Number(s):		1K21052,1K22006,1K28039	
# ¹	A ²	Description	Yes	No	NA ³	NR ⁴	ER# ⁵
R1	OI	Chain-of-custody (C-O-C)					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	Sample and quality control (QC) identification					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	Test reports					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample quantitation limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		If required for the project, TICs reported?			X		
R4	O	Surrogate recovery data					
		Were surrogates added prior to extraction?			X		
		Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	Test reports/summary forms for blank samples					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	Laboratory control samples (LCS):					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			E001
		Were MS/MSD RPDs within laboratory QC limits?		X			E002
R8	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs included in the laboratory data package?	X				
R10	OI	Other problems/anomalies					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				

- Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
- O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
- NA = Not applicable;
- NR = Not reviewed;
- ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).



Laboratory Review Checklist: Reportable Data

Laboratory Name:		ERM Environmental Laboratories	LRC Date:		11/29/11				
Project Name:		SC Sediment Sampling	Laboratory Job		1111546				
Reviewer Name:		Leslie Underwood	Prep Batch Number(s):		1K21052,1K22006,1K28039				
# ¹	A ²	Description	Yes	No	NA ³	NR ⁴	ER# ⁵		
S1	OI	Initial calibration (ICAL)							
		Were response factors and/or relative response factors for each analyte within QC limits?	X						
		Were percent RSDs or correlation coefficient criteria met?	X						
		Was the number of standards recommended in the method used for all analytes?	X						
		Were all points generated between the lowest and highest standard used to calculate the curve?	X						
		Are ICAL data available for all instruments used?	X						
		Has the initial calibration curve been verified using an appropriate second source standard?	X						
S2	OI	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration							
		Was the CCV analyzed at the method-required frequency?	X						
		Were percent differences for each analyte within the method-required QC limits?	X						
		Was the ICAL curve verified for each analyte?	X						
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X						
S3	O	Mass spectral tuning:							
		Was the appropriate compound for the method used for tuning?			X				
		Were ion abundance data within the method-required QC limits?			X				
S4	O	Internal standards (IS):							
		Were IS area counts and retention times within the method-required QC limits?			X				
S5	OI	Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section							
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X						
		Were data associated with manual integrations flagged on the raw data?	X						
S6	O	Dual column confirmation							
		Did dual column confirmation results meet the method-required QC?			X				
S7	O	Tentatively identified compounds (TICs):							
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X				
S8	I	Interference Check Sample (ICS) results:							
		Were percent recoveries within method QC limits?	X						
S9	I	Serial dilutions, post digestion spikes, and method of standard additions							
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X						
S10	OI	Method detection limit (MDL) studies							
		Was a MDL study performed for each reported analyte?	X						
		Is the MDL either adjusted or supported by the analysis of DCSs?	X						
S11	OI	Proficiency test reports:							
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X						
S12	OI	Standards documentation							
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X						
S13	OI	Compound/analyte identification procedures							
		Are the procedures for compound/analyte identification documented?	X						
S14	OI	Demonstration of analyst competency (DOC)							
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X						
		Is documentation of the analyst's competency up-to-date and on file?	X						
S15	OI	Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)							
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X						
S16	OI	Laboratory standard operating procedures (SOPs):							
		Are laboratory SOPs current and on file for each method performed?	X						

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

3. NA = Not applicable;

4. NR = Not reviewed;

5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports

Laboratory Name:	ERMI Environmental Laboratories	LRC Date:	11/29/11
Project Name:	SC Sediment Sampling	Laboratory Job	1111546
Reviewer Name:	Leslie Underwood	Prep Batch Number(s):	1K21052,1K22006,1K28039
ER#¹	Description		
E001	Matrix Spike Recovery for Arsenic (40%) was outside acceptance limits (75-125) in 1K28039-MS1 for As Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. This indicates a low bias to the result presented for the source sample (1111546-01) reported from this batch. The recovery of this analyte in the LCS(s) was within the acceptable range. Matrix Spike Recovery for Lead (65%) was outside acceptance limits (75-125) in 1K28039-MS1 for Pb Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. This indicates a low bias to the result presented for the source sample (1111546-01) reported from this batch. The recovery of this analyte in the LCS(s) was within the acceptable range. Matrix Spike Recovery for Lead (65%) was outside acceptance limits (75-125) in 1K28039-MS2 for Pb Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. This indicates a low bias to the result presented for the source sample (1111546-11) reported from this batch. The recovery of this analyte in the LCS(s) was within the acceptable range. Matrix Spike Recovery for Arsenic (41%) was outside acceptance limits (75-125) in 1K28039-MSD1 for As Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. This indicates a low bias to the result presented for the source sample (1111546-01) reported from this batch. The recovery of this analyte in the LCS(s) was within the acceptable range. Matrix Spike Recovery for Lead (54%) was outside acceptance limits (75-125) in 1K28039-MSD1 for Pb Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. This indicates a low bias to the result presented for the source sample (1111546-01) reported from this batch. The recovery of this analyte in the LCS(s) was within the acceptable range. Matrix Spike Recovery for Arsenic (145%) was outside acceptance limits (75-125) in 1K28039-MSD2 for As Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. This indicates a high bias to the result presented for the source sample (1111546-11) reported from this batch. The recovery of this analyte in the LCS(s) was within the acceptable range.		
E002	Matrix Spike Duplicate RPD for Arsenic (35%) was above the acceptance limit (20) in 1K28039-MSD2 for As Total ICP 6010B - The RPD of this analyte between the MS(s) was outside of the acceptable range. This indicates the result was not as precise as expected for the source sample (1111546-11) reported from this batch. The RPD of this same analyte between the LCS(s) was within the acceptable range. Matrix Spike Duplicate RPD for Lead (24%) was above the acceptance limit (20) in 1K28039-MSD2 for Pb Total ICP 6010B - The RPD of this analyte between the MS(s) was outside of the acceptable range. This indicates the result was not as precise as expected for the source sample (1111546-11) reported from this batch. The RPD of this same analyte between the LCS(s) was within the acceptable range.		

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on the LRC)

Southwest GEOSCIENCE Environmental & Hydrogeologic Consultants		Laboratory: <u>ERMI</u>		ANALYSIS REQUESTED		Lab use only Due Date:							
		Address: _____											
Office Location <u>DALLAS, TX</u>		Contact: _____		Temp. of coolers when received (C°): <u>FR-9</u>		Page <u>1</u> of <u>2</u>							
Project Manager <u>LIZ SCARFOS</u>		Phone: <u>972-777-1123</u>											
Sampler's Name <u>JASON MYNTER/TIMOTHY KIM</u>		Sampler's Signature 		No/Type of Containers		Lab Sample ID (Lab Use Only)							
Project Name <u>SC SEDIMENT SAMPLING</u>		Project No. <u>0111278</u>											
Matrix	Date	Time	G C o m p	G r a b	Identifying Marks of Sample(s)	Top Soil 250 ml	Bottom Soil 250 ml	VOA	A/G 1 Lt.	250 ml	P/O		
S	11/17/11	1456			SC-SED 11	0	6				1	111546.01	
S	11/17/11	1525			SC-SED 10	0	6				1	111546.02	
S	11/17/11	1538			SC-SED 9	0	6				1	111546.03	
S	11/17/11	1556			SC-SED 8	0	6				1	111546.04	
S	11/17/11	1647			SC-SED 7	0	6				1	111546.05	
S	11/17/11	1705			SC-SED 6	0	6				1	111546.06	
S	11/17/11	1726			SC-SED 5	0	6				1	111546.07	
S	11/18/11	1050			SC-SED 30	0	6				1	111546.08	
S	11/18/11	1125			SC-SED 29	0	6				1	111546.09	
S	11/18/11	1149			SC-SED 28	0	6				1	111546.10	
Turn around time ☒ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush													
Relinquished by (Signature)			Date: <u>11/18/11</u>			Received by (Signature)			Date: <u>11/18/11</u>			NOTES:	
Relinquished by (Signature)			Date: <u>11/18/11</u>			Received by (Signature)			Date: <u>11/18/11</u>				
Relinquished by (Signature)			Date: _____			Received by (Signature)			Date: _____				
Relinquished by (Signature)			Date: _____			Received by (Signature)			Date: _____				
Relinquished by (Signature)			Date: _____			Received by (Signature)			Date: _____			C - Charcoal tube P/O - Plastic or other	
Relinquished by (Signature)			Date: _____			Received by (Signature)			Date: _____				
Relinquished by (Signature)			Date: _____			Received by (Signature)			Date: _____				
Relinquished by (Signature)			Date: _____			Received by (Signature)			Date: _____				
Matrix Container	WW - Wastewater VOA - 40 ml vial	S - Soil A/G - Amber / Or Glass 1 Liter	SD - Solid 250 ml - Glass wide mouth	L - Liquid 250 ml - Glass wide mouth	A - Air Bag	O - Oil							

CHAIN OF CUSTODY RECORD

Southwest GEOSCIENCE Environmental & Hydrogeologic Consultants		ERMI		ANALYSIS REQUESTED		Lab use only Due Date:					
Office Location <u>DALLAS, TX</u>		Address:		Temp. of coolers when received (C°):		Page <u>2</u> of <u>2</u>					
Project Manager <u>LIZ SCAGGS</u>		Phone: <u>972-727-1123</u>		PO/SO #:		Lab Sample ID (Lab Use Only)					
Sampler's Name <u>JASON MAYER</u>		Sampler's Signature <u>[Signature]</u>		No. Type of Containers		Lab Sample ID (Lab Use Only)					
Proj. No. <u>011278</u>		Project Name <u>SC SEDIMENT SAMPLING</u>		No. Type of Containers		Lab Sample ID (Lab Use Only)					
Matrix	Date	Time	G C o m p	G r a b	Identifying Marks of Sample(s)	# Sed # Org # Vol	VOA	A/G 1 Lt.	250 ml	P/O	Lab Sample ID (Lab Use Only)
S	11/18/11	1330	X	X	SC-SED 27	0	6	1	X	1	111546-11
S	11/18/11	1340	X	X	SC-SED 26	0	6	1	X	1	111546-12
S	11/18/11	1400	X	X	SC-SED 25	0	6	1	X	1	111546-13
S	11/18/11	1405	X	X	SC-SED 24	0	6	1	X	1	111546-14
S	11/18/11	1500	X	X	SC-SED 23	0	6	1	X	1	111546-15
S	11/18/11	1520	X	X	SC-SED 22	0	6	1	X	1	111546-16
S	11/19/11	1530	X	X	SC-SED 21	0	6	1	X	1	111546-17
S	11/18/11	1540	X	X	SC-SED 20	0	6	1	X	1	111546-18
S	11/18/11	1550	X	X	SC-SED 19	0	6	1	X	1	111546-19

