MAY 2 6 2008

ENVIRONMENTAL SITE ASSESSMENT REPORT

LOCATION:

Residential Area Located
West of the Former Gulf State Creosoting Facility
Forrest County
Hattiesburg, Mississippi

PREPARED FOR:

City of Hattiesburg
212 West Front Street
Hattiesburg, Mississippi 39401

Prepared by:

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1.0 INTORDUCTION

APEX Environmental Consultants (APEX) was contracted by the City of Hattiesburg, Mississippi in January 2008 to determine if the residential area, located directly across the Rail Road Tracks from the former Gulf States Creosoting facility, contains soils and groundwater contamination from Creosote.

The scope of this investigation was to take a "snap shot" look at soil and ground water in the subject residential area. The purpose of this assessment was not to perform an exhausted delineation of the subject area, but to gather enough data to determine if creosote had impacted an area other than what had been documented in conjunction with the Mississippi Department of Environmental Quality (MDEQ).

2.0 SITE DESCRIPTION AND BACKGROUND SUMMARY

2.1 Location and Description

The subject property is located west of the former Gulf States Creosoting facility in Hattiesburg, Mississippi. A site vicinity map (Topo Map) is presented as Figure 1. A site layout map (Aerial Photo) is presented as Figure 2.

2.2 Background

The area of concern is located near the former Gulf States Creosoting site, a former wood treating plant that operated from the early 1920's until the late 1960's. Since 1996, Kerr-McGee Chemical (KMC) has conducted extensive investigations to determine the limit of affected media at the site. Through the completion of this investigative process, referred to in both state and federal guidance as Remedial Investigation, the vertical and horizontal extent of the affected media have been delineated under the direction and review of the Mississippi Department Environmental Quality (MDEQ) Office of Pollution Control Uncontrolled Sites Section.

Upon completion of the Remedial Investigation, the MDEQ required the following remedial action:

1. Former Fill Area
    a. Install sheet-piling wall along the Gordon Creek bank to eliminate seepage in to the creek.
    b. Install monitoring and recovery well along the wall to monitor and recover any free product that may collect.
    c. Install concrete culvert from West Pine Street to creek; cover the area with a liner; and plant trees to prevent mounding of groundwater along the sheet-piling wall.
2. Former Process Area
    a. Remove creosote contaminated soil form the wooden substructure and the concrete sump area.
    b. Backfill with compacted clay fill material.
    c. Regrade the surface and cap the area with a liner and asphalt.
3. Southern Railroad Track Area
    a. Remove creosote contaminated sediment and soils from within and beneath the drainage ditch.
    b. Depending on the effects on the integrity of the railroad tracks, the soils will either be capped or removed.
4. Northeast Ditch from Scooba Street to Katie Street
    a. Remove contaminated sediment and soils.
    b. Install a liner and bed in the ditch.
    c. Install culverts and surface drains.
    d. Backfill around culverts with clean soils.

The Environmental Consultant contracted by KMC, in agreement with the MDEQ, determined the only area west of the Railroad Tracks impacted by Gulf States Creosoting site was the

Northeast Ditch which was the site's storm water runoff pathway. This area was identified as containing sediment and groundwater contamination and was addressed in the MDEQ required remedial action. In addition to the groundwater near the Northeast Ditch, the only other impacted area was determined to be the groundwater within 600 feet of the former Process Area.

3.0 SOIL AND GROUNDWATER SAMPLING STRATEGY

APEX began its investigation by reviewing soil and groundwater investigation reports conducted on the former Gulf States Creosoting facility. The reports that were made available to APEX by the City of Hattiesburg are the following:

Report Author	Date of Report
Roy F. Weston, Inc.	May 1990
Mississippi Department of Environmental Quality	January 1992
Environmental Protection Systems, Inc.	August 1993
Michael Pisani & Associates	June 1997
Michael Pisani & Associates	December 1998
Michael Pisnai & Associates	November 2000

The Investigation of the former Gulf States Creosoting facility was comprehensive and extensive.

