

Report No. 05946-008  
March 18, 2005

Mr. Vince Rorick  
VCP Division, MC-221  
Texas Commission on Environmental Quality  
P. O. Box 13087  
Austin, Texas 78711-3087

Re: **Affected Property Assessment Report**  
**San Antonio Housing Swift Site**  
**1901 South San Marcos Street**  
**San Antonio (Bexar County), Texas**  
**VCP No. 190**

Dear Mr. Rorick:

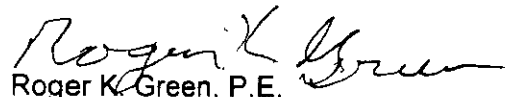
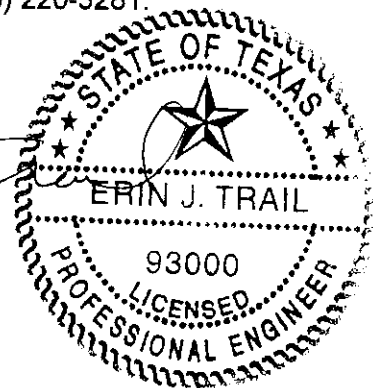
On behalf of the San Antonio Housing Authority, ENSR Corporation is submitting the *Affected Property Assessment Report* for the above referenced site.

If you have any questions about this report, please contact us at (713) 520-9900 or Mr. Oscar Cervantes at (210) 220-3281.

Sincerely,



Erin J. Trail, P.E.  
Project Manager



Roger K. Green, P.E.  
Sr. Project Manager

cc: Oscar Cervantes, SAHA

Soil Assessment

**Affected Property Name(s)/No(s):** SAHA Swift Site/1

Summarize the nature and extent of COCs in soil at the affected property.

COCs present at the site are metals and PAHs. The source of the COCs is coal ash waste buried at the site. The extent of the COCs is limited to the buried coal ash waste. In 1997, a cap was placed over 1 acre of the coal ash. An additional 5,299 cubic yards of coal ash was excavated. Attachment 1B shows the location of the coal ash cap and the locations where coal ash was completely excavated and where coal ash is present below 4 ft bgs.

**Investigation Approach**

Discuss how the surface and subsurface soil assessment requirements for on-site, and if necessary off-site, properties have been satisfied. Include the rationale for the selection of soil field screening and/or sampling locations, including any soil vapor sampling locations, in terms of both the placement of sampling points and the sampling depth. Discuss how the location of the samples provides for the optimum observation of COCs based on the physical and chemical properties of the COCs, migration pathways, the type and location of potential or affected receptors, and on the site-specific geologic conditions. If field screening was conducted and no samples were collected, explain how the field screening results justified the decision to not collect samples. Include a discussion on the data quality objectives in terms of the intended use of the samples and the levels of required performance. Illustrate the sampling locations on the maps in Attachments 5B and 5C.

## Soil Assessment

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The objective of the assessment activities was to advance site closure in accordance with Texas Risk Reduction Standard Number 3, the VCP program, and TRRP. This involved reviewing previous assessment results, advancing borings to assess geologic conditions, collecting and analyzing soil and groundwater samples to characterize the nature and extent of affected media. The activities focused on delineation of the coal ash waste landfill and the extent of impacted soils from the landfill.

Sample locations were located both within and outside of the identified coal ash waste areas. The purpose of the samples within the coal ash waste areas was to define the depth of the coal ash as well as to define the depth of impacts to soil beneath the coal ash. The purpose of the samples outside of identified coal ash waste areas was to define the lateral extent of soil impacts from the coal ash. Soil samples were analyzed for metals, volatile organic compounds (VOCs), and/or semi-volatile organic compounds (SVOCs).

### 1995 Investigation

Borings that were performed in 1995 were advanced with either a hand auger (B-21 to B-24) or a hollow stem auger (B-9 to B-20 and B-25 to B-32). Soil samples from borings advanced with a hollow stem auger were collected using a 2-foot long split spoon sampler that was advanced with the augers. Soils samples were visually screened for impacts. Soil borings were completed to depths ranging from 4 to 8 ft bgs. Soil samples from borings B-21 to B-24 were analyzed for metals, VOCs and SVOCs. Soil samples from borings B-9 to B-11 were collected from the coal ash waste interval and were analyzed for SVOCs. Soil borings B-28 to B-32 were converted to monitoring wells MW-4 to MW-8. These borings were drilled to completion depths ranging from 22 to 27 ft bgs.