Turn around time ☒ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush		NOTES:	
Relinquished by (Signature) <u>[Signature]</u>	Date: <u>11/18/11</u>	Time: <u>1620</u>	Date: <u>11/18/11</u>
Relinquished by (Signature) <u>[Signature]</u>	Date: <u>11/18/11</u>	Time: <u>1705</u>	Date: <u>11/18/11</u>
Relinquished by (Signature) <u>[Signature]</u>	Date:	Time:	Date:
Relinquished by (Signature) <u>[Signature]</u>	Date:	Time:	Date:

1111546



P.O. BOX 940303
PLANO, TX 75094-0303
(972) 881-7577

NOTARY SERVICE AVAILABLE

No.

SHIPPER NAME: Southwest GEOScience ADDRESS: N. Dallas Tollway / Cottonwood CITY: Ennis, TX REFERENCE NO.:		DATE: 11-18-11		
		Falcon Charges ☐ PREPAID ☐ COLLECT ☐ ROUND TRIP ☐ NIGHT-WEEKEND		
		Type of Delivery ☐ X-Press ☐ 2 HOUR ☐ 4 HOUR ☐ NEXT DAY		
		CONSIGNEE NAME: ERM1 ADDRESS: 400 W. Bethany CITY: Allen, TX ATTN:		
NO. PCS.	DESCRIPTION AND REMARKS		WEIGHT	CHARGES
	Samples			
WAITING TIME		TOTAL CHARGES		
NOT RESPONSIBLE FOR FREIGHT CLAIMS AFTER 72 HRS. NOT RESPONSIBLE FOR CONCEALED DAMAGE, DUE AND PAYABLE PLANO, COLLIN COUNTY, TEXAS		\$50 DECLARED VALUE UNLESS SPECIFIED HERE \$		
DRIVER NAME: Arde Velazquez	DRIVER NAME & NO.	TIME OF DEL: 5:55 AM	RECEIVED BY: Arde Velazquez	RECEIVED BY: X

ERM1 Environmental Laboratories
Bethany Tech Center
400 W. Bethany, Suite 190
Allen, Texas 75013
972-727-1123 (Local) • 800-228-ERM1
972-727-1175 (Fax)

DATE: *11/18/11*

SAMPLE I.D.: *John*

SAMPLE TYPE:
☐ GRAB
☐ COMPOSITE
☐ OTHER

PARAMETERS:

COMMENTS: *John*

OF CONTAINERS

COLLECTED BY: *John*

PRESERVED: *11/18*

OTHER

ERM1 SAMPLE NO.:

X-409

ERM1 Environmental Laboratories
Bethany Tech Center
400 W. Bethany, Suite 190
Allen, Texas 75013
972-727-1123 (Local) • 800-228-ERM1
972-727-1175 (Fax)

DATE: *11/18/11*

SAMPLE I.D.: *John*

SAMPLE TYPE:
☐ GRAB
☐ COMPOSITE
☐ OTHER

PARAMETERS:

COMMENTS: *John*

OF CONTAINERS

COLLECTED BY: *John*

PRESERVED: *11/18/11*

OTHER

ERM1 SAMPLE NO.:

X-409

Lab Number(s): 1111546

ERMI

Sample Preservation Documentation*

On Ice (Circle One): ☒ YES OR NO (check if on Dry Ice _____)

Parameters	Containers #	Size	Required Preservation	Sample Container	Circle pH Note any discrepancy
Metals			pH < 2	Glass or Plastic	pH < 2
Dissolved Metals			Unpreserved prior to being filtered, Cool**	Glass or Plastic	
Hexavalent Chromium			CWA - pH 9.3-9.7, Cool; RCRA - Cool	Glass or Plastic	Checked At Analysis
Semivolatiles, Pesticides, PCBs, Herbicides			Cool	Glass only with Teflon lid	Chlorine ☐ yes ☐ no
VOA (BTEX, MTBE, 624, 8260, TPH-GRO)			Cool, pH < 2 Zero Head Space	40 ml VOA vial	DO NOT OPEN
VOA (TPH-1005)			Cool, Zero Head Space Please check if collected in pre-weighed vials	40 ml VOA vial	DO NOT OPEN
Phos., NO ₃ /NO ₂ , NH ₃ N, COD, TKN, TOC			Cool, pH < 2	Glass or Plastic	pH < 2
TDS, BOD, CBOD, Cond, pH, TSS, F, SO ₄ , Cl, Alk, Sulfite			Cool	Glass or Plastic, Plastic only if F	
Phenols, TPH-DRO			Cool, pH < 2	Glass only Teflon lid _____ Foil lid _____	pH < 2
Oil & Grease, TPH (by 1664a)			Cool, pH < 2	Glass only Teflon lid _____ Foil lid _____	DO NOT Check pH
Cyanide			Cool, pH > 12	Glass or Plastic	pH > 12 Chlorine ☐ yes ☐ no Sulfide ☐ yes ☐ no ☐ na
Sulfide			Cool, pH > 9	Glass or Plastic	pH > 9
Bacteria			Cool	Plastic Sterile Cup	
(Soil) Sludge, Solid, Oil, Liquid	19	902	Cool Note: please check if collected in pre-weighed vials	g/lw	

Metals Preserved By Login ☐yes ☐no

Trip Blanks Received ☐yes ☒no

COMMENTS: _____

*This form is used to document sample preservation. Circle parameter requested. Fill in number and size of containers received. Check pH (adjust if needed) and note if different from what is required and make a notation of any samples not received on ice. Note any incorrect sample containers or preservation on chain-of-custody.

**Cool means cooled to ≤6°C but not frozen.

Preservation Checked By [Signature]

Date

11-18-11

Time

1240

1000.0-3.2

2/17/09

KW

kdy 7/10/08

Q:\Form Masters\1000.0-3.2 Sample Preservation Form

**Environmental Laboratories**

Bethany Tech Center ♦ Suite 190
400 W. Bethany Rd. ♦ Allen, Texas 75013

State Certifications

Arkansas: 88-0647
Oklahoma: 8727



Louisiana: 02007
Kansas: E-10388
Texas: T104704232-11-2

Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz Scaggs

Page: Page 1 of 11
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:32

Attached is our analytical report for the samples received for your project. Below is a list of your individual sample descriptions with our corresponding laboratory number. We also have enclosed a copy of the Chain of Custody that was received with your samples and a form documenting the condition of your samples upon arrival. Please note any unused portion of the samples may be discarded upon expiration of the EPA holding time for the analysis performed or after 30 days from the above report date, unless you have requested otherwise.

ERMI Environmental Laboratories certifies that all results contained in this report were produced in accordance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) unless otherwise noted. The results presented apply to the samples analyzed in accordance with the chain-of-custody document(s) furnished with the samples. This report is intended for the sole use of the customer for whom the work was performed and must be reproduced, without modification, in its entirety.

Sample Identification

<u>Laboratory ID #</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
1111547-01	SC-SED 4	Solid	11/18/11 09:10	11/18/11 17:05
1111547-02	SC-SED 3	Solid	11/18/11 09:25	11/18/11 17:05
1111547-03	SC-SED 2	Solid	11/18/11 09:35	11/18/11 17:05
1111547-04	SC-SED 1	Solid	11/18/11 09:50	11/18/11 17:05



Environmental Laboratories

Bethany Tech Center ♦ Suite 190
400 W. Bethany Rd. ♦ Allen, Texas 75013

State Certifications

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Oklahoma: 8727



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Texas: T104704232-11-2

Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz Scaggs

Page: Page 2 of 11
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:32

The analytical data and results contained in this report, as well as their supporting data, conform with Texas Risk Reduction Program (TRRP), 30 TAC, Section 350, requirements and are of sufficient and documented quality to meet both TRRP objectives, TCEQ regulatory guidance No. RG-366/TRRP-13 and the project-based objective of achieving the lowest method detection limit (i.e., the TRRP Critical PCL where reasonably achievable or, if not reasonably achievable, the MQL). All information concerning analytical parameters, methods and protocols that might bear upon or otherwise affect the accuracy of the analytical data in this report have been provided or otherwise disclosed herein. The data were obtained using applicable and appropriate EPA SW-846 or Texas Commission on Environmental Quality approved analytical protocols, methodologies and quality assurance/quality control standards. **ERMI Environmental Laboratories** certifies that its quality control program is substantially and materially consistent with the International Organization for Standardization "Guide 25: General Requirements the Competence of Calibration and Testing Laboratories (ISO 25 3rd Edition, 1990)," as amended or the quality standards outlined in the National Environmental Laboratory Accreditation Program, as amended. The entire analytical data package for this report, including the supporting quality control data, will be retained and maintained for at least five (5) years (or such longer period of time as may be required by TRRP) from the report date at the offices of **ERMI Environmental Laboratories, 400 W. Bethany, Suite 190, Allen, Texas 75013.**

I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Thank you for the opportunity to serve your environmental chemistry analysis needs. If you have any questions or concerns regarding this report please contact our Customer Service Department at the phone number below.