Because the Railroad Track has served as a barrier between the Gulf States Creosoting facility and the subject property, the only potential exposure pathways would have come from either storm water drainage through culverts beneath the tracks or migration of the creosote contamination in the groundwater, APEX conducted interviews of life long residents of the subject residential area to determine if any additional storm water drainage patterns from the Gulf States Creosoting facility had ever existed other than the Northeast Drainage Ditch that was identified in the pervious investigations. The following is a list of some of the residents that were interviewed in this phase of the investigation:

1. Robert & Willene Carson
2. Brad Nix
3. Mildred McGee
4. Barbara Jones
5. Carolyn Reed
6. Elder Bobby Carpenter
7. James Rogers
8. Johnny Owens
9. Eddie Brazile
10. Mrs. McGilvey
11. Vernell Woods

Based upon the interviews, APEX selected sample locations 1-5 in an attempt to collect representative samples from areas that were reported to formerly have a culvert connection to the Gulf States Creosoting facility.

APEX selected sample locations 6, 8, and 9 for their close proximity to the Gulf State Creosoting facility.

APEX selected samples locations 7 and 14 based upon certain residents who indicated that they had recently seen creosote contamination just below top soil while conducting minor excavation on their property.

APEX received information as part of our initial investigation that indicated creosote contamination may have not been completely excavated during the Northeast Drainage Ditch remediation. Sample locations 10-13, 15-18, 20 and 21 were selected based upon this information.

Sample locations 19, 22, and 24 were conducted at the request by the organized citizen's group representative.

At this point APEX interviewed Mr. Bennie Sellers, City Engineer, to determine if he was aware of any additional prior drainage culverts connecting the Gulf Sates Creosoting facility and the residential that had not been previously identified during prior interviews and research. Sample location 23 resulted from the questioning of Mr. Sellers.

Mr. Richard Ellis, a former project manger of Singley Construction during the excavation of the Northeast Drainage Ditch, was interviewed after samples 1-19 were collected. Mr. Richard Ellis stated that he did not recall any visible contamination remaining in the Northeast Drainage Ditch after excavation. He also stated that very little contamination was observed past Harrell Street during the excavation of the Northeast Drainage Ditch. With this additional information, APEX selected sample locations 25, 26, and 27 to verify Mr. Ellis' previous visual observations.

APEX reviewed historical and present topographic maps to determine drainage patterns other than the Northeast Drainage Ditch. A drainage ditch head near the intersection of Dumas Avenue and Ashford Street was identified. The ditch drains to the northeast and appears not to have a connection to the Gulf State Creosoting facility; however, a sample was collected to verify that no creosote was present (sample location 29).

Ms. Tennie White, the Environmental Consultant for the citizens group, requested sample locations 28, 30, 31, 32, as well as a surface water sample for a low laying area that holds water at the end of Rose Street. These locations were area of concern in the professional opinion of Ms. White. Sample location 30 was in the front parking area of Down Home Cooking Restaurant near an area were it was believed that abandoned Underground Storage Tanks (UST) existed from an old gas station that operated at the location. Ms. White believes that creosote may have leached into the bed of the USTs due to the close proximately of the Northeast Drainage Ditch that is adjacent to the site. Sample 30 was collected within 10 feet of sample 19.

3.1 Soil Sampling Strategy

A total of thirty two (32) soil borings were advanced at the subject property. Boring locations are presented as Figure 2. Each 4 ft boring sample was analyzed for Volatile Organic Compounds (VOCs) in the field utilizing a Photo-ionization Detector (PID) Meter. A sample was collected from the portion of the boring with the highest PID reading. If there was no PID reading in the entire boring, then a composite sample of the first 4 ft was collected and sent for verification via laboratory analysis. The Constituents Of Potential Concern (COPC) were analyzed for Polynuclear Aromatic Hydrocarbons by EPA Method 8270C.

For multiple borings that were conducted within close proximity of one another, a representative number of the borings were sent for laboratory analysis. Field readings only were gathered on the remaining borings in these areas.

Each borehole was advanced utilizing "direct-push" hydraulic probe system (*Geoprobe*®). The probe sampling system is designed for interval sampling from ground surface to a maximum depth of approximately 50 feet below ground surface. In order to obtain a sample, the sampler was connected to a drive-rod assembly and activated at each desired sample depth. The sampler was then able to obtain a relatively undisturbed soil sample in an acetate sleeve inside the sample collection tube. After sample collection, the soil sample in the sleeve was extracted from the sample tube, placed in the appropriate laboratory-provided glass containers, and labeled with a unique identification number.

