



FUGRO-McCLELLAND (SOUTHWEST), INC.

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Attention: Mr. Oscar Cervantes

**PHASE II ENVIRONMENTAL SITE ASSESSMENT
SAHA 10 ACRE SITE
1901 SOUTH SAN MARCOS STREET
SAN ANTONIO, TEXAS**

Fugro Environmental, Inc. (Fugro) is pleased to provide the San Antonio Housing Authority (SAHA) with the following report which presents the results of the Phase II Environmental Site Assessment (ESA) at the SAHA 10 Acre Site (subject property) located at 1901 South San Marcos Street in San Antonio, Texas. These services were authorized on December 28, 1994, and were performed in general accordance with the scope and services outlined in our Proposal No. 0542-0289 dated December 20, 1994.

This investigation included the drilling of four soil borings, the conversion of three of the borings into permanent groundwater monitoring wells, and the collection of shallow soil and groundwater samples for chemical analysis. A regulatory assessment was made, conclusions stated, and recommendations outlined.

We appreciate the opportunity to provide environmental consulting services to San Antonio Housing Authority on this project. If you have any questions concerning this report, or if we can assist you in any other matter, please contact us at (210) 655-9516.

Sincerely,
FUGRO ENVIRONMENTAL, INC.

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Scientist II

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Copies Submitted: (2)
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EXECUTIVE SUMMARY

This report presents the findings of the Phase II Environmental Site Assessment (ESA) performed by Fugro Environmental, Inc. (Fugro) at the San Antonio Housing Authority (SAHA) 10 acre site (subject property), located in San Antonio, Texas. The scope of work included the collection and analysis of soil and groundwater samples from the site to assess the presence and type of suspect solid waste in the subsurface, and to identify potential contaminants in the shallow soils and groundwater at the site. The following paragraphs summarize the findings of the assessment.

Fugro supervised the drilling and sampling of four soil borings on the subject property and the conversion of three of the soil borings into permanent groundwater monitoring wells. All of the borings were drilled on the northeastern portion of the subject property near a previous geotechnical boring in which coal ash waste was encountered.

During the drilling of the soil borings, soil samples were collected and screened for volatile organic vapors. Selected samples were then submitted to an independent laboratory and analyzed for total petroleum hydrocarbons (TPH) and Priority Pollutant Metals. The results of the laboratory analyses identified detectable concentrations of TPH in the soil sample collected from boring B-4. Additionally, the concentrations of metals in the soil samples collected from borings B-4, B-6, and B-7 were comparable to the concentrations of metals found in the background soil sample collected from boring B-8.

The soil sample collected from boring B-4 was also analyzed for Toxicity Characteristic Leaching Procedure (TCLP) Metals, volatile organic compounds, and semi-volatile organic compounds. The results of the TCLP analysis identified barium as the only metal in the sample above laboratory detection limits. The results of the other chemical analyses identified no volatile organic compounds in the sample; however, several semi-volatile organic compounds typically associated with coal combustion products were detected.

After the monitoring wells had been developed and allowed to stabilize, groundwater samples were collected from each of the three monitoring wells. The groundwater samples were submitted to an independent laboratory and analyzed for TPH. The results of the laboratory analyses identified detectable concentrations of TPH in the groundwater sample collected from MW-3. TPH was not detected in the groundwater samples collected from MW-1 or MW-2.

The groundwater samples from MW-1 and MW-3 were also analyzed for EPA Priority Pollutant Metals. The results of the laboratory analyses identified concentrations of zinc in both groundwater samples. The concentrations of all other metals in the samples were below laboratory detection limits.

The groundwater sample from MW-3 was also analyzed for volatile and semi-volatile organic compounds. Results of the laboratory analyses identified several semi-volatile organic compounds in the sample. The compounds identified in the groundwater sample are polycyclic aromatic hydrocarbons which may be associated with coal, coal tar, and coal combustion products.

Based on the results of the chemical analyses, it appears that the groundwater beneath the site may have been affected by waste materials deposited on the site. Because a release of constituents to the environment has occurred, and even though the deposition may have occurred under a prior owner, the current owner is responsible for; (1) ensuring that the contaminated groundwater does not migrate off-site, and (2) restoration of the water quality of the groundwater. The owner's responsibilities are established under Sections 271-275 of Chapter 361 of the Texas Health and Safety Code.

