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Phase II Environmental Site Assessment

Proposed Airport Exxon

3505 N. Liberty Street

Forsyth County Tax Block 3191, Lot 004B

Winston Salem, NC

GeoSci Job 01.246

Prepared by
Geoscience and Technology, P.A.
for
Becky and Jimmy Flowers
and
The City of Winston-Salem Department
of Enterprise Community Development
March 2002

TABLE OF CONTENTS

	Page
Table of Contents.....	i
List of Tables.....	ii
List of Figures.....	ii
List of Appendices.....	ii
Certification.....	iii
1.0 Background.....	1
2.0 Investigation.....	1
2.1 Soil and Groundwater Sampling.....	2
3.0 Sampling Data.....	3
4.0 Conclusions.....	4
5.0 Recommendations.....	4
6.0 Data Usability.....	4
7.0 Limitations of the Investigation.....	5

Tables

Figures

Appendices

LIST OF TABLES

<u>Table</u>	<u>Description</u>
1.	Sampling Locations and Laboratory Analytical Methods
2.	Laboratory Data Summary

LIST OF FIGURES

<u>Figure</u>	<u>Description</u>
1	Site Location
2	Site Identification Map – Tax Block Map Aerial Photo
3	Sample Locations

LIST OF APPENDICES

<u>Appendix</u>	<u>Description</u>
1.	Boring Logs
2.	Laboratory Reports and Chain-of-Custody Documentation

1.0 BACKGROUND

The project property is currently owned by Becky and Jimmy Flowers and is designated as Forsyth County Tax Block 3191, Lot 004B. It is located approximately 200 feet north of the intersection of Fairchild Road and N. Liberty Street (east side of N. Liberty Street), Winston-Salem, NC. Please see Figures 1 and 2 for site location maps. The historical City Business directories indicated that the property was undeveloped until 1989. Several auto repair and tire supply companies occupied the subject site from 1989-1993.

Evidence of potential releases was discovered during a Phase I Environmental Site Assessment conducted for the City of Winston-Salem in May 2000 by Geoscience and Technology, P.A. (GeoSci). At the time of the investigation, the site contained an industrial-type metal frame building that was moved to the site in 1989 and the existing tenant operated a similar auto repair business. The building has now been demolished and removed from the site in preparation for the redevelopment project. The Phase I investigation included site reconnaissance for both natural and induced hazards, an examination of current and historical land use, and a review of state and federal regulatory databases. Information derived from a site walkover and interviews with regulatory officials and the current owner indicated evidence of used oil and possibly solvent storage at the site. Improper handling of waste fuel products, most notably used oil, was evident at the site. Soil staining, likely associated with these types of materials, was identified in several locations. On site solid waste observed during the site inspection included used tires, spare car parts, bottles, cans, wrappers, and an air conditioner casing.

2.0 INVESTIGATION

The Phase II ESA project was designed to further investigate the areas where evidence of potential releases were identified in the Phase I ESA. The investigation was conducted according to the October 8, 2001 Quality Assurance Project Plan for the Phase II Environmental Site Assessment project, approved November 13, 2001. Both definitive (laboratory analyses) and screening data (OVA) were gathered in the investigation. Sample locations are shown in Figure 3.

2.1 Soil and Groundwater Sampling

Soil samples were collected via direct push technology with a Simco 2400 combination auger/direct push rig owned and operated by Geoscience & Technology, P.A. Direct push collected soil samples were retrieved in new dedicated acetate sample tubes four feet in length and divided into shorter sections. Non-dedicated soil sampling equipment, e.g. hand augers, trowels, was decontaminated before and after use at each sampling interval. Decontamination procedures were performed on the drilling rig and rods before and after use at each boring. Equipment was decontaminated with a high-pressure steam cleaner.

During sample handling, the collector wore a new pair of disposable vinyl gloves to minimize potential cross-contamination. Samples were placed in sealed ziplock bags for screening via OVA. Following screening, those samples selected for laboratory analysis were placed in clean 120 ml soil jars with teflon lined lids and placed on ice in a cooler. Each sample was labeled with a waterproof marker, including sample identification, date, time, analytical method, and sampler name. Each sample was recorded on a chain-of-custody document which accompanied the samples from the field to the laboratory. Sampling procedures, laboratory analytical methods, and chain-of-custody procedures used for this project were in accordance with USEPA's Region 4 Science and Ecosystem Support Division (SESD) Enforcement and Investigations Branch (EIB) Standard Operating Procedure and Quality Assurance Manual (SOPQAM), May 1996.