Samples were immediately placed on ice and maintained at a temperature of less than 4°C to preserve sample integrity. Samples were packed and submitted to the laboratory. Chain-of-Custody procedures were maintained from sample collection until completion of sample analysis. All sample collection and preservation procedures followed SW-846 protocol.

Note: Borings 30, 31, and 32 were sent for laboratory analysis for Volatile Organics by EPA Method 8260B and for Semi-Volatile Organics by EPA Method 8270C. This was done at the request of Ms. Tennie White and was authorized by City of Hattiesburg officials.

3.2 Groundwater Sampling Strategy (*Geoprobe*® Screen Point)

Twenty one (21) soil borings at the site were advanced to groundwater and sampled utilizing *Geoprobe*® Screen Point (SP-15) sampling technique. Figure 3 presents the soil boring/screen point sampling locations. The *Geoprobe*® Screen Point is ~5 to 10 feet in length and constructed of 1 inch PVC with 0.010 inch screens, and is set in the bottom 4 feet of each borehole for groundwater sampling. Constituents Of Potential Concern (COPC) were analyzed for Polynuclear Aromatic Hydrocarbons by EPA Method 8270C.

The wells were developed by removing a sufficient volume of water to produce relatively clear, low turbidity water utilizing a peristaltic pump. Well development is intended to remove residual materials from wells and to reestablish the natural flow condition in the formations disturbed by the installation process. After the Screen Point was set and the well developed, groundwater sampling was conducted. A peristaltic pump with dedicated tubing was used for purging and sampling groundwater. Groundwater was purged at a flow rate approximately equal to or less than the recharge rate of the monitoring well. Purging was conducted until relatively clear water was obtained.

After relatively clear water was obtained, the groundwater samples were collected. The sampler used clean latex gloves and disposable equipment. Plastic was placed on the ground around each well to prevent inadvertent contamination of the sampling equipment. Groundwater samples were placed in new containers supplied by the laboratory. The sample bottles were filled directly from the peristaltic pump, labeled and recorded on the chain-of-custody form. The sample labels included the sample number, date, time, sample location, sampler's name, sample type, analysis to be performed, preservatives used and all other pertinent information to ensure proper sample identification. The containers were placed on ice in coolers immediately after they were filled. The samples were maintained at less than 4°C and custody-sealed until they were prepared for analysis. Completed chain-of-custody forms accompanied the samples.

Note: Borings 30, 31, and 32 were sent for laboratory analysis for Volatile Organics by EPA Method 8260B and for Semi-Volatile Organics by EPA Method 8270C. This was done at the request of Ms. Tennie White and was authorized by City of Hattiesburg officials.

4.0 SOIL AND GROUNDWATER SAMPLING SUMMARY

4.1 Soil Sampling

Between January 23 and April 24, 2008, APEX installed thirty two (32) soil borings at the subject property. Figure 2 presents the soil boring locations. All soil sampling activities were conducted in accordance with the Work Plan protocols, which is presented as Section 3.1 of this report. All samples were shipped to EDL Labs in Hattiesburg, Mississippi for laboratory analysis. A copy of the analytical results is included as Appendix B. Photographic documentation is presented as Appendix C.

4.2 Groundwater Sampling Utilizing *Geoprobe*® Screen Point

Between January 23 and April 24, 2008, ground water sampling activities were conducted in accordance with the Work Plan protocols presented as Section 3.2 of this report. The *Geoprobe*® Screen Point locations (Screen Point) were developed by inserting a clean, unopened roll of 3/8 inch polyethylene tubing to the bottom of the well. The water was purged by use of low flow regulated vacuum pump. The development process continued until relatively clear water was obtained. The Screen Point sampling technique does not preclude the possibility of laboratory matrix interference, which could result as false positives (elevates levels) in metal sample results. False positives would be the result of fine grain sediments attenuating into the Screen Point water column. Figure 2 and Appendix B presents the Screen Pont locations and analytical results for the sampling event. All samples were collected in accordance with the protocols presented in Section 3.2 and shipped to EDL Labs in Hattiesburg, Mississippi for laboratory analysis.