Respectfully submitted,

Kendall K. Brown
President

**Environmental Laboratories**

Bethany Tech Center ♦ Suite 190
400 W. Bethany Rd. ♦ Allen, Texas 75013

State Certifications

Arkansas: 88-0647
Oklahoma: 8727



Louisiana: 02007
Kansas: E-10388
Texas: T104704232-11-2

Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz Scaggs

Page: Page 3 of 11
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:32

Laboratory ID #:
1111547-01

Sample Type
Grab

Matrix

Solid

Sample Date/Time
11/18/11 0910

Sample Collected By
Jason Minter/John
Koehnman/Tommy Kim

Customer

Sample Description
SC-SED 4

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	69.8	0.180	1	mg/kg dry	1.00	I2	1K22017	11/22/11 1424	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	72	0.040	0.2	%	1.00	W3	1K22018	11/22/11 1548	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	49.02	DB1	1K28040	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	12.0	0.43	0.25	mg/kg dry	4.90	M4	1K28040	11/29/11 0200	SPS	Q-20, Q-22, R-01
Cadmium	0.95	0.50	0.221	mg/kg dry	4.90	M4	1K28040	11/29/11 0200	SPS	Q-20, R-01, J
Lead	39.1	0.95	0.42	mg/kg dry	4.90	M4	1K28040	11/29/11 0200	SPS	Q-20, Q-22, R-01
Selenium	ND	1.09	0.4	mg/kg dry	4.90	M4	1K28040	11/29/11 0200	SPS	R-01



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Project: SC Sediment Sampling
Project #: 0111278
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<u>Laboratory ID #:</u> 1111547-02	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 3		<u>Sample Date/Time</u> 11/18/11 0925		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	85.5	0.170	1	mg/kg dry	1.00	I2	1K22017	11/22/11 1443	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	76	0.040	0.2	%	1.00	W3	1K22018	11/22/11 1548	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	50.51	DB1	1K28040	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	18.6	0.42	0.25	mg/kg dry	5.05	M4	1K28040	11/29/11 0018	SPS	R-01
Cadmium	2.01	0.49	0.221	mg/kg dry	5.05	M4	1K28040	11/29/11 0018	SPS	R-01
Lead	63.8	0.92	0.42	mg/kg dry	5.05	M4	1K28040	11/29/11 0018	SPS	R-01
Selenium	ND	1.06	0.4	mg/kg dry	5.05	M4	1K28040	11/29/11 0018	SPS	R-01



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Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:32

<u>Laboratory ID #:</u> 1111547-03	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 2		<u>Sample Date/Time</u> 11/18/11 0935		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	87.8	0.194	1	mg/kg dry	1.00	I2	1K22017	11/22/11 1548	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	67	0.040	0.2	%	1.00	W3	1K22018	11/22/11 1548	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	48.08	DB1	1K28040	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	11.2	0.45	0.25	mg/kg dry	4.81	M4	1K28040	11/29/11 0026	SPS	R-01
Cadmium	0.75	0.53	0.221	mg/kg dry	4.81	M4	1K28040	11/29/11 0026	SPS	R-01, J
Lead	46.9	1.01	0.42	mg/kg dry	4.81	M4	1K28040	11/29/11 0026	SPS	R-01
Selenium	ND	1.15	0.4	mg/kg dry	4.81	M4	1K28040	11/29/11 0026	SPS	R-01

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Report of Sample Analysis

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Project: SC Sediment Sampling
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<u>Laboratory ID #:</u> 1111547-04	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 1		<u>Sample Date/Time</u> 11/18/11 0950		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	39.3	0.168	1	mg/kg dry	1.00	I2	1K22017	11/22/11 1621	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	77	0.040	0.2	%	1.00	W3	1K22018	11/22/11 1548	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	52.63	DB1	1K28040	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	11.9	0.43	0.25	mg/kg dry	5.26	M4	1K28040	11/29/11 0034	SPS	R-01
Cadmium	0.61	0.50	0.221	mg/kg dry	5.26	M4	1K28040	11/29/11 0034	SPS	R-01, J
Lead	38.2	0.95	0.42	mg/kg dry	5.26	M4	1K28040	11/29/11 0034	SPS	R-01
Selenium	ND	1.09	0.4	mg/kg dry	5.26	M4	1K28040	11/29/11 0034	SPS	R-01

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Texas: T104704232-11-2**Report of Sample Analysis**Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz ScaggsPage: Page 7 of 11
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:32**Conventional Chemistry Parameters - Quality Control**

Analyte(s)	Result	*SDI	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Blank (1K22017-BLK1)										
Prepared: 11/22/11 12:30 Analyzed: 11/22/11 13:02										
Sulfate (Total) as SO ₄	ND	0.130	mg/kg wet							
Laboratory Control Sample (1K22017-BS1)										
Prepared: 11/22/11 12:30 Analyzed: 11/22/11 13:19										
Sulfate (Total) as SO ₄	46.3	0.130	mg/kg wet	50.0		93	90-110			
Laboratory Control Sample Duplicate (1K22017-BSD1)										
Prepared: 11/22/11 12:30 Analyzed: 11/22/11 16:38										
Sulfate (Total) as SO ₄	47.6	0.130	mg/kg wet	50.0		95	90-110	3	20	
Matrix Spike (1K22017-MS1) 1x										
Prepared: 11/22/11 12:30 Analyzed: 11/22/11 13:52										
					Source: 1111547-01					
Sulfate (Total) as SO ₄	140	0.200	mg/kg dry	76.9	69.8	91	90-110			
Matrix Spike (1K22017-MS2) 1x										
Prepared: 11/22/11 12:30 Analyzed: 11/22/11 20:44										
					Source: 1111557-07					
Sulfate (Total) as SO ₄	257	0.221	mg/kg dry	85.1	172	100	90-110			
Matrix Spike Duplicate (1K22017-MSD1) 1x										
Prepared: 11/22/11 12:30 Analyzed: 11/22/11 14:08										
					Source: 1111547-01					
Sulfate (Total) as SO ₄	141	0.200	mg/kg dry	76.9	69.8	92	90-110	0.6	20	
Matrix Spike Duplicate (1K22017-MSD2) 1x										
Prepared: 11/22/11 12:30 Analyzed: 11/22/11 21:00										
					Source: 1111557-07					
Sulfate (Total) as SO ₄	257	0.221	mg/kg dry	85.1	172	99	90-110	0.3	20	
Blank (1K22018-BLK1)										
Prepared & Analyzed: 11/22/11 15:48										
% Solids	ND	0.040	%							



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Project: SC Sediment Sampling
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Conventional Chemistry Parameters - Quality Control

Analyte(s)	Result	*SDI	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Duplicate (1K22018-DUP1)										
Prepared & Analyzed: 11/22/11 15:48					Source: 1111493-01					
% Solids	1.0	0.040	%		1.1			10	7	Q-26
Duplicate (1K22018-DUP2)										
Prepared & Analyzed: 11/22/11 15:48					Source: 1111563-01					
% Solids	84	0.040	%		84			0.2	7	

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Texas: T104704232-11-2**Report of Sample Analysis**Southwest Geoscience
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ATTN: Liz ScaggsPage: Page 9 of 11
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:32**Metals (Total) - Quality Control**

Analyte(s)	Result	*SDI	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Blank (1K28040-BLK1)										
Prepared & Analyzed: 11/28/11 08:21										
Acid Digestion of Sludges/Solids	Completed	N/A	-							
Arsenic	ND	0.06	mg/kg wet							
Cadmium	ND	0.07	mg/kg wet							
Lead	ND	0.14	mg/kg wet							
Selenium	ND	0.16	mg/kg wet							
Laboratory Control Sample (1K28040-BS1)										
Prepared & Analyzed: 11/28/11 08:21										
Acid Digestion of Sludges/Solids	Completed	N/A	-				0-0			
Arsenic	21.2	0.06	mg/kg wet	24.5		86	80-120			
Cadmium	22.3	0.07	mg/kg wet	24.5		91	80-120			
Lead	21.6	0.14	mg/kg wet	24.5		88	80-120			
Selenium	43.0	0.16	mg/kg wet	49.0		88	80-120			
Laboratory Control Sample Duplicate (1K28040-BSD1)										
Prepared & Analyzed: 11/28/11 08:21										
Acid Digestion of Sludges/Solids	Completed	N/A	-				0-0		0	
Arsenic	22.6	0.06	mg/kg wet	25.3		89	80-120	7	20	
Cadmium	23.6	0.07	mg/kg wet	25.3		93	80-120	6	20	
Lead	22.8	0.14	mg/kg wet	25.3		90	80-120	5	20	
Selenium	45.3	0.16	mg/kg wet	50.5		90	80-120	5	20	
Matrix Spike (1K28040-MS1)										
Prepared & Analyzed: 11/28/11 08:21										
Acid Digestion of Sludges/Solids	Completed	N/A	-		ND		0-0			
Arsenic	55.3	0.86	mg/kg dry	33.9	12.0	128	75-125			Q-02, R-01
Cadmium	37.8	1.00	mg/kg dry	33.9	0.95	109	75-125			R-01
Lead	92.3	1.90	mg/kg dry	33.9	39.1	157	75-125			Q-02, R-01
Selenium	66.3	2.17	mg/kg dry	67.9	ND	98	75-125			R-01

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Texas: T104704232-11-2**Report of Sample Analysis**Southwest Geoscience
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ATTN: Liz ScaggsPage: Page 10 of 11
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:32**Metals (Total) - Quality Control**