Samples were transported to Research & Analytical Laboratories, Kernersville, North Carolina for laboratory analysis. The soil samples were analyzed by EPA Method 8260B for volatile organics; EPA Method 8270C for semi-volatile organics; EPA Method 3050B for total RCRA metals – arsenic, barium, cadmium, chromium, lead, selenium, and silver. These methods were selected based on the NCDENR Superfund Section Inactive Hazardous Sites Branch 1997 Guidelines for Assessment and Cleanup. All methods are from SW846.

Continuous sampling was conducted at each location until there was no screening evidence of contamination, auger refusal was reached, or to the top of the shallow aquifer, whichever came first. A minimum of one soil sample per potential release area was selected for laboratory analyses. Soil samples selected for laboratory analysis were chosen on the basis of elevated OVA readings, visible staining and/or perceived vertical position relative to the water table at the time of sampling. Soil boring total depths ranged from 7 to 18 feet below land surface. Boring logs including soil profile descriptions are provided in Appendix 1.

Groundwater was encountered at approximately 9 feet below land surface at Boring P5. Boring P5 was extended to 18 feet and completed as a temporary monitoring well TW-1. Groundwater samples were collected from TW-1 and analyzed for the same parameters as the soil samples, by applicable groundwater methods.

3.0 SAMPLING DATA

Soil samples were obtained from four locations at the subject site where evidence of a release had previously been identified. Groundwater was encountered at one soil sampling location and a temporary monitor well (TW-1) was installed and sampled. Sampling locations are shown on Figure 3. Sample locations and laboratory analytical methods are summarized in Table 1. Soil and groundwater sampling data are summarized in Table 2. Soil boring data are provided for each sample location in Appendix 1. Laboratory reports and chain-of-custody documentation are provided in Appendix 2.

Volatile organic compounds and semi-volatile organic compounds were reported as BQL (below laboratory quantitation limits) for each of the soil and groundwater samples submitted for analyses. Total metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) were reported to be below NCDENR soil remediation goals for every sampling location except for sample P1/7. Sample location P1 was associated with a small area of visible soil staining associated with apparent spillage from used oil drums. The sample was collected at a depth of seven feet, immediately above probe refusal at eight feet. Sample P1/7 was reported to contain 16 parts per million arsenic, which is above the NCDENR soil remediation goal of 4.6 parts per million. No other metals were reported above NCDENR soil remediation goals for sample P1/7.

Arsenic was not present above the laboratory detection limit in the other soil samples analyzed, nor was it detected in the groundwater sample collected from the temporary well (TW-1) installed at soil boring location P-5. Total chromium and total lead were both reported above their respective NCDENR groundwater remediation goals for the groundwater sample collected from TW-1.

4.0 CONCLUSIONS

No evidence of impact to soil or groundwater by volatile organic compounds and semi-volatile organic compounds was found in the Phase II investigation, based on laboratory reports BQL (below laboratory quantitation limits) for each of the soil and groundwater samples submitted for analyses. The sampling results do suggest, however, that there may have been some impact to the soil and groundwater from heavy metals potentially associated with spills of used oil suspected to have occurred on the site. A total arsenic concentration of 16 parts per million, which is greater than the NCDENR soil remediation goal of 4.6 parts per million, was reported for the soil sample collected from location P1, where visible oil-staining was present in the soil boring. The area of visible soil staining was approximately 3 feet by 6 feet wide at the surface. With a depth of 8 feet to probe refusal, the volume of potentially impacted soil can be estimated to be approximately 19 yd³ (3 feet X 6 feet X 8 feet). The groundwater sample collected from

TW-1 (P-5 location) was reported to contain total chromium and total lead above their respective NCDENR groundwater remediation goals.