5.0 INVESTIGATION SUMMARY

5.1 Soil

Between January 23 and April 24, 2008, APEX representatives conducted a soil and groundwater investigation at the subject property. Thirty two (32) soil borings were advanced utilizing *Geoprobe*® techniques as outlined in Section 3.0. The borings were advanced to depths ranging from 4 to 31 feet BLS. Soil samples were taken from each boring and field screened with a hand-held Photo-ionization Detector (PID) for the presence of organic vapors. Low levels of organic vapor were detected in borings 1, 6, 22, 25, and 30. Analytical results from all of the soil samples collected during the investigation indicate the vast majority of the samples were below laboratory detection limits. Samples SB-8 0-4ft, SB-10 0-4ft, SB-15 0-4ft, SB-25 0-4ft, and SB-30 6ft had levels that were above laboratory detection limits.

Samples with reported parameter compared to MDEQ Target Remedial Goals list:

Sample Location	Parameter	Laboratory Results	MDEQ TRG Restricted Use	MDEQ TRGs Unrestricted Use
SB-8 0-4ft	Fluoranthene	0.45 mg/kg	81700 mg/kg	3130 mg/kg
	Phenanthrene	0.31 mg/kg	61300 mg/kg	2350 mg/kg
	Pyrene	0.25 mg/kg	61300 mg/kg	2350 mg/kg
SB-10 0-4ft	Benz(a)anthracene	0.63 mg/kg	7.84 mg/kg	0.875 mg/kg
	Benzo(b)fluoranthene	1.1 mg/kg	7.84 mg/kg	
	Benzo(k)fluoranthene	0.26 mg/kg	78.4 mg/kg	8.75 mg/kg
	Benzo(g,h,i)perylene	0.28 mg/kg	61300 mg/kg	2350 mg/kg
	Benzo(a)pyrene	0.56 mg/kg	0.78 mg/kg	
	Chrysene	0.62 mg/kg	784 mg/kg	87.5 mg/kg
	Fluoranthene	0.49 mg/kg	81700 mg/kg	3130 mg/kg
	Indeno(1,2,3-cd)pyrene	0.46 mg/kg	7.84 mg/kg	0.875 mg/kg
	Pyrene	1.0 mg/kg	61300 mg/kg	2350 mg/kg
SB-15 0-4ft	Benzo(b)fluoranthene	0.31 mg/kg	7.84 mg/kg	0.875 mg/kg
	Indeno(1,2,3-cd)pyrene	0.30 mg/kg	7.84 mg/kg	0.875 mg/kg
SB-25 0-4ft	Benz(a)anthracene	0.26 mg/kg	7.84 mg/kg	0.875 mg/kg
	Benzo(b)fluoranthene	1.1 mg/kg	7.84 mg/kg	
	Benzo(g,h,i)perylene	0.42 mg/kg	61300 mg/kg	2350 mg/kg
	Benzo(a)pyrene	0.43 mg/kg	0.78 mg/kg	
	Chrysene	0.28 mg/kg	784 mg/kg	87.5 mg/kg
	Fluoranthene	0.27 mg/kg	81700 mg/kg	3130 mg/kg
	Indeno(1,2,3-cd)pyrene	0.64 mg/kg	7.84 mg/kg	0.875 mg/kg
	Pyrene	0.32 mg/kg	61300 mg/kg	2350 mg/kg
SB-30 6ft	Fluoranthene	0.40 mg/kg	81700 mg/kg	3130 mg/kg
	Phenanthrene	0.60 mg/kg	61300 mg/kg	2350 mg/kg
	Pyrene	0.30 mg/kg	61300 mg/kg	2350 mg/kg
	Naphthalene	0.24 mg/kg	247 mg/kg	194 mg/kg