Analyte(s)	Result	*SDI	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Matrix Spike (1K28040-MS2)										
Prepared & Analyzed: 11/28/11 08:21					Source: 1111557-05					
Acid Digestion of Sludges/Solids	Completed	N/A	-		ND		0-0			
Arsenic	42.9	0.77	mg/kg dry	30.7	12.7	99	75-125			R-01
Cadmium	31.2	0.91	mg/kg dry	30.7	0.79	99	75-125			R-01
Lead	75.9	1.72	mg/kg dry	30.7	27.7	157	75-125			Q-02, R-01
Selenium	58.0	1.96	mg/kg dry	61.3	ND	95	75-125			R-01
Matrix Spike Duplicate (1K28040-MSD1)										
Prepared & Analyzed: 11/28/11 08:21					Source: 1111547-01					
Acid Digestion of Sludges/Solids	Completed	N/A	-		ND		0-0		0	
Arsenic	42.5	0.90	mg/kg dry	35.7	12.0	85	75-125	26	20	Q-04, R-01
Cadmium	45.8	1.06	mg/kg dry	35.7	0.95	126	75-125	19	20	Q-02, R-01
Lead	67.8	2.00	mg/kg dry	35.7	39.1	81	75-125	31	20	Q-04, R-01
Selenium	72.2	2.28	mg/kg dry	71.4	ND	101	75-125	8	20	R-01
Matrix Spike Duplicate (1K28040-MSD2)										
Prepared & Analyzed: 11/28/11 08:21					Source: 1111557-05					
Acid Digestion of Sludges/Solids	Completed	N/A	-		ND		0-0		0	
Arsenic	40.1	0.74	mg/kg dry	29.5	12.7	93	75-125	7	20	R-01
Cadmium	29.9	0.87	mg/kg dry	29.5	0.79	99	75-125	4	20	R-01
Lead	65.4	1.65	mg/kg dry	29.5	27.7	128	75-125	15	20	Q-02, R-01
Selenium	56.0	1.89	mg/kg dry	58.9	ND	95	75-125	4	20	R-01



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Project: SC Sediment Sampling
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Notes and Definitions

The results presented in this report were generated using those methods given in 40 CFR Part 136 for Water and Wastewater samples and in SW-846 for RCRA/Solid Waste samples.

J	This value is above the method detection limit but below the reporting limit.
Q-02	The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. The recovery of this analyte in the LCS(s) was within the acceptable range.
Q-04	The RPD of this analyte between the MS(s) was outside of the acceptable range. The RPD of this same analyte between the LCS(s) was within the acceptable range.
Q-20	The recovery of this analyte in the MS was higher than the acceptable range. This indicates a high bias to the result presented.
Q-22	The RPD between the MS(s) sample analyses was outside the acceptable range. This indicates the result was not as precise as expected.
Q-26	The RPD between duplicate analyses was outside of the acceptable range. This indicates the result was not as precise as expected.
R-01	The higher reporting limit is due to dilutions required for analysis as a result of a high concentration of target and/or non-target parameters in this sample.
ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
MS/MSD	Matrix Spike/Matrix Spike Duplicate
RPD	Relative Percent Difference
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
ug/kg	micrograms per kilogram
ug/l	micrograms per liter
exc	Not covered under scope of NELAP accreditation.
F*	Calculated factor rounded to 3 significant figures. Concentration factor when <1.00 and dilution factor when >1.00.
Inst	Instrument Identification
Anlst	Analyst Initials
SDL	Sample Detection Limit
MQL	Method Quantitation Limit
naa	This analysis/parameter is not accreditable under the current NELAP program

Laboratory Data Package Cover Page

This data package for Laboratory Job Number 1111547 consists of:

- ☒ This signature page, the laboratory review checklist, and the following reportable data:
- ☒ **R1** Field chain-of-custody documentation;
- ☒ **R2** Sample identification cross-reference;
- ☒ **R3** Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☒ **R4** Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☒ **R5** Test reports/summary forms for blank samples;
- ☒ **R6** Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☒ **R7** Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☒ **R8** Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) the amount of analyte measured in the duplicate,
 - b) the calculated RPD, and
 - c) the laboratory's QC limits for analytical duplicates.
- ☒ **R9** List of method quantitation limits (MQLs) for each analyte for each method and matrix;
- ☒ **R10** Other problems or anomalies.
- ☒ The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release Statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Kendall K. Brown

Name (Printed)

Kendall K. Brown

Signature

President

Official Title (Printed)

11/30/11

Date



Laboratory Review Checklist: Reportable Data

Laboratory Name:		ERM Environmental Laboratories		LRC Date:		11/30/11	
Project Name:		SC Sediment Sampling		Laboratory Job Number:		1111547	
Reviewer Name:		Leslie Underwood		Prep Batch Number(s):		1K22017,1K22018,1K28040	
#¹	A²	Description	Yes	No	NA³	NR⁴	ER#⁵
R1	OI	Chain-of-custody (C-O-C)					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	Sample and quality control (QC) identification					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	Test reports					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample quantitation limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		If required for the project, TICs reported?			X		
R4	O	Surrogate recovery data					
		Were surrogates added prior to extraction?			X		
		Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	Test reports/summary forms for blank samples					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	Laboratory control samples (LCS):					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			E001
		Were MS/MSD RPDs within laboratory QC limits?		X			E002
R8	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?		X			E003
R9	OI	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs included in the laboratory data package?	X				
R10	OI	Other problems/anomalies					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				

- Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
- O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
- NA = Not applicable;
- NR = Not reviewed;
- ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).



Laboratory Review Checklist: Reportable Data

Laboratory Name:		ERMI Environmental Laboratories	LRC Date:		11/30/11				
Project Name:		SC Sediment Sampling	Laboratory Job		1111547				
Reviewer Name:		Leslie Underwood	Prep Batch Number(s):		1K22017,1K22018,1K28040				
# ¹	A ²	Description	Yes	No	NA ³	NR ⁴	ER# ⁵		
S1	OI	Initial calibration (ICAL)							
		Were response factors and/or relative response factors for each analyte within QC limits?	X						
		Were percent RSDs or correlation coefficient criteria met?	X						
		Was the number of standards recommended in the method used for all analytes?	X						
		Were all points generated between the lowest and highest standard used to calculate the curve?	X						
		Are ICAL data available for all instruments used?	X						
		Has the initial calibration curve been verified using an appropriate second source standard?	X						
S2	OI	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration							
		Was the CCV analyzed at the method-required frequency?	X						
		Were percent differences for each analyte within the method-required QC limits?	X						
		Was the ICAL curve verified for each analyte?	X						
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X						
S3	O	Mass spectral tuning:							
		Was the appropriate compound for the method used for tuning?			X				
		Were ion abundance data within the method-required QC limits?			X				
S4	O	Internal standards (IS):							
		Were IS area counts and retention times within the method-required QC limits?			X				
S5	OI	Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section							
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X						
		Were data associated with manual integrations flagged on the raw data?	X						
S6	O	Dual column confirmation							
		Did dual column confirmation results meet the method-required QC?			X				
S7	O	Tentatively identified compounds (TICs):							
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X				
S8	I	Interference Check Sample (ICS) results:							
		Were percent recoveries within method QC limits?	X						
S9	I	Serial dilutions, post digestion spikes, and method of standard additions							
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X						
S10	OI	Method detection limit (MDL) studies							
		Was a MDL study performed for each reported analyte?	X						
		Is the MDL either adjusted or supported by the analysis of DCSs?	X						
S11	OI	Proficiency test reports:							
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X						
S12	OI	Standards documentation							
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X						
S13	OI	Compound/analyte identification procedures							
		Are the procedures for compound/analyte identification documented?	X						
S14	OI	Demonstration of analyst competency (DOC)							
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X						
		Is documentation of the analyst's competency up-to-date and on file?	X						
S15	OI	Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)							
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X						
S16	OI	Laboratory standard operating procedures (SOPs):							
		Are laboratory SOPs current and on file for each method performed?	X						

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

3. NA = Not applicable;

4. NR = Not reviewed;

5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports

Laboratory Name:	ERM Environmental Laboratories	LRC Date:	11/30/11
Project Name:	SC Sediment Sampling	Laboratory Job	1111547
Reviewer Name:	Leslie Underwood	Prep Batch Number(s):	1K22017,1K22018,1K28040
ER#¹	Description		
E001	Matrix Spike Recovery for Arsenic (128%) was outside acceptance limits (75-125) in 1K28040-MS1 for As Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. This indicates a high bias to the result presented for the source sample (1111547-01) reported from this batch. The recovery of this analyte in the LCS(s) was within the acceptable range. Matrix Spike Recovery for Lead (157%) was outside acceptance limits (75-125) in 1K28040-MS1 for Pb Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. This indicates a high bias to the result presented for the source sample (1111547-01) reported from this batch. The recovery of this analyte in the LCS(s) was within the acceptable range. Matrix Spike Recovery for Lead (157%) was outside acceptance limits (75-125) in 1K28040-MS2 for Pb Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. The recovery of this analyte in the LCS(s) was within the acceptable range. Matrix Spike Recovery for Cadmium (126%) was outside acceptance limits (75-125) in 1K28040-MSD1 for Cd Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. This indicates a high bias to the result presented for the source sample (1111547-01) reported from this batch. The recovery of this analyte in the LCS(s) was within the acceptable range. Matrix Spike Recovery for Lead (128%) was outside acceptance limits (75-125) in 1K28040-MSD2 for Pb Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. The recovery of this analyte in the LCS(s) was within the acceptable range.		
E002	Matrix Spike Duplicate RPD for Arsenic (26%) was above the acceptance limit (20) in 1K28040-MSD1 for As Total ICP 6010B - The RPD of this analyte between the MS(s) was outside of the acceptable range. This indicates the result was not as precise as expected for the source sample (1111547-01) reported from this batch. The RPD of this same analyte between the LCS(s) was within the acceptable range. Matrix Spike Duplicate RPD for Lead (31%) was above the acceptance limit (20) in 1K28040-MSD1 for Pb Total ICP 6010B - The RPD of this analyte between the MS(s) was outside of the acceptable range. This indicates the result was not as precise as expected for the source sample (1111547-01) reported from this batch. The RPD of this same analyte between the LCS(s) was within the acceptable range.		
E003	Duplicate RPD for % Solids (10%) was above the acceptance limit (7) in 1K22018-DUP1 for Dry Weight 2540G - The RPD between duplicate analyses was outside of the acceptable range. This indicates the result was not as precise as expected.		