5.0 RECOMMENDATIONS

Future development activities for the proposed Airport Exxon property need to include either removal or placing an impermeable cover (such as pavement or building) over the oil stained soils in the area of P-1, since the sample P-1/7 exceeded the NCDENR soil remediation goal for arsenic. The total arsenic concentrations was less than 10 times the TCLP limit and generally would not be considered likely to exceed the TCLP limit. P-1 soils should be resampled and analyzed for TCLP arsenic prior to excavation, however, to confirm that they do not exceed the TCLP hazardous waste limit. Groundwater use on the site should be restricted based on the total chromium and lead concentrations that exceed the NCDENR groundwater remediation goals in TW-1.

6.0 DATA USABILITY

The primary objective of the report is to provide information necessary to proceed with the development of a Brownfields Agreement for redevelopment of the property by the property owner. The redevelopment of the site is also desired by the City of Winston-Salem Enterprise Community Development Department as part of the targeted area for the City's USEPA Brownfields Pilot Study Grant.

The recipients of the report are:

1. Mrs. Becky Flowers and Mr. Jimmy Flowers, property owners and potential developer;
2. Derwick L. Paige, Director, City of Winston-Salem Enterprise Community Development Department, and;
3. Mr. Tony Duque, NCDENR Division of Waste Management, Brownfields Project Manager.

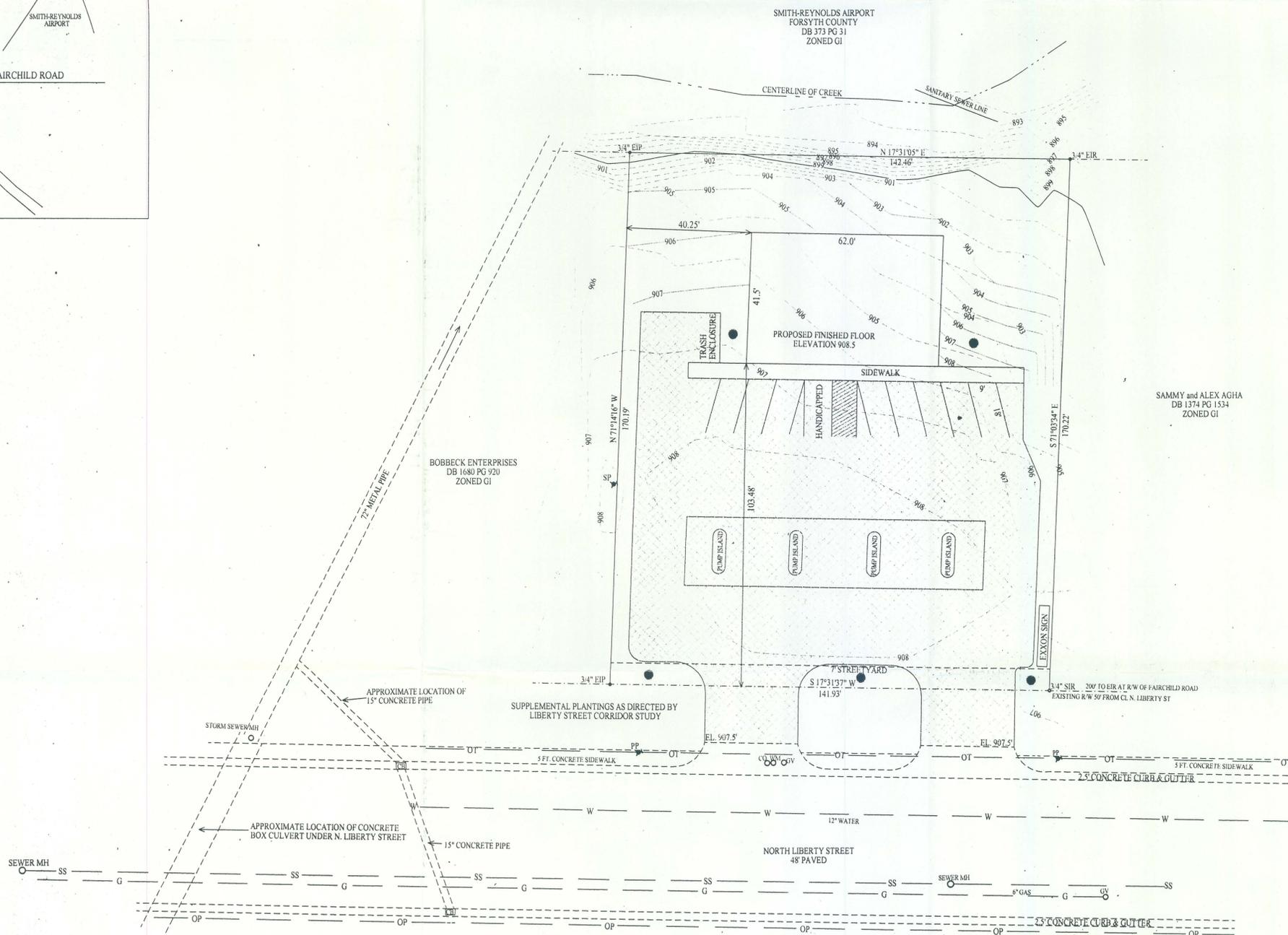
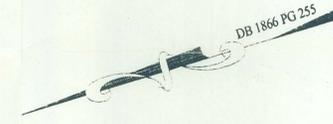
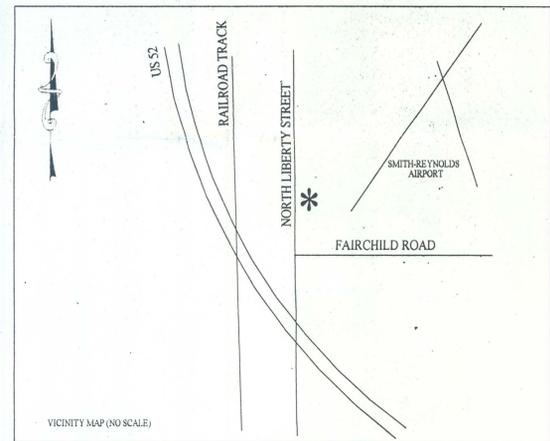
7.0 LIMITATIONS OF THE INVESTIGATION