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The Texas Natural Resource Conservation Commission (TNRCC) is the state agency with regulatory oversight for pollution prevention and pollution remediation. The TNRCC rules establishing the requirements for site cleanup are found in Subchapter S (30 TAC Sections 335.554 - 335.559) of the regulations for Industrial and Municipal Hazardous Waste.

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INTRODUCTION

This report presents the results of the Phase II Environmental Site Assessment (ESA) performed by Fugro Environmental, Inc. (Fugro) at the San Antonio Housing Authority (SAHA) 10 acre site (subject property) located in San Antonio, Texas. This project was authorized on December 28, 1994, and was performed in accordance with the scope of services outlined in our Proposal No. 0542-0289, dated December 20, 1994.

Site Description

The subject property is a 10.01 acre tract of land located at 1901 South San Marcos Street in San Antonio, Texas (Plate 1). The tract is located adjacent to the Union Stock Yards, and was the location of a meat packing facility from 1889 to circa 1960. The tract is currently undeveloped; however, two Edwards Aquifer water wells and several remnant building foundations are present at the site.

Background Information

On November 28, 1994, Fugro-McClelland (SW), Inc. performed a geotechnical study at the subject property to assess the engineering properties of the soil. During the geotechnical study, three soil borings were drilled on the subject property (B-1, B-2, and B-3). During the drilling activities, coal ash, coal clinker, and pieces of bituminous coal were encountered in boring B-3 from the ground surface to a depth of approximately 8 feet. Shallow groundwater in this boring was encountered at a depth of approximately three feet below ground surface. The coal ash waste in the subsurface was suspected to have been produced as a by-product of coal-fired boilers used at the site in the past.

Previous environmental activities at the site conducted by others included the removal of three underground petroleum storage tanks and the excavation of contaminated soils around the tanks. Additionally, remediation of PCB-containing electrical transformers and the disposal of several drums of waste oil were also performed at the site.

Purpose and Scope of Work

This Phase II ESA was conducted in order to assess the presence and character of suspect solid wastes encountered during a geotechnical study at the site by Fugro-McClelland (SW), Inc. in November 1994. The assessment included the drilling of four soil borings at the subject property and the conversion of three of the borings into groundwater monitoring wells. Selected soil and groundwater samples were submitted to a qualified laboratory for chemical analysis.

Report Organization

This report is organized into sections which discuss and present background information, shallow soil and groundwater conditions, field activities, and laboratory analytical results. Our conclusions and recommendations based on our findings are also provided. Additional tables and plates follow the text. Well reports, original laboratory reports, and supporting documentation are included in appendices.

FIELD INVESTIGATION

The objective of our field investigation was to assess the presence and character of suspect solid wastes in the shallow subsurface encountered during a previous geotechnical investigation. The investigation included the drilling and sampling of four soil borings (B-4 through B-7) and the installation of permanent groundwater monitoring wells in three of the four boreholes. Details of the field investigation activities are presented below.

Historical Data Review

Prior to the drilling activities, Fugro obtained the oldest aerial photograph reasonably available. The photograph, dated 1958, showed the locations of the former buildings on the subject property, and was used to aid in the efficient location of the four soil borings. Previous environmental studies conducted at the subject property were made available from the client, and were reviewed for information capable of aiding this investigation.

Boring locations were selected on the northeast portion of the subject property around geotechnical boring B-3 in which coal ash waste was encountered. The borings were drilled to a completion depth ranging from 20 to 23 feet below ground surface (bgs) and were terminated at the top of the underlying Navarro Formation of Cretaceous Age. The locations of the soil borings and monitoring wells are presented on Plate 2.

Drilling and Sampling Techniques

Drilling activities were performed on January 5 and 6, 1995 by Jones Environmental Drilling, Inc. (JEDI). The borings were advanced via a truck-mounted drilling rig using continuous flight dry-auger techniques. Petroleum-based lubricants were not used at any time on the downhole equipment. The borings were completed to depths ranging from 20 to 23 feet bgs. Boring logs for the geotechnical borings B-1, B-2, and B-3 are included in Appendix A. Boring logs for the environmental borings B-4 through B-7 are included in Appendix B.