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Sample Location	Parameter	Laboratory Results	MDEQ Tier 1 TRG	Units
MW - 2	Acenaphthene	0.096	0.365	Mg/l
	Acenaphthylene	0.0097	2.19	Mg/l
	Fluorene	0.099	0.243	Mg/l
	Fluoranthene	0.0043	1.46	Mg/l
	Naphthalene	[illegible]	0.0062	Mg/l
	Phenanthrene	0.021	1.10	Mg/l
MW - 5	Acenaphthene	0.068	0.365	Mg/l
	Fluorene	0.056	0.243	Mg/l
	Fluoranthene	0.0035	1.46	Mg/l
	Naphthalene	[illegible]	0.0062	Mg/l
	Phenanthrene	0.077	1.10	Mg/l
MW - 6	Naphthalene	0.0073	0.0062	Mg/l
MW - 7	Acenaphthene	0.015	0.365	Mg/l
	Fluorene	0.015	0.243	Mg/l
	Naphthalene	0.0068	0.0062	Mg/l
	Naphthalene	0.018	1.10	Mg/l
MW - 9	Acenaphthene	0.010	0.365	Mg/l
	Fluorene	0.017	0.243	Mg/l
	Naphthalene	0.024	0.0062	Mg/l
	Phenanthrene	0.0057	1.10	Mg/l
MW - 11	Acenaphthene	0.18	0.365	Mg/l
	Acenaphthylene	0.0047	2.19	Mg/l
	Fluorene	0.11	0.243	Mg/l
	Fluoranthene	0.0081	1.46	Mg/l
	Naphthalene	[illegible]	0.0062	Mg/l
	Phenanthrene	0.10	1.10	Mg/l
	Pyrene	0.0042	0.183	Mg/l
MW - 14	Acenaphthene	0.15	0.365	Mg/l
	Acenaphthylene	0.0028	2.19	Mg/l
	Anthrancene	0.021	0.0434	Mg/l
	Fluorene	0.12	0.243	Mg/l
	Fluoranthene	0.027	1.46	Mg/l
	Naphthalene	[illegible]	0.0062	Mg/l
	Phenanthrene	0.14	1.10	Mg/l
	Pyrene	0.016	0.183	Mg/l
MW - 19	Acenaphathene	0.006	0.365	Mg/l
	Dibenzofuran	0.019	0.0243	Mg/l
	Fluorene	0.008	0.243	Mg/l
	Naphthalene	0.009	0.0062	Mg/l
	Phenanthrene	0.003	1.10	Mg/l
	Benzene	[illegible]	0.005	Mg/l
MW - 21	Acenaphathene	0.007	0.365	Mg/l
	Dibenzofuran	0.009	0.0243	Mg/l
	Fluorene	0.008	0.243	Mg/l
	Naphthalene	0.008	0.0062	Mg/l

Note: This table was created at the request of Mr. Franklin Tate. The table reflects the water sample results compared to the MDEQ Tier 1 Target Remedial Goals. Only samples that had components above laboratory detection limits are listed above.

Target remediation goals (TRGs) refer to the risk-based media concentrations utilized in the Tier 1 evaluation of human health and environmental impacts in these regulations. Soil TRGs are soil concentrations developed by MDEQ for individual chemicals to address the soil ingestion and inhalation exposure pathways and environmental risks. Groundwater TRGs are either the groundwater quality standards or risk-based remediation goals derived by MDEQ. Soil and groundwater TRGs are provided in MDEQ's Risk Evaluation Procedures developed for these regulations. Surface water TRGs are the water quality criteria published by the MDEQ. TRGs are to be compared with the exposure point concentrations.

TRGs alone do not always trigger the need for response actions or define unacceptable levels of contaminants in soil or groundwater. The Tier 1 TRGs may either be used as "default" remediation goals or as screening values that will initiate a Tier 2 Evaluation or Tier 3 Evaluation.

5.2 Groundwater

Groundwater samples were collected from twenty one (21) soil borings, as outlined in Section 3.2. The samples were analyzed for Polynuclear Aromatic Hydrocarbons. Analytical results from the soil samples collected during the investigation indicate that levels were all within the range of what had previously been recognized by the MDEQ.

5.3 Conclusions

Two sample borings had parameters above the MDEQ TRG's Unrestricted Use but below Restricted Use guidelines (see table in Section 5.1). These sample locations are adjacent to the drainage culvert that was installed in the Northeast Drainage Ditch. Therefore, the use of these areas would be presumably restricted.

Based upon the data obtained in this investigation, it is appears that trace amounts of contaminates remains in portions of the Northeast Drainage Ditch. A restrictive use covenants on the Northeast Drainage Ditch would be advisable. All other areas appear not to contain any significant creosote soil contamination. Some groundwater contamination is evident in the subject property area. However, as long as there are no private drinking water wells in the area, there is no significant exposure concern.