### 1997 Soil Samples

Coal ash was excavated in 1997. Confirmation soil samples were taken (S-1 and S-2) to confirm that coal ash impacted soil was removed. These samples were analyzed for metals and SVOCs.

### 1999 Investigation

Borings TH-1 to TH-4 were advanced with a hollow stem auger to a depth of 10 ft bgs in the northern property boundary, near the approximate limits of the area excavated and the capped coal ash. Soil samples from these borings were collected with a split spoon sampler and analyzed for SVOCs. Soil samples were visually screened for coal ash impacts. The depth of soil samples from these borings was based on the known depth of coal ash, as determined during previous investigations and excavation activities.

### 2004 Investigation

Six surficial soil samples (GS-1 to GS-6) were collected from the area surrounding B-22 and analyzed for PAHs. These samples were to fully delineate the extent of soil impacts observed in B-22 at 0.5 ft bgs. Additionally, four surficial samples (GTS-1 to GTS-4) were collected from four locations on the site and analyzed for pH and organic carbon.

## Investigation Methods

Identify and describe the sampling and field screening method(s) used (drilling, hand auger, push probe, excavation, etc), the method of sample collection and preservation, and sample handling procedures. Discuss the site-specific reasons for choosing the method(s) and explain any atypical procedures or any problems encountered. State whether samples were collected using a documented standard operating procedure.

Borings were advanced with a hand auger or a hollow stem auger. Soil samples collected from borings were collected continuously via a 2 foot split spoon. Soil sampling intervals were determined on visual observations. Surficial samples were collected by hand with a trowel.

A portion of each soil sample was placed in a clean, laboratory prepared container and labeled with unique identification numbers. Following collection, the soil sample containers were placed on ice in a cooler and transported to ENSR's contract laboratory under chain-of-custody control for analysis.

Prior to sampling, and between each sampling location, the split spoon and other sampling equipment was washed with an Alconox soap solution, rinsed with potable water, and rinsed with distilled water.

Identify and describe the field screening and/or sampling method(s) used, the method of sample collection and

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preservation, and sample handling procedures. Discuss the site-specific reasons for choosing the sample collection and handling method(s) and explain any atypical sampling procedures or any problems encountered. Include a discussion of the data quality objectives for the project. If a dedicated sampling device was not used for each sample, describe the decontamination procedures.

Soil sampling intervals were determined on visual observations. Surficial samples were collected by hand with a trowel. Surficial sample locations were based from previous investigation data.

A portion of each soil sample was placed in a clean, laboratory prepared container and labeled with unique identification numbers. Following collection, the soil sample containers were placed on ice in a cooler and transported to ENSR's contract laboratory under chain-of-custody control for analysis.

Prior to sampling, and between each sampling location, the split spoon and other sampling equipment was washed with an Alconox soap solution, rinsed with potable water, and rinsed with distilled water.

## Soil and Soil Vapor Field QA/QC

Date(s) of field work events to which these answers apply: January 1995 to August 2004

If other field events or sampling/screening methods require different answers, repeat the section or question and specify the date(s) of the event or the type of sampling/screening.

Was the field measurement equipment properly calibrated?  Yes  No

Describe the types of equipment used and the frequency and procedures for calibration.

No equipment was used to screen samples during soil sample collection

Were samples preserved in the field in accordance with EPA SW-846 or other appropriate methods?

Yes  No

If samples were not preserved, provide justification for no preservation.

Is the field logbook available upon request?  Yes  No

If no, provide justification.

Soil boring logs were used to record site sampling activities.

## Nature and Extent

Was the lateral extent of COCs in soil delineated to the residential assessment levels?  Yes  No

If no, explain why not:

Is NAPL present?  Yes, measured  Yes, suspected based on dissolved concentrations  
 No, and not suspected based on dissolved concentrations

If yes, and abatement measures have been conducted, provide details in the Chronology.

Have COCs migrated off-site at concentrations greater than residential assessment levels?  Yes  No

If yes, were COCs on all off-site affected properties delineated to the residential assessment level?  
 Yes  No. If no, explain:

Discuss any modifications made to the COC extent assessment when existing physical controls will be used in a Remedy Standard B response action (see §350.51(a)).

Not applicable

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Were theoretical soil vapor calculations performed?  Yes  No

If yes, include calculations and results in Appendix 4 and clearly label the information to relate to this topic.

## Aesthetics

Do any of the COCs present an aesthetics problem or violate §350.74(i) criteria? If yes, describe and indicate if COC concentrations will need to be addressed to below the human health and ecological PCLs.