Soil samples were collected using a 2-foot long split spoon sampler simultaneously advanced with the augers. The sampler was set approximately 4 inches ahead of the lead bit so that an undisturbed soil sample could be obtained. The sampler was then recovered, and the soil

sample given to Fugro's field geologist for classification. Soil cuttings were placed in 55-gallon drums and were left on-site for subsequent disposal.

Field Screening Procedures

All soil borings were sampled in 2-foot intervals from 2 feet bgs to the completion depth of the borings. A representative portion of each soil sample was screened using a Photo-Ionization Detector (PID). A minimum period of two minutes elapsed before a measurement for total organic vapor concentrations (TOVCs) was obtained. Soil descriptions and TOVCs are illustrated on the environmental boring logs.

Soil Sample Collection

Fugro selected soil samples from each boring for chemical analysis. The samples were selected based on PID readings and other physical indicators. Because suspect solid waste was not encountered in boring B-5, samples for chemical analysis were not collected. Soil samples were collected from a depth of 4-6 feet in boring B-4, 2-4 feet in boring B-6, and 6-8 feet in boring B-7. An additional soil sample was collected from the southwestern portion of the property at a depth of approximately 1 foot bgs (B-8). A review of historical aerial photographs indicated that the location of this shallow boring was a relatively undisturbed area of the property. The sample collected from this location was used to obtain background soil chemistry. All soil samples collected during the investigation were placed in sample containers provided by the laboratory, stored on ice, and submitted to an independent laboratory for chemical analysis.

Decontamination Procedures

In order to reduce cross-contamination between samples, the sampling equipment was cleaned with a trisodium phosphate detergent solution and rinsed with water before each use. Additionally, all downhole equipment was cleaned between each soil boring using a steam cleaner. The cleaning water was containerized and left on-site for later analysis and disposal.

Monitoring Well Installation

Soil borings B-4, B-5, and B-6 were converted into monitoring wells MW-1, MW-2, and MW-3, respectively. Fugro's on-site geologist determined the completion depth and screened interval in the field. The well screens were placed from the base of the borehole to a depth of 2 to 7 feet bgs. All monitoring wells were constructed to monitor the uppermost permeable water bearing unit.

All of the monitoring wells were constructed with 2 inch inside diameter PVC pipe. Each well consisted of a 15 to 20 foot section of 0.0010 inch, factory slotted pipe and a 2 to 7 foot section of riser. The borehole annulus around each screened section was filled with sand to a maximum of 2 feet above the screened interval. A 0.5 to 2 foot thick bentonite seal was placed above the sand interval and the remaining space filled with cement grout. Each well was

completed at grade with a locking cap and water-tight manhole cover according to TNRCC standards.

All wells were drilled by a water well driller licensed in the State of Texas. Well reports were prepared for all wells installed during this investigation and filed with the TNRCC. Copies of the well reports are included in Appendix C.

Groundwater Sample Collection

Each of the three monitoring wells were developed by the purge and bail method the day after completion of drilling operations using a disposable Teflon bailer. The wells were developed to remove fine particles from the well screen, the sand pack, and the surrounding formation. A minimum of ten well volumes of water were removed from each well. The wells were allowed to recharge to near static conditions for approximately 24 hours before groundwater samples were collected.

Groundwater samples were collected from monitoring wells MW-1, MW-2 and MW-3 on January 7, 1995. A minimum of three well volumes from each well was removed prior to sampling. The groundwater samples were placed in sample containers provided by the laboratory, stored on ice, and submitted to an independent laboratory for chemical analysis. Purging and sampling of groundwater was conducted in accordance with TNRCC protocols. The purge and sampling water was containerized and left at the site for later analysis and proper disposal.

Surveying of Well and Soil Boring Locations

Bain Medina Bain, Inc. (BMB) of San Antonio, Texas surveyed each soil boring and monitoring well location on the property. Both vertical and horizontal coordinates for the soil boring and monitoring well locations were established to the nearest 0.01 feet. Horizontal and vertical reference was established using an off-site benchmark identified on the survey. BMB is a registered surveyor with the State of Texas. Survey data is included in Appendix D.