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on the LRC)

111547



P.O. BOX 940303
PLANO, TX 75094-0303
(972) 881-7577

NOTARY SERVICE AVAILABLE

No.

SHIPPER	NAME	B Southwest GEOSCIENCE		DATE	11-18-11											
	ADDRESS	11 Palms Parkway / Cottonwood		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">Falcon Charges</th> <th style="width: 50%;">Type of Delivery</th> </tr> <tr> <td>☐ PREPAID</td> <td>☐ X-Press</td> </tr> <tr> <td>☐ COLLECT</td> <td>☐ 2 HOUR</td> </tr> <tr> <td>☐ ROUND TRIP</td> <td>☐ 4 HOUR</td> </tr> <tr> <td>☐ NIGHT-WEEKEND</td> <td>☐ NEXT DAY</td> </tr> </table>			Falcon Charges	Type of Delivery	☐ PREPAID	☐ X-Press	☐ COLLECT	☐ 2 HOUR	☐ ROUND TRIP	☐ 4 HOUR	☐ NIGHT-WEEKEND	☐ NEXT DAY
	Falcon Charges	Type of Delivery														
	☐ PREPAID	☐ X-Press														
☐ COLLECT	☐ 2 HOUR															
☐ ROUND TRIP	☐ 4 HOUR															
☐ NIGHT-WEEKEND	☐ NEXT DAY															
CITY	Enrico, TX															
REFERENCE NO.																
CONSIGNEE	NAME	ERMI		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">WEIGHT</th> <th style="width: 50%;">CHARGES</th> </tr> <tr> <td rowspan="3"> </td> <td>WEIGHT CHARGE</td> </tr> <tr> <td>WAITING TIME CHG</td> </tr> <tr> <td>DELIVERY CHARGE</td> </tr> <tr> <td colspan="2" style="text-align: center;">TOTAL CHARGES</td> </tr> </table>			WEIGHT	CHARGES		WEIGHT CHARGE	WAITING TIME CHG	DELIVERY CHARGE	TOTAL CHARGES			
	WEIGHT	CHARGES														
		WEIGHT CHARGE														
		WAITING TIME CHG														
DELIVERY CHARGE																
TOTAL CHARGES																
ADDRESS	400 W. Bethany															
CITY	Allen, TX															
ATTN:																

NO. PCS.	DESCRIPTION AND REMARKS	WEIGHT	CHARGES
	STAMPED		

WAITING TIME

NOT RESPONSIBLE FOR FREIGHT CLAIMS AFTER 72 HRS. NOT RESPONSIBLE FOR CONCEALED DAMAGE, DUE AND PAYABLE PLANO, COLLIN COUNTY, TEXAS

DRIVER NAME & NO. Hicks DRIVER NAME & NO. Verlancia C. Bay TIME OF DEL. 3:55 PM RECEIVED BY X Helio Lindor RECEIVED BY X

\$50 DECLARED VALUE UNLESS SPECIFIED HERE \$

ERMI Environmental Laboratories
 Bethany Tech Center
 400 W. Bethany, Suite 190
 Allen, Texas 75013
 972-727-1123 (Local) • 800-228-ERMI
 972-727-1175 (FAX)

DATE: 11/18/11

SAMPLE I.D.:

SAMPLE TYPE: ☐ GRAB ☐ COMPOSITE ☐ OTHER

PARAMETERS:

COMMENTS: OF CONTAINERS

COLLECTED BY: Koch

PRESERVED: ☐ YES ☒ NO

OTHER 11/18

ERMI SAMPLE NO.:

X-409

ERMI Environmental Laboratories
 Bethany Tech Center
 400 W. Bethany, Suite 190
 Allen, Texas 75013
 972-727-1123 (Local) • 800-228-ERMI
 972-727-1175 (FAX)

DATE: 11/18/11

SAMPLE I.D.:

SAMPLE TYPE: ☐ GRAB ☐ COMPOSITE ☐ OTHER

PARAMETERS:

COMMENTS: OF CONTAINERS

COLLECTED BY: Koch

PRESERVED: ☐ YES ☒ NO

OTHER 11/18/11

ERMI SAMPLE NO.:

X-409

Lab Number(s): 111547**ERMI****Sample Preservation Documentation***On Ice (Circle One): **YES** OR NO (check if on Dry Ice _____)

Parameters	Containers #	Size	Required Preservation	Sample Container	Circle pH Note any discrepancy
Metals			pH < 2	Glass or Plastic	pH < 2
Dissolved Metals			Unpreserved prior to being filtered, Cool**	Glass or Plastic	
Hexavalent Chromium			CWA - pH 9.3-9.7, Cool; RCRA - Cool	Glass or Plastic	Checked At Analysis
Semivolatiles, Pesticides, PCBs, Herbicides			Cool	Glass only with Teflon lid	Chlorine ☐ yes ☐ no
VOA (BTEX, MTBE, 624, 8260, TPH-GRO)			Cool, pH < 2 Zero Head Space	40 ml VOA vial	DO NOT OPEN
VOA (TPH-1005)			Cool, Zero Head Space Please check if collected in pre-weighed vials	40 ml VOA vial	DO NOT OPEN
Phos., NO ₃ /NO ₂ , NH ₃ N, COD, TKN, TOC			Cool, pH < 2	Glass or Plastic	pH < 2
TDS, BOD, CBOD, Cond, pH, TSS, F, SO ₄ , Cl, Alk, Sulfite			Cool	Glass or Plastic, Plastic only if F	
Phenols, TPH-DRO			Cool, pH < 2	Glass only Teflon lid _____ Foil lid _____	pH < 2
Oil & Grease, TPH (by 1664a)			Cool, pH < 2	Glass only Teflon lid _____ Foil lid _____	DO NOT Check pH
Cyanide			Cool, pH > 12	Glass or Plastic	pH > 12 Chlorine ☐ yes ☐ no Sulfide ☐ yes ☐ no ☐ na
Sulfide			Cool, pH > 9	Glass or Plastic	pH > 9
Bacteria			Cool	Plastic Sterile Cup	
Soil, Sludge, Solid, Oil, Liquid	4	92	Cool Note: please check if collected in pre-weighed vials	9/10	

Metals Preserved By Login ☐yes ☐noTrip Blanks Received ☐yes ☒no

COMMENTS: _____

*This form is used to document sample preservation. Circle parameter requested. Fill in number and size of containers received. Check pH (adjust if needed) and note if different from what is required and make a notation of any samples not received on ice. Note any incorrect sample containers or preservation on chain-of-custody.

**Cool means cooled to ≤6°C but not frozen.

Preservation Checked By _____

Date

Time

1000.0-3.2

kdy 7/10/08

Q:\Form Masters\1000.0-3.2 Sample Preservation Form

**Environmental Laboratories**

Bethany Tech Center ♦ Suite 190
400 W. Bethany Rd. ♦ Allen, Texas 75013

State Certifications

Arkansas: 88-0647
Oklahoma: 8727



Louisiana: 02007
Kansas: E-10388
Texas: T104704232-11-2

Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz Scaggs

Page: Page 1 of 14
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:07

Attached is our analytical report for the samples received for your project. Below is a list of your individual sample descriptions with our corresponding laboratory number. We also have enclosed a copy of the Chain of Custody that was received with your samples and a form documenting the condition of your samples upon arrival. Please note any unused portion of the samples may be discarded upon expiration of the EPA holding time for the analysis performed or after 30 days from the above report date, unless you have requested otherwise.

ERMI Environmental Laboratories certifies that all results contained in this report were produced in accordance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) unless otherwise noted. The results presented apply to the samples analyzed in accordance with the chain-of-custody document(s) furnished with the samples. This report is intended for the sole use of the customer for whom the work was performed and must be reproduced, without modification, in its entirety.

Sample Identification

<u>Laboratory ID #</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
1111557-01	SC-SED 18	Solid	11/18/11 16:20	11/19/11 11:40
1111557-02	SC-SED 17	Solid	11/18/11 16:35	11/19/11 11:40
1111557-03	SC-SED 16	Solid	11/18/11 16:45	11/19/11 11:40
1111557-04	SC-SED 15	Solid	11/18/11 16:50	11/19/11 11:40
1111557-05	SC-SED 14	Solid	11/18/11 17:00	11/19/11 11:40
1111557-06	SC-SED 13	Solid	11/18/11 17:10	11/19/11 11:40
1111557-07	SC-SED 12	Solid	11/18/11 17:15	11/19/11 11:40



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Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz Scaggins

Page: Page 2 of 14
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:07

The analytical data and results contained in this report, as well as their supporting data, conform with Texas Risk Reduction Program (TRRP), 30 TAC, Section 350, requirements and are of sufficient and documented quality to meet both TRRP objectives, TCEQ regulatory guidance No. RG-366/TRRP-13 and the project-based objective of achieving the lowest method detection limit (i.e., the TRRP Critical PCL where reasonably achievable or, if not reasonably achievable, the MQL). All information concerning analytical parameters, methods and protocols that might bear upon or otherwise affect the accuracy of the analytical data in this report have been provided or otherwise disclosed herein. The data were obtained using applicable and appropriate EPA SW-846 or Texas Commission on Environmental Quality approved analytical protocols, methodologies and quality assurance/quality control standards. **ERMI Environmental Laboratories** certifies that its quality control program is substantially and materially consistent with the International Organization for Standardization "Guide 25: General Requirements the Competence of Calibration and Testing Laboratories (ISO 25 3rd Edition, 1990)," as amended or the quality standards outlined in the National Environmental Laboratory Accreditation Program, as amended. The entire analytical data package for this report, including the supporting quality control data, will be retained and maintained for at least five (5) years (or such longer period of time as may be required by TRRP) from the report date at the offices of **ERMI Environmental Laboratories, 400 W. Bethany, Suite 190, Allen, Texas 75013.**

I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Thank you for the opportunity to serve your environmental chemistry analysis needs. If you have any questions or concerns regarding this report please contact our Customer Service Department at the phone number below.