No.

For each COC where the applicable soil PCL is greater than 10,000 mg/kg and affected property concentrations exceed 10,000 mg/kg, is there any evidence of the presence of mobile NAPL?

Yes  No

Provide the basis for this conclusion.

# Soil Assessment

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## Soil Assessment Levels

Use this page to help identify the applicable assessment levels for each COC in surface and subsurface soils. If the affected property passed the Tier 1 Ecological Exclusion Criteria, you do not need to determine ecological PCLs. **This page does not need to be submitted with your report.**

**COC:** Not Applicable

(determine the assessment level for each COC)

### Assessment for Horizontal Extent<sup>1</sup>

Surface soil exposure pathways		Subsurface soil exposure pathways	
Lowest of: <sup>2</sup>	PCL (mg/kg)	Lowest of: <sup>2</sup>	PCL (mg/kg)
Tier 1 <sup>Tot</sup> Soil <sub>Comb</sub> (residential)		Tier 1 <sup>Air</sup> Soil <sub>Inh-v</sub> (residential),	
Tier 1 <sup>GW</sup> Soil <sup>3</sup>		Tier 1 <sup>GW</sup> Soil <sup>3</sup>	
or Tier 2 <sup>GW</sup> Soil <sup>4</sup>		or Tier 2 <sup>GW</sup> Soil <sup>3</sup>	
or Tier 3 <sup>GW</sup> Soil <sup>3</sup>		or Tier 3 <sup>GW</sup> Soil <sup>3</sup>	
Tier 2 Ecological PCL (0 to 0.5 feet)		Other pathway	
or Tier 3 Ecological PCL (0 to 0.5 feet)			
Tier 2 Ecological PCL (0.5 to 5 feet)			
or Tier 3 Ecological PCL (0.5 to 5 feet)			
Other pathway			

### Assessment for Vertical Extent<sup>1</sup> Surface and Subsurface Soils<sup>2</sup>

	Concentration (mg/kg) or document applicable basis:
Higher of MQL/SQL or background, or	
<sup>GW</sup> Soil if groundwater has been assessed, or	
Evidence of gw protectiveness (§350.75(i)(7)(C)); or	
If groundwater is impacted, option to declare soil PCLE zone	

### Critical PCLs for Focused On-Site Horizontal Assessment (§350.51(c))<sup>4</sup>

Surface soil				Subsurface soil			
Residential (0 - 15 ft)		Commercial/Industrial (0 - 5 ft)		Residential (>15 ft)		Commercial/Industrial (>5 ft)	
Lowest of: <sup>2</sup>	PCL (mg/kg)	Lowest of: <sup>2</sup>	PCL (mg/kg)	Lowest of: <sup>2</sup>	PCL (mg/kg)	Lowest of: <sup>2</sup>	PCL (mg/kg)
Tier 1 <sup>Tot</sup> Soil <sub>Comb</sub>		Tier 1 <sup>Tot</sup> Soil <sub>Comb</sub>		Tier 1 <sup>Air</sup> Soil <sub>Inh-v</sub>		Tier 1 <sup>Air</sup> Soil <sub>Inh-v</sub>	
or Tier 2 <sup>Tot</sup> Soil <sub>Comb</sub>		or Tier 2 <sup>Tot</sup> Soil <sub>Comb</sub>		or Tier 2 <sup>Air</sup> Soil <sub>Inh-v</sub>		or Tier 2 <sup>Air</sup> Soil <sub>Inh-v</sub>	
or Tier 3 <sup>Tot</sup> Soil <sub>Comb</sub>		or Tier 3 <sup>Tot</sup> Soil <sub>Comb</sub>		or Tier 3 <sup>Air</sup> Soil <sub>Inh-v</sub>		or Tier 3 <sup>Air</sup> Soil <sub>Inh-v</sub>	
Tier 1 <sup>GW</sup> Soil <sup>3</sup>		Tier 1 <sup>GW</sup> Soil		Tier 1 <sup>GW</sup> Soil <sup>3</sup>		Tier 1 <sup>GW</sup> Soil <sup>3</sup>	
or Tier 2 <sup>GW</sup> Soil <sup>3</sup>		or Tier 2 <sup>GW</sup> Soil		or Tier 2 <sup>GW</sup> Soil <sup>3</sup>		or Tier 2 <sup>GW</sup> Soil <sup>3</sup>	
or Tier 3 <sup>GW</sup> Soil <sup>3</sup>		or Tier 3 <sup>GW</sup> Soil		or Tier 3 <sup>GW</sup> Soil <sup>3</sup>		or Tier 3 <sup>GW</sup> Soil <sup>3</sup>	
Tier 2 Ecological PCL (0 to 0.5 feet)		Tier 2 Ecological PCL (0 to 0.5 feet)		Other pathway		Other pathway	
or Tier 3 Ecological PCL (0 to 0.5 feet)		or Tier 3 Ecological PCL (0 to 0.5 feet)					
Tier 2 Ecological PCL (0.5 to 5 feet)		Tier 2 Ecological PCL (0.5 to 5 feet)					
or Tier 3 Ecological PCL (0.5 to 5 feet)		or Tier 3 Ecological PCL (0.5 to 5 feet)					
Other pathway		Other (specify)					