SITE GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

This section includes an overview of general geologic and hydrogeologic conditions in the vicinity of the subject property and surrounding area.

Site Geology

The subject property is located in central Bexar County, Texas, approximately 9 miles south of the Balcones Escarpment. The Balcones Escarpment is an ancient fault scarp which separates two physiographic provinces; the Edwards Plateau to the north and the Gulf Coastal Plain to the south. The Edwards Plateau is comprised of Cretaceous Age limestone units created by marine depositional processes about 65 million years ago. The coastal plain consists of a

series of sedimentary depositional plains created by fluvial and deltaic processes during the last three million years. The coastal plain is underlain by older sedimentary formations that thicken seaward forming sedimentary wedges.

According to the Geologic Atlas of Texas (San Antonio Sheet), the subject property lies on an outcrop of the Navarro Group. This sedimentary unit is the youngest of the Cretaceous age sediments, and consists of chalk and chalky marl. The formation generally thickens eastward forming a sedimentary wedge. The Navarro Group is approximately 580 feet in thickness, and is underlain by older Cretaceous Age sediments. A site specific stratigraphic column is presented on Plate 3.

Soils

According to the USDA Soil Survey for Bexar County, Texas, the subject property lies on the Lewisville silty clay soils classification. The Lewisville soils consist of moderately deep, dark-colored, nearly level alluvial sediments which occur mainly on terraces bordering the San Antonio and Medina Rivers and their main tributaries.

In a representative profile, the surface layer of Lewisville silty clay soils is very dark grayish-brown to brown silty clay about 24 inches thick. The subsurface layer is brown silty clay and is about 20 inches thick. The underlying material is reddish-yellow silty clay. Beneath this layer, there may be deep beds of water-rounded limestone gravel. Lewisville soils have slow or medium surface drainage and medium internal drainage. Permeability is slow to moderate, and the capacity to hold water is good.

The soils encountered during the advancement of the soil borings at the northeast portion of the subject property were not representative of the Lewisville Series. The soils in this area had been altered by grading and filling, and consisted of gravel, brick, fill material, and coal ash waste. The soils encountered in Boring B-8 near the southwest portion of the subject property were representative of the Lewisville Series and were used to obtain background soil chemistry.

Site Hydrogeology

The subject property is located on the Artesian Zone of the Edwards Aquifer at an elevation of approximately 620 to 635 feet above mean sea level. Wells in this area are known to exhibit an artesian effect as a result of hydrostatic pressure in the aquifer. According to well records for wells drilled in the vicinity of the subject property, the top of the Edwards Aquifer in this area is approximately 820 feet bgs. Static water level in wells penetrating the Edwards Aquifer in this area may rise above the ground surface creating a flowing artesian well. Groundwater flow in the Edwards Aquifer is toward the southeast.

Regional groundwater flow in Bexar County is generally to the southeast. Shallow groundwater flow generally follows the local topography, but may be influenced by localized

subsurface conditions. Based on the topography in the vicinity of the subject property, shallow groundwater is expected to flow east toward San Pedro Creek.

During our investigation, shallow groundwater at the subject property was encountered at depths ranging from 3 to 7 feet bgs in the soil borings. Groundwater elevation data collected from the monitoring wells during this assessment indicated the direction of shallow groundwater flow at the subject property is generally to the east. A groundwater contour map of the site showing the depth to groundwater and direction of groundwater flow is illustrated on Plate 4.

Two active Edwards Aquifer water wells are present on the subject property. The two wells, identified as No. 927 and No. 928 are located on the northeastern portion of the property. Well No. 927 was drilled in 1921 and well No. 928 was drilled in 1910. According to well records, these wells penetrate approximately 580 feet into the Edwards Aquifer from approximately 820 to 1400 feet bgs.