Respectfully submitted,

Kendall K. Brown
President



Environmental Laboratories

Bethany Tech Center ♦ Suite 190
400 W. Bethany Rd. ♦ Allen, Texas 75013

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Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz Scaggs

Page: Page 3 of 14
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:07

Laboratory ID #:
1111557-01

Sample Type
Grab

Matrix

Solid

Sample Date/Time
11/18/11 1620

Sample Collected By
Jason Minter/John
Koehnman/Tommy Kim

Customer

Sample Description
SC-SED 18

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	190	0.154	1	mg/kg dry	1.00	I2	1K22017	11/22/11 1654	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	85	0.040	0.2	%	1.00	W3	1K22018	11/22/11 1548	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	48.08	DB1	1K28040	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	8.10	0.36	0.25	mg/kg dry	4.81	M4	1K28040	11/29/11 0010	SPS	R-01
Cadmium	0.43	0.42	0.221	mg/kg dry	4.81	M4	1K28040	11/29/11 0010	SPS	R-01, J
Lead	20.5	0.80	0.42	mg/kg dry	4.81	M4	1K28040	11/29/11 0010	SPS	R-01
Selenium	ND	0.91	0.4	mg/kg dry	4.81	M4	1K28040	11/29/11 0010	SPS	R-01

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Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz Scaggs

Page: Page 4 of 14
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:07

<u>Laboratory ID #:</u> 1111557-02	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnman/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 17		<u>Sample Date/Time</u> 11/18/11 1635		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	40.2	0.158	1	mg/kg dry	1.00	I2	1K22017	11/22/11 1710	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	82	0.040	0.2	%	1.00	W3	1K22018	11/22/11 1548	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	50.00	DB1	1K28040	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	18.3	0.38	0.25	mg/kg dry	5.00	M4	1K28040	11/29/11 0244	SPS	R-01
Cadmium	1.19	0.45	0.221	mg/kg dry	5.00	M4	1K28040	11/29/11 0244	SPS	R-01, J
Lead	43.1	0.85	0.42	mg/kg dry	5.00	M4	1K28040	11/29/11 0244	SPS	R-01
Selenium	ND	0.97	0.4	mg/kg dry	5.00	M4	1K28040	11/29/11 0244	SPS	R-01

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Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz Scaggs

Page: Page 5 of 14
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:07

<u>Laboratory ID #:</u> 1111557-03	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 16		<u>Sample Date/Time</u> 11/18/11 1645		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	35.6	0.163	1	mg/kg dry	1.00	I2	1K22017	11/22/11 1727	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	80	0.040	0.2	%	1.00	W3	1K22018	11/22/11 1548	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	49.50	DB1	1K28040	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	14.6	0.39	0.25	mg/kg dry	4.95	M4	1K28040	11/29/11 0252	SPS	R-01
Cadmium	1.49	0.46	0.221	mg/kg dry	4.95	M4	1K28040	11/29/11 0252	SPS	R-01
Lead	59.0	0.87	0.42	mg/kg dry	4.95	M4	1K28040	11/29/11 0252	SPS	R-01
Selenium	ND	1.00	0.4	mg/kg dry	4.95	M4	1K28040	11/29/11 0252	SPS	R-01



Environmental Laboratories

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Louisiana: 02007
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Texas: T104704232-11-2

Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz Scaggs

Page: Page 6 of 14
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:07

<u>Laboratory ID #:</u> 1111557-04	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 15		<u>Sample Date/Time</u> 11/18/11 1650		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	58.0	0.167	1	mg/kg dry	1.00	I2	1K22017	11/22/11 1743	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	78	0.040	0.2	%	1.00	W3	1K22018	11/22/11 1548	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	49.02	DB1	1K28040	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	12.9	0.40	0.25	mg/kg dry	4.90	M4	1K28040	11/29/11 0300	SPS	R-01
Cadmium	1.54	0.47	0.221	mg/kg dry	4.90	M4	1K28040	11/29/11 0300	SPS	R-01
Lead	35.3	0.88	0.42	mg/kg dry	4.90	M4	1K28040	11/29/11 0300	SPS	R-01
Selenium	ND	1.01	0.4	mg/kg dry	4.90	M4	1K28040	11/29/11 0300	SPS	R-01

**Environmental Laboratories**

Bethany Tech Center ♦ Suite 190
400 W. Bethany Rd. ♦ Allen, Texas 75013

State Certifications

Arkansas: 88-0647
Oklahoma: 8727



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Kansas: E-10388
Texas: T104704232-11-2

Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz Scaggs

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Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:07

<u>Laboratory ID #:</u> 1111557-05	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 14		<u>Sample Date/Time</u> 11/18/11 1700		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	48.2	0.156	1	mg/kg dry	1.00	I2	1K22017	11/22/11 1816	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	83	0.040	0.2	%	1.00	W3	1K22018	11/22/11 1548	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	50.51	DB1	1K28040	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	12.7	0.38	0.25	mg/kg dry	5.05	M4	1K28040	11/29/11 0208	SPS	R-01
Cadmium	0.79	0.45	0.221	mg/kg dry	5.05	M4	1K28040	11/29/11 0208	SPS	R-01, J
Lead	27.7	0.85	0.42	mg/kg dry	5.05	M4	1K28040	11/29/11 0208	SPS	Q-20, R-01
Selenium	ND	0.97	0.4	mg/kg dry	5.05	M4	1K28040	11/29/11 0208	SPS	R-01



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Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:07

<u>Laboratory ID #:</u> 1111557-06	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnman/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 13		<u>Sample Date/Time</u> 11/18/11 1710		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	58.3	0.167	1	mg/kg dry	1.00	I2	1K22017	11/22/11 1832	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	78	0.040	0.2	%	1.00	W3	1K22018	11/22/11 1548	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	48.54	DB1	1K28040	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	31.1	0.39	0.25	mg/kg dry	4.85	M4	1K28040	11/29/11 0316	SPS	R-01
Cadmium	0.84	0.46	0.221	mg/kg dry	4.85	M4	1K28040	11/29/11 0316	SPS	R-01, J
Lead	33.7	0.87	0.42	mg/kg dry	4.85	M4	1K28040	11/29/11 0316	SPS	R-01
Selenium	ND	1.00	0.4	mg/kg dry	4.85	M4	1K28040	11/29/11 0316	SPS	R-01

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Report of Sample Analysis

Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
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Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:07

<u>Laboratory ID #:</u> 1111557-07	<u>Sample Type</u> Grab	<u>Matrix</u> Solid	<u>Sample Collected By</u> Jason Minter/John Koehnan/Tommy Kim	Customer
<u>Sample Description</u> SC-SED 12		<u>Sample Date/Time</u> 11/18/11 1715		

Analyte(s)	Result	SDL	MQL	Units	F*	Inst	Batch	Analysis Date/Time	Anlst	Flag
Conventional Chemistry Parameters, EPA 300.0										
Sulfate (Total) as SO ₄	172	0.199	1	mg/kg dry	1.00	I2	1K22017	11/22/11 1849	ANM	
Conventional Chemistry Parameters, SM 2540G										
% Solids	65	0.040	0.2	%	1.00	W3	1K22018	11/22/11 1548	KTF	
Metals (Total), EPA 3050B										
Acid Digestion of Sludges/Solids	Completed	N/A	N/A	-	51.55	DB1	1K28040	11/28/11 0821	MDG	
Metals (Total), EPA 6010B										
Arsenic	11.3	0.50	0.25	mg/kg dry	5.15	M4	1K28040	11/29/11 0324	SPS	R-01
Cadmium	0.79	0.58	0.221	mg/kg dry	5.15	M4	1K28040	11/29/11 0324	SPS	R-01, J
Lead	56.7	1.11	0.42	mg/kg dry	5.15	M4	1K28040	11/29/11 0324	SPS	R-01
Selenium	ND	1.26	0.4	mg/kg dry	5.15	M4	1K28040	11/29/11 0324	SPS	R-01

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400 W. Bethany Rd. ♦ Allen, Texas 75013State CertificationsArkansas: 88-0647
Oklahoma: 8727Louisiana: 02007
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Texas: T104704232-11-2**Report of Sample Analysis**Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
Dallas, TX 75220
ATTN: Liz ScaggsPage: Page 10 of 14
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:07**Conventional Chemistry Parameters - Quality Control**

Analyte(s)	Result	*SDI	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Blank (1K22017-BLK1)										
Prepared: 11/22/11 12:30 Analyzed: 11/22/11 13:02										
Sulfate (Total) as SO ₄	ND	0.130	mg/kg wet							
Laboratory Control Sample (1K22017-BS1)										
Prepared: 11/22/11 12:30 Analyzed: 11/22/11 13:19										
Sulfate (Total) as SO ₄	46.3	0.130	mg/kg wet	50.0		93	90-110			
Laboratory Control Sample Duplicate (1K22017-BSD1)										
Prepared: 11/22/11 12:30 Analyzed: 11/22/11 16:38										
Sulfate (Total) as SO ₄	47.6	0.130	mg/kg wet	50.0		95	90-110	3	20	
Matrix Spike (1K22017-MS1) 1x										
Prepared: 11/22/11 12:30 Analyzed: 11/22/11 13:52										
					Source: 1111547-01					
Sulfate (Total) as SO ₄	140	0.200	mg/kg dry	76.9	69.8	91	90-110			
Matrix Spike (1K22017-MS2) 1x										
Prepared: 11/22/11 12:30 Analyzed: 11/22/11 20:44										
					Source: 1111557-07					
Sulfate (Total) as SO ₄	257	0.221	mg/kg dry	85.1	172	100	90-110			
Matrix Spike Duplicate (1K22017-MSD1) 1x										
Prepared: 11/22/11 12:30 Analyzed: 11/22/11 14:08										
					Source: 1111547-01					
Sulfate (Total) as SO ₄	141	0.200	mg/kg dry	76.9	69.8	92	90-110	0.6	20	
Matrix Spike Duplicate (1K22017-MSD2) 1x										
Prepared: 11/22/11 12:30 Analyzed: 11/22/11 21:00										
					Source: 1111557-07					
Sulfate (Total) as SO ₄	257	0.221	mg/kg dry	85.1	172	99	90-110	0.3	20	
Blank (1K22018-BLK1)										
Prepared & Analyzed: 11/22/11 15:48										
% Solids	ND	0.040	%							