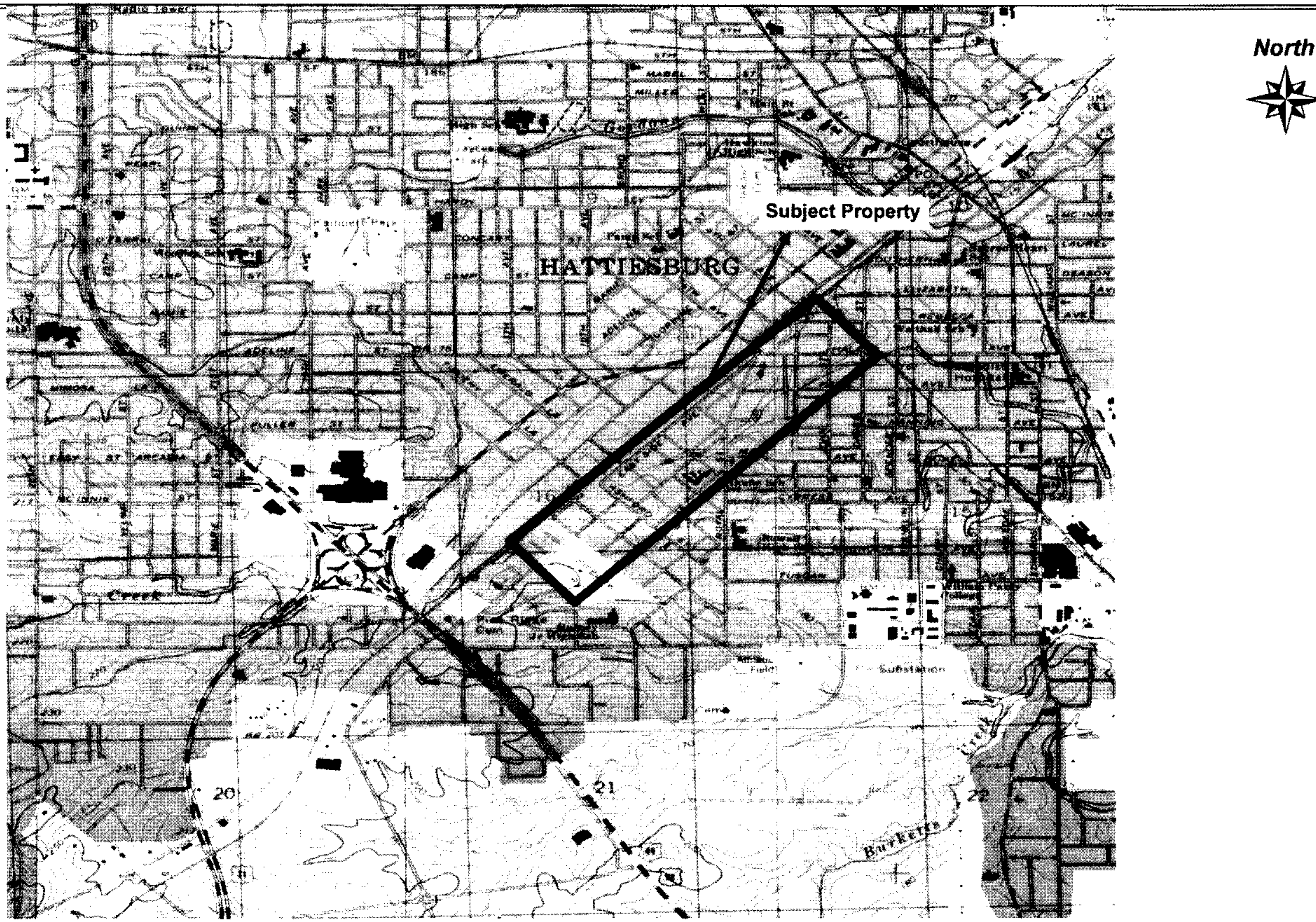
6.0 REFERENCES

Final Remedial Action Work Plan Michael Pisani & Associates, Inc. August 21, 2002

Laboratory Report – EDL Labs, Inc., Hattiesburg, MS

Sanborn Maps 1931, 1949, 1966

Historical Topographic Maps 1964, 1982, 1996



Gulf State Creosoting Contamination Assessment Residential Area Hattiesburg Forrest County, Mississippi	Reference: Hattiesburg 7.5 Minute Quadrangle Forrest County, Mississippi	Date: 3/13/2008 Scale: NTC	Project # 08-gulfstatehatt Figure: 1

APEX ENVIRONMENTAL CONSULTANTS, INC.

FIGURE 2

AERIAL PHOTOGRAPH SHOWING BORING LOCATIONS