Fugro contacted the Edwards Underground Water District (EUWD) regarding the elevation of the groundwater in the Edwards Aquifer. Representatives with the EUWD stated that on February 2, 1995 the average elevation of groundwater in the aquifer was 674.0 feet above mean sea level. Because the elevation of groundwater in the Edwards Aquifer exceeds the ground surface elevation near the water wells on the subject property (630 feet), hydrostatic pressure in wells penetrating the Edwards Aquifer on the subject property would produce a flowing artesian well. The upward flow of groundwater through the wells on the subject property may have contributed to the shallow groundwater encountered at the site.

SOIL AND GROUNDWATER QUALITY CHARACTERIZATION

This section presents results of laboratory analyses for soil and groundwater samples collected during this investigation. All samples were submitted to MBA Laboratories in Houston, Texas for chemical analysis. Chain-of-custody documentation and standard EPA sampling practices were followed at all times during this assessment. Analytical results are summarized in Tables 1 through 3, with original laboratory reports and chain-of-custody forms included in Appendix E.

Soil samples collected from borings B-4, B-6, B-7, and B-8 were analyzed for total petroleum hydrocarbons (TPH) (EPA Method 418.1), and for EPA Priority Pollutant Metals (EPA Methods 6010, 7091, and 7841). The priority pollutant metals include antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc.

Based on the results of the initial analyses, the soil sample collected from boring B-4 was analyzed for Toxicity Characteristic Leaching Procedure (TCLP) Metals using EPA Methods 1311, 6010, and 7470, and was analyzed by gas chromatograph/mass spectrometry (GC/MS) for volatile and semi-volatile organic compounds using EPA Methods 8260 and 8270.

The groundwater samples collected from monitoring wells MW-1, MW-2, and MW-3 were analyzed for TPH. Based on the results of the initial analyses, the groundwater sample from MW-1 was analyzed for EPA Priority Pollutant Metals, and the groundwater sample from MW-3 was analyzed for EPA Priority Pollutant Metals, volatile organic compounds, and semi-volatile organic compounds.

Soil Analytical Results

Soil samples collected from borings B-4, B-6, B-7, and B-8 were analyzed for TPH and EPA Priority Pollutant Metals. Results of the laboratory analyses indicated that the concentration of TPH in the soil sample collected from boring B-4 at a depth of 4-6 feet bgs was 16 milligrams per kilogram (mg/kg). TPH was not detected in any of the other soil samples. The results of the laboratory analyses also indicated that the concentrations of metals in the soil samples collected from borings B-4, B-6, and B-7 were comparable to the concentrations of metals found in the background soil sample collected from boring B-8.

Based on the results of the chemical analyses, the soil sample collected from boring B-4 was analyzed for TCLP metals, volatile organic compounds, and semi-volatile organic compounds. The results of the TCLP analysis identified barium at 0.23 milligrams per liter (mg/L). All other metals in the sample were below laboratory detection limits. The results of the other chemical analyses identified no volatile organic compounds in the sample; however, several semi-volatile organic compounds typically associated with coal combustion products were detected in the sample. A summary of the semi-volatile organic compounds detected in the soil sample is presented in Table 3.

Groundwater Analytical Results

Groundwater samples collected from each of the three monitoring wells were analyzed for TPH. Results of the laboratory analyses indicated that the concentration of TPH in the groundwater sample collected from MW-3 was 1.45 mg/L. TPH was not detected in the groundwater samples collected from MW-1 or MW-2.

Based on the results of the initial chemical analyses and our field observations, the groundwater samples from MW-1 and MW-3 were analyzed for EPA Priority Pollutant Metals. The results of the laboratory analysis identified the 0.006 mg/L of zinc in the sample collected from MW-1 and 0.051 mg/L of zinc in the sample collected from MW-3. Concentrations of all other metals in the two samples were below laboratory detection limits.

The groundwater sample collected from MW-3 was also analyzed for volatile and semi-volatile organic compounds. Results of the laboratory analyses did not identify any volatile organic compounds in the sample. However, several semi-volatile organic compounds typically associated with coal combustion products were detected in the sample. A summary of the semi-volatile organic compounds detected in the groundwater sample is presented in Table 3.