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Report of Sample Analysis

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Project: SC Sediment Sampling
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Conventional Chemistry Parameters - Quality Control

Analyte(s)	Result	*SDI	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Duplicate (1K22018-DUP1)										
Prepared & Analyzed: 11/22/11 15:48					Source: 1111493-01					
% Solids	1.0	0.040	%		1.1			10	7	Q-26
Duplicate (1K22018-DUP2)										
Prepared & Analyzed: 11/22/11 15:48					Source: 1111563-01					
% Solids	84	0.040	%		84			0.2	7	

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Texas: T104704232-11-2**Report of Sample Analysis**Southwest Geoscience
2351 W. Northwest Hwy, Suite 3321
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ATTN: Liz ScaggsPage: Page 12 of 14
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:07**Metals (Total) - Quality Control**

Analyte(s)	Result	*SDI	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Blank (1K28040-BLK1)										
Prepared & Analyzed: 11/28/11 08:21										
Acid Digestion of Sludges/Solids	Completed	N/A	-							
Arsenic	ND	0.06	mg/kg wet							
Cadmium	ND	0.07	mg/kg wet							
Lead	ND	0.14	mg/kg wet							
Selenium	ND	0.16	mg/kg wet							
Laboratory Control Sample (1K28040-BS1)										
Prepared & Analyzed: 11/28/11 08:21										
Acid Digestion of Sludges/Solids	Completed	N/A	-				0-0			
Arsenic	21.2	0.06	mg/kg wet	24.5		86	80-120			
Cadmium	22.3	0.07	mg/kg wet	24.5		91	80-120			
Lead	21.6	0.14	mg/kg wet	24.5		88	80-120			
Selenium	43.0	0.16	mg/kg wet	49.0		88	80-120			
Laboratory Control Sample Duplicate (1K28040-BSD1)										
Prepared & Analyzed: 11/28/11 08:21										
Acid Digestion of Sludges/Solids	Completed	N/A	-				0-0		0	
Arsenic	22.6	0.06	mg/kg wet	25.3		89	80-120	7	20	
Cadmium	23.6	0.07	mg/kg wet	25.3		93	80-120	6	20	
Lead	22.8	0.14	mg/kg wet	25.3		90	80-120	5	20	
Selenium	45.3	0.16	mg/kg wet	50.5		90	80-120	5	20	
Matrix Spike (1K28040-MS1)										
Prepared & Analyzed: 11/28/11 08:21										
Acid Digestion of Sludges/Solids	Completed	N/A	-		ND		0-0			
Arsenic	55.3	0.86	mg/kg dry	33.9	12.0	128	75-125			Q-02, R-01
Cadmium	37.8	1.00	mg/kg dry	33.9	0.95	109	75-125			R-01
Lead	92.3	1.90	mg/kg dry	33.9	39.1	157	75-125			Q-02, R-01
Selenium	66.3	2.17	mg/kg dry	67.9	ND	98	75-125			R-01



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Report of Sample Analysis

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Project: SC Sediment Sampling
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Metals (Total) - Quality Control

Analyte(s)	Result	*SDI	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Matrix Spike (1K28040-MS2)										
Prepared & Analyzed: 11/28/11 08:21					Source: 1111557-05					
Acid Digestion of Sludges/Solids	Completed	N/A	-		ND		0-0			
Arsenic	42.9	0.77	mg/kg dry	30.7	12.7	99	75-125			R-01
Cadmium	31.2	0.91	mg/kg dry	30.7	0.79	99	75-125			R-01
Lead	75.9	1.72	mg/kg dry	30.7	27.7	157	75-125			Q-02, R-01
Selenium	58.0	1.96	mg/kg dry	61.3	ND	95	75-125			R-01
Matrix Spike Duplicate (1K28040-MSD1)										
Prepared & Analyzed: 11/28/11 08:21					Source: 1111547-01					
Acid Digestion of Sludges/Solids	Completed	N/A	-		ND		0-0		0	
Arsenic	42.5	0.90	mg/kg dry	35.7	12.0	85	75-125	26	20	Q-04, R-01
Cadmium	45.8	1.06	mg/kg dry	35.7	0.95	126	75-125	19	20	Q-02, R-01
Lead	67.8	2.00	mg/kg dry	35.7	39.1	81	75-125	31	20	Q-04, R-01
Selenium	72.2	2.28	mg/kg dry	71.4	ND	101	75-125	8	20	R-01
Matrix Spike Duplicate (1K28040-MSD2)										
Prepared & Analyzed: 11/28/11 08:21					Source: 1111557-05					
Acid Digestion of Sludges/Solids	Completed	N/A	-		ND		0-0		0	
Arsenic	40.1	0.74	mg/kg dry	29.5	12.7	93	75-125	7	20	R-01
Cadmium	29.9	0.87	mg/kg dry	29.5	0.79	99	75-125	4	20	R-01
Lead	65.4	1.65	mg/kg dry	29.5	27.7	128	75-125	15	20	Q-02, R-01
Selenium	56.0	1.89	mg/kg dry	58.9	ND	95	75-125	4	20	R-01



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Report of Sample Analysis

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Page: Page 14 of 14
Project: SC Sediment Sampling
Project #: 0111278
Print Date/Time: 11/30/11 17:07

Notes and Definitions

The results presented in this report were generated using those methods given in 40 CFR Part 136 for Water and Wastewater samples and in SW-846 for RCRA/Solid Waste samples.

J	This value is above the method detection limit but below the reporting limit.
Q-02	The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. The recovery of this analyte in the LCS(s) was within the acceptable range.
Q-04	The RPD of this analyte between the MS(s) was outside of the acceptable range. The RPD of this same analyte between the LCS(s) was within the acceptable range.
Q-20	The recovery of this analyte in the MS was higher than the acceptable range. This indicates a high bias to the result presented.
Q-26	The RPD between duplicate analyses was outside of the acceptable range. This indicates the result was not as precise as expected.
R-01	The higher reporting limit is due to dilutions required for analysis as a result of a high concentration of target and/or non-target parameters in this sample.
ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
MS/MSD	Matrix Spike/Matrix Spike Duplicate
RPD	Relative Percent Difference
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
ug/kg	micrograms per kilogram
ug/l	micrograms per liter
exc	Not covered under scope of NELAP accreditation.
F*	Calculated factor rounded to 3 significant figures. Concentration factor when <1.00 and dilution factor when >1.00.
Inst	Instrument Identification
Anlst	Analyst Initials
SDL	Sample Detection Limit
MQL	Method Quantitation Limit
naa	This analysis/parameter is not accreditable under the current NELAP program

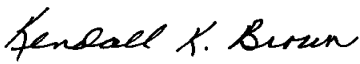
Laboratory Data Package Cover Page

This data package for Laboratory Job Number 1111557 consists of:

- ☒ This signature page, the laboratory review checklist, and the following reportable data:
- ☒ **R1** Field chain-of-custody documentation;
- ☒ **R2** Sample identification cross-reference;
- ☒ **R3** Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☒ **R4** Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☒ **R5** Test reports/summary forms for blank samples;
- ☒ **R6** Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☒ **R7** Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☒ **R8** Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) the amount of analyte measured in the duplicate,
 - b) the calculated RPD, and
 - c) the laboratory's QC limits for analytical duplicates.
- ☒ **R9** List of method quantitation limits (MQLs) for each analyte for each method and matrix;
- ☒ **R10** Other problems or anomalies.
- ☒ The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release Statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Kendall K. Brown		President	11/30/11
Name (Printed)	Signature	Official Title (Printed)	Date



Laboratory Review Checklist: Reportable Data

Laboratory Name:		ERM Environmental Laboratories	LRC Date:		11/30/11				
Project Name:		SC Sediment Sampling	Laboratory Job Number:		1111557				
Reviewer Name:		Leslie Underwood	Prep Batch Number(s):		1K22017,1K22018,1K28040				
# ¹	A ²	Description	Yes	No	NA ³	NR ⁴	ER# ⁵		
R1	OI	Chain-of-custody (C-O-C)							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X						
		Were all departures from standard conditions described in an exception report?	X						
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X						
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X						
R3	OI	Test reports							
		Were all samples prepared and analyzed within holding times?	X						
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X						
		Were calculations checked by a peer or supervisor?	X						
		Were all analyte identifications checked by a peer or supervisor?	X						
		Were sample quantitation limits reported for all analytes not detected?	X						
		Were all results for soil and sediment samples reported on a dry weight basis?	X						
		Were % moisture (or solids) reported for all soil and sediment samples?	X						
		If required for the project, TICs reported?				X			
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?	X						
		Were blanks analyzed at the appropriate frequency?	X						
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X						
		Were blank concentrations < MQL?	X						
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?	X						
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X						
		Were LCSs analyzed at the required frequency?	X						
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X						
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X						
		Was the LCSD RPD within QC limits?	X						
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?	X						
		Were MS/MSD analyzed at the appropriate frequency?	X						
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X				E001	
		Were MS/MSD RPDs within laboratory QC limits?		X				E002	
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?	X						
		Were analytical duplicates analyzed at the appropriate frequency?	X						
		Were RPDs or relative standard deviations within the laboratory QC limits?		X				E003	
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?	X						
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X						
		Are unadjusted MQLs included in the laboratory data package?	X						
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X						
		Were all necessary corrective actions performed for the reported data?	X						
		Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X						

- Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
- O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
- NA = Not applicable;
- NR = Not reviewed;
- ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).