<sup>1</sup> Always use this section to identify assessment levels.

<sup>2</sup> All delineation requirements also include the following:

- The higher of background or the MQL/SQL if greater than the others.
- The PCL for any other applicable exposure pathway

<sup>3</sup> <sup>GW</sup>Soil = <sup>GW</sup>Soil<sub>Inh</sub>, <sup>GW</sup>Soil<sub>Class3</sub>, <sup>Air</sup>GW-Soil<sub>Inh-v</sub>, and <sup>GW</sup>Soil for secondary MCLs, as applicable

<sup>4</sup> Use this section only if you did a focused on-site assessment of soils to critical PCLs (§350.51(c)). You must still determine the residential assessment level using the first table and ultimately delineate to the residential assessment level.

# Soil Assessment

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## Assessment Levels

Complete these tables to indicate the assessment level used to delineate the affected property for each COC, both on-site and, if applicable, off-site. Include maps in Attachment 2A illustrating the affected property defined by the assessment level. If a Tier 2 or 3 <sup>GW</sup>Soil PCL was used as an assessment level, complete Date of the Tier 1 PCL tables used in the determination of assessment levels: March 31, 2004

## Surface Soil

Specify the **horizontal** assessment level used to characterize each COC in surface soil. Refer to the table on the previous page for information on determining assessment levels.

COC	Source area size (acres)	Soil <sub>comb</sub> PCL (mg/kg)	Soil PCL		Ecological PCL <sup>1</sup> (0 to 0.5 ft)		Ecological PCL <sup>1</sup> (0.5 to 5 ft)		Other Pathway PCL <sup>1</sup>		Horizontal assessment level concentration <sup>2</sup> (mg/kg)	Exposure pathway <sup>3</sup>	Maximum Surface Soil Concentration (mg/kg)
			Soil <sub>inh-v</sub> PCL (mg/kg)	Soil PCL (mg/kg)	Tier	(mg/kg)	Tier	(mg/kg)	Tier	(mg/kg)			
Benzo(a)pyrene	0.5	2,3716	7,64032	1							2,3716	Tot Soil <sub>comb</sub>	34
Benzo(b)fluoranthene	0.5	23,702	134,659	1							23,702	Tot Soil <sub>comb</sub>	31
Beryllium	0.5	249	5520	2							249	Tot Soil <sub>comb</sub>	4.17
Lead	0.5	1600	179	2							179	GW Soil <sub>inh</sub>	420
Zinc	0.5	245280	58414	2							58414	GW Soil <sub>inh</sub>	8554

## Subsurface Soil

Specify the **horizontal** assessment level used to characterize each COC in subsurface soil. Refer to the table on the previous page for information on determining assessment levels.

COC	Source area size (acres)	Soil <sub>inh-v</sub> PCL (mg/kg)	Soil PCL		Other Pathway PCL <sup>1</sup>		Horizontal assessment level concentration <sup>1</sup> (mg/kg)	Exposure pathway <sup>3</sup>	Maximum Subsurface Soil Concentration (mg/kg)
			Soil PCL (mg/kg)	Tier	(mg/kg)	Tier			
Benzo(a)pyrene	0.5		7,64032	1			7,64032	GW Soil <sub>inh</sub>	0.463
Benzo(b)fluoranthene	0.5		134,659	1			134,659	GW Soil <sub>inh</sub>	0.34
Beryllium	0.5		5520	2			5520	GW Soil <sub>inh</sub>	2.22
Lead	0.5		179	2			179	GW Soil <sub>inh</sub>	118
Zinc	0.5		58414	2			58414	GW Soil <sub>inh</sub>	150

<sup>1</sup> Specify this PCL when applicable.

<sup>2</sup> If evidence of groundwater protectiveness is used to determine the vertical assessment level (§350.75(f)(7)(C)), attach supporting documentation to this worksheet.