REGULATORY ANALYSIS

Chemical analysis of ground water samples collected from monitoring wells MW-1 and MW-3 indicate that the only priority pollutant metal detected was Zinc. The levels detected are well below the secondary drinking water standard of 5 mg/L. The water standards for metals are presented in Table 3. Volatile organic compounds were not detected in the groundwater sample collected from monitor well MW-3; however, several semi-volatile compounds were detected. The compounds detected are polycyclic aromatic hydrocarbons (PAH) typically associated with coal, coal tar, and coal combustion products. Only one of the compounds detected has an established standard for drinking water (benzo-[a]-pyrene) although standards have been proposed for several PAH compounds (Federal Register, 1992). The results of semi-volatile analyses for water and soil samples and the applicable water quality and clean up standards are presented in Table 3.

The analytical results for the groundwater sample obtained from monitor well MW-3 indicate benzo {a} pyrene is present above the drinking water standard. Since the constituents found in the water sample are the same as those detected in the soil sample collected from boring B-4, a reasonable assumption is that the contaminants detected in the groundwater were leached from the coal ash and associated materials (clinker and unburned coal).

Based on the analytical data, the groundwater beneath the site appears to have been impacted by waste materials deposited on site (a release of constituents to the environment). Even though the deposition may have occurred under a prior owner, the current owner is responsible for (1) ensuring that contaminated water does not migrate off site and (2) restoration of the groundwater quality. Restoration may involve treatment of existing contaminated water and/or removal of the contaminant source. The owner's responsibilities are established under Sections 271-275 of Chapter 361 of the Texas Health and Safety Code.

The TNRCC is the state agency with regulatory oversight for pollution prevention and pollution remediation. The Commission has promulgated rules establishing the requirements for site cleanup. The rules are found in Subchapter S (30 TAC Sections 335.554 - 335.559) of the regulations for Industrial and Municipal Hazardous Waste (30 TAC Section 335). The rules provide the following three alternatives for pollution cleanup and site closure.

- (1) The site may be cleaned up by removal of all waste materials and affected media (soil and groundwater)-Standard No. 1 (Clean Closure).
- (2) The site may be cleaned up by removal of all waste materials and removal of impacted media to the extent that any residual levels of contaminants do not exceed media specific concentrations (MSC) which are protective of human health and the environment-Standard No. 2.
- (3) The migration and exposure to the contaminants may be controlled or remediated by the installation of control measures-Standard No. 3.

Standards 1 and 2 may be self implementing in that the owner/operator may notify the TNRCC of the intent to close the site and the Standard which will be used for closure. A final report must be submitted to TNRCC upon completion of closure, and the TNRCC must accept the report conclusions. Under Standard No. 1, no deed recordation, deed notification or post closure care is required. Under Standard No. 2, deed recordation of the Cleanup Standard is required, but post closure maintenance is generally not required.

Closure under Standard No. 3 requires the owner/operator to accomplish certain investigative actions and submit a report to TNRCC prior to initiating clean up activities. The reports and proposed clean up plan must be approved by TNRCC prior to commencement of remedial activities. The required investigative actions include (1) site assessment report, (2) a baseline risk assessment for the site, and (3) a workplan to implement a selected set of corrective measures or controls. Deed recordation and post closure care are required for closure under Standard No. 3.

The TNRCC has established a unit to work with individuals seeking to undertake voluntary clean up of their sites. Individuals who do not voluntarily clean up their sites could be subject to enforcement action by TNRCC.

FINDINGS AND CONCLUSIONS

Fugro has performed a Phase II Environmental Site Assessment at the SAHA 10 Acre Site located at 1901 South San Marcos Street in San Antonio, Texas. During the investigation, Fugro supervised the drilling of four soil borings on the subject property and the conversion of three of the borings into permanent groundwater monitoring wells. The borings were drilled on the northeastern portion of the subject property around the geotechnical boring in which coal ash and related waste was encountered.

Soil samples collected from borings B-4, B-6, B-7, and B-8 were submitted to an independent laboratory and analyzed for TPH and EPA Priority Pollutant Metals. The samples were selected based on PID readings obtained during the field screening and other physical properties. The soil sample collected from boring B-4 was also analyzed for TCLP Metals, volatile organic compounds, and semi-volatile organic compounds.