Due to the limited nature of the investigation, GeoSci cannot warrant that all areas within the subject site are of the same quality as that inferred from conditions observed at the surface, nor that future conditions (i.e., after the period in which the assessment was performed) will remain the same as those observed during the performance of this assessment. In the event additional environmental sampling is performed, either by GeoSci or by others, GeoSci reserves the right to revise its opinion as to the presence and scope of environmental conditions at the subject sites. In addition, documents pertaining to the investigation may not have been available at the time of the writing of this report. GeoSci reserves the right to revise its opinion as to the presence of environmental hazards upon review of any additional information obtained. Conditions noted at the site represent observations for November 27, 2001.

Site Name: Proposed Airport Exxon
Site Location: 3305 N. Liberty Street
Winston-Salem, NC

Revision Number: 1
Revision Date: March 15, 2002
Page 5 of 5

This report was prepared for the sole use of Becky and Jimmy Flowers and the City Of Winston-Salem Enterprise Community Development Department. Use of the report or data from this assessment by other third parties is at their sole risk; GeoSci disclaims any liability for such third party use or reliance.



ZONING	
EXISTING ZONING:	GI
PROPOSED ZONING:	LB-S
TYPE OF REVIEW REQUESTED:	Planning Board Review

OFF-STREET PARKING	
PROPOSED USES:	Convenience Store
PARKING CALCULATION:	1 SPACE/ 200 SF GFA
REQUIRED PARKING:	13 SPACES
PARKING PROVIDED:	17 SPACES
GFA= Square Feet of Gross Floor Area	

SITE SIZE AND COVERAGES	
TOTAL ACREAGE:	0.56 ACRES (24195 SQ FT)
SITE COVERAGES:	
BUILDING TO LAND	10.6%
PAVEMENT TO LAND	52.8%
OPEN SPACE	36.6%

OFF-STREET LOADING	
REQUIRED LOADING/UNLOADING SPACES:	0
LOADING/UNLOADING SPACES PROVIDED:	0
SIZE:	

BUFFERYARDS	
ADJOINING ZONING:	GI
TYPE REQUIRED:	NONE
WIDTH PROVIDED:	5.5 FT
FENCE OPTION:	NO

STREETYARD	
WIDTH:	7 FT. PER UNIFIED DEVELOPMENT ORDINANCES 3-4.3(A),3(b)
PLANTINGS:	AS PER UNIFIED DEVELOPMENT ORDINANCES 3-4.3B

INFRASTRUCTURE	
Water:	X Public Private
Sewer:	X Public Private
Streets:	X Public Private