<sup>3</sup> Identify the exposure pathway for which the horizontal assessment level was derived. If background or MQL concentrations exceeded the PCL, insert background or MQL as appropriate.

Assessment Levels

**Surface and Subsurface Soil**

Specify the **vertical** assessment level used to characterize each COC in surface and subsurface soil.

COC	Vertical Assessment Level and basis for assessment level determination <sup>1</sup>						Maximum or representative soil concentration <sup>2</sup> (mg/kg)	
	MQL <sup>3</sup> (mg/kg)	SQL <sup>4</sup> (mg/kg)	<sup>GW</sup> Soil <sup>5</sup>			Evidence of gw protectiveness <sup>6</sup> (\$350.75(i)(7)(C))		Declare entire soil column PCLE zone <sup>7</sup>
			(mg/kg)	Tier	Source area size (acres)			
Benzo(a)pyrene			7.64032	1	0.5		M 38	
Benzo(b)fluoranthene			134.659	1	0.5		M 34	
Beryllium			5520	2	0.5		M 4.2	
Lead		11.9	179	2	0.5		M 420	
Zinc			58414	2	0.5		M 8554	

<sup>1</sup> Check the appropriate box for the basis of the vertical assessment level and input the assessment level concentration and associated information, when appropriate, for each COC.

<sup>2</sup> Take into account both surface soil and subsurface soil.

<sup>3</sup> If the MQL was used as the assessment level, specify the concentration of the MQL.

<sup>4</sup> If the SQL was used as the assessment level, specify the concentration of the SQL and provide supporting documentation on the reasons for using the SQL in Appendix 5.

<sup>5</sup> If the <sup>GW</sup>Soil PCL was used as the assessment level, provide the concentration, the tier under which the PCL was derived, and the source area size.

<sup>6</sup> Check this box if the person chose to use evidence of groundwater protectiveness instead of determining an assessment level. Documentation of this evidence must be attached to this page.

<sup>7</sup> Check this box if the person chose to declare the entire soil column a PCLE zone instead of using an assessment level.

### Non-Default Affected Property Parameters

Complete the next two tables if the values for any parameters used to calculate PCLs are site-specific and/or different than those listed in rule or guidance. **All non-default parameters must be supported by documentation and explanation. Values listed are not valid unless fully substantiated.** Note that site-specific values cannot be used to determine Tier 1 PCLs. Tier 2 calculations must use TNRCC-provided equations. Include the supporting documentation and any Tier 3 calculations and parameters not addressed here in Appendix 4.

### COC-Specific Affected Property Parameters

COC	Cross sectional area of air emissions source A (m <sup>2</sup> )		Length of air emissions source parallel to wind direction L (m)	
	Surface Soil	Subsurface Soil	Surface Soil	Subsurface Soil

### Affected Property Parameters

Term	Affected Property Parameters	Tier 1 Default	Value Used for Tier 2/3 <sup>1</sup>
p <sub>s</sub>	Particle density (g/cm <sup>3</sup> )	2.65	
RCF	Ratio of concentration in roots to concentration in soil pore water (mg/kg)/(µg/ml)	$(10^{((0.77 \times \log Kow) - 1.52)} + 0.82) / 0.222$	
τ	Exposure interval(s) <sup>2</sup>	9.5 x 10 <sup>8</sup>	
Soil pH	Measured soil pH	NA	7.95
σ <sub>y</sub>	Transverse air dispersion coefficient (m) (dispersion estimates based on the Pasquill-Gifford system adopted by U.S. Public Health Service, Turner, 1970, EPA Workbook of Atmospheric Dispersion Estimates; see Cooper & Alley, 1994, Air Pollution Control)	NA	
σ <sub>z</sub>	Vertical air dispersion coefficient (m) (dispersion estimates based on the Pasquill-Gifford system adopted by U.S. Public Health Service, Turner, 1970, EPA Workbook of Atmospheric Dispersion Estimates; see Cooper & Alley, 1994, Air Pollution Control)	NA	
Q	Air volumetric flow through mixing zone (m <sup>3</sup> /s)	NA	
α <sub>v</sub>	Vertical groundwater dispersivity = 0.0056 x W <sub>s</sub> (m)	NA	

<sup>1</sup> Provide detailed information in Appendix 4 how each parameter was determined. Values are not valid unless fully substantiated.  
<sup>2</sup> The value of 1.0 x 10<sup>9</sup> listed in the rule was an error.