Groundwater samples collected from monitoring wells MW-1, MW-2, and MW-3 were analyzed for TPH. The groundwater sample collected from MW-1 was also analyzed for EPA Priority Pollutant Metals, and the groundwater sample collected from MW-3 was analyzed for EPA Priority Pollutant Metals, volatile organic compounds, and semi-volatile organic compounds.

A summary of the findings for the chemical analyses performed during this assessment is presented below.

- Detectable concentrations of TPH were identified in the soil sample collected from boring B-4 at a depth of 4-6 feet bgs. TPH was not detected in the soil samples collected from borings B-6, B-7, and B-8.
- Results of the laboratory analyses indicated that the concentration of metals in the soil samples collected from borings B-4, B-6, and B-7 were comparable to the concentrations of metals found in the background soil sample collected from boring B-8.
- Detectable concentrations of TPH were identified in the groundwater sample collected from monitoring well MW-3. TPH was not detected in the groundwater samples obtained from MW-1 or MW-2.
- Detectable concentrations of several semi-volatile organic compounds were identified in the soil sample collected from boring B-4 and in the groundwater sample collected from monitoring well MW-3. The semi-volatile organic compounds identified in these samples are polycyclic aromatic hydrocarbons typically associated with coal, coal tar, and coal combustion products.

Based on the results of the chemical analyses, it appears that the groundwater beneath the site has been affected by waste materials deposited on the site. Because a release of constituents to the environment has occurred, and even though the deposition may have occurred under a prior owner, the current owner is responsible for (1) ensuring that the contaminated groundwater does not migrate off site, and (2) restoration of the water quality of the groundwater. The owner's responsibilities are established under Sections 271-275 of Chapter 361 of the Texas Health and Safety Code.

The Texas Natural Resource Conservation Commission (TNRCC) is the state agency with regulatory oversight for pollution prevention and pollution remediation. The TNRCC rules establishing the requirements for site cleanup are found in Subchapter S (30 TAC Sections 335.554 - 335.559) of the regulations for Industrial and Municipal Hazardous Waste.

RECOMMENDATIONS

Based on the results of our field investigation, laboratory analytical results, and the regulatory analysis of the results, we recommend the following:

- SAHA report a release of contamination into the groundwater at the site to the TNRCC as required by state law;

- Since it is likely that the high water table observed at the site is due to the old Edwards Aquifer water wells at the site, SAHA should implement the proper and complete plugging of the water wells to reduce the amount of groundwater at the site. Plugging should emphasize the elimination of water which may be leaking from the degraded cement in the annuli of these two water wells;
- Install additional groundwater monitoring wells, sample all wells, and analyze for semi-volatile hydrocarbons to determine the extent and levels of groundwater contamination;
- Install one or more of these wells at the eastern boundary of the property to establish whether groundwater contamination may have migrated off-site;
- If groundwater contamination appears to have migrated off-site, determine if any drainage system exists behind the retaining wall of San Pedro Creek east of the site. If the drainage system discharges into San Pedro Creek, and is such a discharge exists, sample and analyzed the discharge for semi-volatile hydrocarbons;
- Based on the results of the additional sampling, obtain input from SAHA on the future uses and geotechnical effects of the coal ash on the future use of the site, and develop and implement a cost effective closure of the site using Risk Reduction Standards 1, 2, or 3.

LIMITATIONS

This report has been prepared to aid SAHA in assessing the subsurface conditions at the SAHA 10 Acre Site located at 1901 South San Marcos Street in San Antonio, Texas. This report is prepared for the sole benefit of SAHA and may not be relied upon by any other person or entity without the written authorization of Fugro, Environmental, Inc.

The preliminary subsurface evaluation was intended to evaluate general shallow subsurface conditions, and was based on limited and selected sampling locations. Significant variations in the subsurface conditions may be present in areas not sampled. Additional study would be necessary to evaluate the extent and magnitude of the soil and groundwater contamination.

During this Phase II ESA, Fugro relied on information from previous environmental reports and current analytical laboratory data to base our conclusions. Fugro has assumed, where reasonable to do so, that the information provided is true and accurate. If information to the contrary is discovered, our conclusions and recommendations may not be valid.

The conclusions and recommendations describe only the conditions present at the time of our study in the areas that were investigated. The scope of this report is limited to matters expressly covered.