SITE DATA	
SITE ADDRESS:	3309 NORTH LIBERTY STREET
DEED REFERENCE:	DB 1866 PG 255
TAX MAP NUMBER:	636866
TAX BLOCK:	3191 LOT: 4B
EXISTING ZONING:	GI
PROPOSED ZONING:	LB-S
TOTAL SITE AREA:	0.56 ACRES(24195 SQ FT)
ZONING DATA FOR LB-S CLASSIFICATION:	
MINIMUM LOT SIZE:	10,000 SQ FT
MINIMUM LOT WIDTH:	100 FT
MINIMUM SETBACK:	
FRONT:	20 FT
REAR:	5 FT
INTERIOR SIDE:	0.5/12 FT
STREET:	20 FT
MAXIMUM IMPERVIOUS SURFACE COVER:	75%
MAXIMUM HEIGHT:	40 FT

- LEGEND**
- EIP= EXISTING IRON PIPE
 - EIR=EXISTING IRON ROD
 - SIR=SET IRON ROD
 - GV=GAS VALVE
 - WV=WATER VALVE
 - MH=MANHOLE
 - CO=SANITARY SEWER CLEANOUT
 - PP=POWER POLE
 - SP=POWER SERVICE POLE
 - G=UNDERGROUND GAS LINE
 - W=UNDERGROUND WATER LINE
 - SS=UNDERGROUND SANITARY SEWER LINE
 - OP=OVERHEAD POWER LINES
 - OT=OVERHEAD TELEPHONE LINES
 - 908---=EXISTING CONTOUR LINES
 - 907---=PROPOSED CONTOUR LINES
 - = 8 FT. DECIDUOUS TREE

- NOTES:**
- ALL ELEVATIONS ARE REFERENCED TO CITY OF WINSTON-SALEM DATUM
 - CONTRACTOR TO VERIFY DEPTH AND LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. ANY VARIANCE FROM PLANS SHOULD BE REPORTED TO THE PROJECT ENGINEER.
 - NO SUBSURFACE INVESTIGATION WAS PERFORMED
 - ALL SUBSURFACE UTILITIES ARE OF APPROXIMATE LOCATION.
 - THIS PROPERTY IS NOT LOCATED IN A WATERSHED.
 - NO NCGS HORIZONTAL CONTROL FOUND WITHIN 2000 FT OF SITE.
 - AREA DETERMINED BY COORDINATE METHOD
 - ALL CONSTRUCTION TO BE TO THE STANDARDS AND SPECIFICATIONS OF THE TOWN OF WINSTON-SALEM AND TO THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.
 - FINISHED FLOOR ELEVATION AND PROPOSED CONTOURS SUBJECT TO THE AVAILABILITY OF SUITABLE FILL MATERIAL AND MAY BE ADJUSTED AT THE DISCRETION OF THE PROJECT ENGINEER.
 - THIS PROPERTY IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA AS DETERMINED BY THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.
 - PROPOSED CONTOURS ARE DESIGNED TO DISTRIBUTE STORM RUNOFF TO EXISTING DRAINAGE STRUCTURES ALONG NORTH LIBERTY STREET AND THE GRASSED AREAS ADJACENT TO PAVEMENT AND BUILDING.

I, S.H. AUTRY, certify that this plat was drawn under my supervision from an actual survey made under my supervision; that the ratio of precision as calculated is 1:10,000. Witness my original signature, registration number and seal this 5th day of APRIL, A.D., 2000.

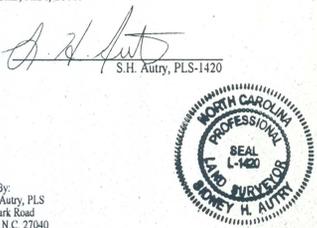


Figure 2

SITE PLAN for AIRPORT EXXON	
OWNERS: Becky and Jimmy Flowers 804 Westbourne Grv Colfax, NC 27235	North Liberty Street Winston-Salem, NC Forsyth County Tax Map 636866 Block 3191 Lot 4B
REVISED: 4-8-2000 5-2-2000	
SCALE 1IN.=20FT.	
DATE SURVEYED: MARCH 18, 2000	
PROJECT # FOR00104	

0400-00-024