Laboratory Review Checklist: Reportable Data

Laboratory Name:		ERMI Environmental Laboratories	LRC Date:		11/30/11				
Project Name:		SC Sediment Sampling	Laboratory Job		1111557				
Reviewer Name:		Leslie Underwood	Prep Batch Number(s):		1K22017,1K22018,1K28040				
# ¹	A ²	Description	Yes	No	NA ³	NR ⁴	ER# ⁵		
S1	OI	Initial calibration (ICAL)							
		Were response factors and/or relative response factors for each analyte within QC limits?	X						
		Were percent RSDs or correlation coefficient criteria met?	X						
		Was the number of standards recommended in the method used for all analytes?	X						
		Were all points generated between the lowest and highest standard used to calculate the curve?	X						
		Are ICAL data available for all instruments used?	X						
		Has the initial calibration curve been verified using an appropriate second source standard?	X						
S2	OI	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration							
		Was the CCV analyzed at the method-required frequency?	X						
		Were percent differences for each analyte within the method-required QC limits?	X						
		Was the ICAL curve verified for each analyte?	X						
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X						
S3	O	Mass spectral tuning:							
		Was the appropriate compound for the method used for tuning?			X				
		Were ion abundance data within the method-required QC limits?			X				
S4	O	Internal standards (IS):							
		Were IS area counts and retention times within the method-required QC limits?			X				
S5	OI	Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section							
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X						
		Were data associated with manual integrations flagged on the raw data?	X						
S6	O	Dual column confirmation							
		Did dual column confirmation results meet the method-required QC?			X				
S7	O	Tentatively identified compounds (TICs):							
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X				
S8	I	Interference Check Sample (ICS) results:							
		Were percent recoveries within method QC limits?	X						
S9	I	Serial dilutions, post digestion spikes, and method of standard additions							
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X						
S10	OI	Method detection limit (MDL) studies							
		Was a MDL study performed for each reported analyte?	X						
		Is the MDL either adjusted or supported by the analysis of DCSs?	X						
S11	OI	Proficiency test reports:							
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X						
S12	OI	Standards documentation							
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X						
S13	OI	Compound/analyte identification procedures							
		Are the procedures for compound/analyte identification documented?	X						
S14	OI	Demonstration of analyst competency (DOC)							
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X						
		Is documentation of the analyst's competency up-to-date and on file?	X						
S15	OI	Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)							
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X						
S16	OI	Laboratory standard operating procedures (SOPs):							
		Are laboratory SOPs current and on file for each method performed?	X						

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

3. NA = Not applicable;

4. NR = Not reviewed;

5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).



Laboratory Review Checklist: Exception Reports

Laboratory Name:	ERM Environmental Laboratories	LRC Date:	11/30/11
Project Name:	SC Sediment Sampling	Laboratory Job	1111557
Reviewer Name:	Leslie Underwood	Prep Batch Number(s):	1K22017,1K22018,1K28040
ER#¹	Description		
E001	Matrix Spike Recovery for Arsenic (128%) was outside acceptance limits (75-125) in 1K28040-MS1 for As Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. The recovery of this analyte in the LCS(s) was within the acceptable range. Matrix Spike Recovery for Lead (157%) was outside acceptance limits (75-125) in 1K28040-MS1 for Pb Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. The recovery of this analyte in the LCS(s) was within the acceptable range. Matrix Spike Recovery for Lead (157%) was outside acceptance limits (75-125) in 1K28040-MS2 for Pb Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. This indicates a high bias to the result presented for the source sample (1111557-05) reported from this batch. The recovery of this analyte in the LCS(s) was within the acceptable range. Matrix Spike Recovery for Cadmium (126%) was outside acceptance limits (75-125) in 1K28040-MSD1 for Cd Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. The recovery of this analyte in the LCS(s) was within the acceptable range. Matrix Spike Recovery for Lead (128%) was outside acceptance limits (75-125) in 1K28040-MSD2 for Pb Total ICP 6010B - The recovery of this analyte in the MS was outside the acceptable range due to interference, large dilutions required for analysis or a combination of these factors. This indicates a high bias to the result presented for the source sample (1111557-05) reported from this batch. The recovery of this analyte in the LCS(s) was within the acceptable range.		
E002	Matrix Spike Duplicate RPD for Arsenic (26%) was above the acceptance limit (20) in 1K28040-MSD1 for As Total ICP 6010B - The RPD of this analyte between the MS(s) was outside of the acceptable range. The RPD of this same analyte between the LCS(s) was within the acceptable range. Matrix Spike Duplicate RPD for Lead (31%) was above the acceptance limit (20) in 1K28040-MSD1 for Pb Total ICP 6010B - The RPD of this analyte between the MS(s) was outside of the acceptable range. The RPD of this same analyte between the LCS(s) was within the acceptable range.		
E003	Duplicate RPD for % Solids (10%) was above the acceptance limit (7) in 1K22018-DUP1 for Dry Weight 2540G - The RPD between duplicate analyses was outside of the acceptable range. This indicates the result was not as precise as expected.		

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on the LRC)



Southwest GEOSCIENCE Environmental & Hydrogeologic Consultants		Laboratory: <u>ERMI</u> Address: _____ Contact: _____ Phone: <u>972-727-1123</u> PO/ISO #: _____		ANALYSIS REQUESTED Pb, Cd, Se, Sulfate		Lab use only Due Date: _____ Temp. of coolers when received (C°): <u>20.0</u> Page <u>20</u> of <u>5</u>		
		Office Location <u>Dallas, TX</u> Project Manager <u>Liz SCAGGS</u>		Project Name <u>SC SEDIMENT SAMPLING</u> Project No. <u>011278</u>		Lab Sample ID (Lab Use Only)		
Sampler's Name <u>JASON MUMFORD</u> Project Name <u>SC SEDIMENT SAMPLING</u> Project No. <u>011278</u>				Sampler's Signature <u>[Signature]</u> Date of Collection <u>11/12/11</u>				
Matrix	Date	Time	Identifying Marks of Sample(s)	Depth	Depth	VOA	P/O	Lab Sample ID (Lab Use Only)
S	11/12/11	1620	SC-SEP 18	0	6		1	111557-01
S	11/12/11	1635	SC-SEP 17	0	6		1	111557-02
S	11/12/11	1645	SC-SEP 16	0	6		1	111557-03
S	11/12/11	1650	SC-SEP 15	0	6		1	111557-04
S	11/12/11	1700	SC-SEP 14	0	6		1	111557-05
S	11/12/11	1710	SC-SEP 13	0	6		1	111557-06
S	11/13/11	1715	SC-SEP 12	0	6		1	111557-07
Turn around time ☐ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush								
Relinquished by (Signature) <u>[Signature]</u> Date: <u>11/19/11</u> Time: <u>1140</u>				Received by (Signature) <u>[Signature]</u> Date: <u>11/19/11</u> Time: <u>1140</u>				NOTES:
Relinquished by (Signature) _____ Date: _____ Time: _____				Received by (Signature) _____ Date: _____ Time: _____				
Relinquished by (Signature) _____ Date: _____ Time: _____				Received by (Signature) _____ Date: _____ Time: _____				
Relinquished by (Signature) _____ Date: _____ Time: _____				Received by (Signature) _____ Date: _____ Time: _____				
Matrix Container	WW - Wastewater VOA - 40 ml vial	S - Soil A/G - Amber / Or Glass 1 Liter	SD - Solid 250 ml - Glass wide mouth	L - Liquid 250 ml - Glass wide mouth	A - Air Bag	C - Charcoal tube P/O - Plastic or other	SL - sludge	O - Oil

Lab Number(s): 111557

ERM

Sample Preservation Documentation*

On Ice (Circle One) YES OR NO (check if on Dry Ice _____)

Parameters	Containers #	Size	Required Preservation	Sample Container	Circle pH Note any discrepancy
Metals			pH < 2	Glass or Plastic	pH < 2
Dissolved Metals			Unpreserved prior to being filtered, Cool**	Glass or Plastic	
Hexavalent Chromium			CWA - pH 9.3-9.7, Cool; RCRA - Cool	Glass or Plastic	Checked At Analysis
Semivolatiles, Pesticides, PCBs, Herbicides			Cool	Glass only with Teflon lid	Chlorine ☐ yes ☐ no
VOA (BTEX, MTBE, 624, 8260, TPH-GRO)			Cool, pH < 2 Zero Head Space	40 ml VOA vial	DO NOT OPEN
VOA (TPH-1005)			Cool, Zero Head Space Please check if collected in pre-weighed vials	40 ml VOA vial	DO NOT OPEN
Phos., NO ₃ /NO ₂ , NH ₃ N, COD, TKN, TOC			Cool, pH < 2	Glass or Plastic	pH < 2
TDS, BOD, CBOD, Cond, pH, TSS, F, SO ₄ , Cl, Alk, Sulfite			Cool	Glass or Plastic, Plastic only if F	
Phenols, TPH-DRO			Cool, pH < 2	Glass only Teflon lid _____ Foil lid _____	pH < 2
Oil & Grease, TPH (by 1664a)			Cool, pH < 2	Glass only Teflon lid _____ Foil lid _____	DO NOT Check pH
Cyanide			Cool, pH > 12	Glass or Plastic	pH > 12 Chlorine ☐ yes ☐ no Sulfide ☐ yes ☐ no ☐ na
Sulfide			Cool, pH > 9	Glass or Plastic	pH > 9
Bacteria			Cool	Plastic Sterile Cup	
Soil, Sludge, Solid, Oil, Liquid	7	92	Cool Note: please check if collected in pre-weighed vials	g/l	

Metals Preserved By Login ☐yes ☐no

Trip Blanks Received ☐yes ☒no

COMMENTS: _____

*This form is used to document sample preservation. Circle parameter requested. Fill in number and size of containers received. Check pH (adjust if needed) and note if different from what is required and make a notation of any samples not received on ice. Note any incorrect sample containers or preservation on chain-of-custody.

**Cool means cooled to ≤6°C but not frozen.

Preservation Checked By _____

Date

Time

1000.0-3.2

kdy 7/10/08

Q:\Form Masters\1000.0-3.2 Sample Preservation Form