

REVISED SOIL INVESTIGATION PLAN

**INVISTA S.à r.l.
NORTH TERMINAL – PARAXYLENE FACILITY
3325 RIVER ROAD
WILMINGTON, NORTH CAROLINA**

PREPARED ON BEHALF OF:

FLINT HILLS RESOURCES, LP

ORIGINAL: FEBRUARY 20, 2012

REVISED: JUNE 14, 2012

**CATLIN PROJECT NO. 201125
NCDENR-IHSB-ID NO. NONCD0002797**



PREPARED BY:

**CATLIN ENGINEERS AND SCIENTISTS
P. O. BOX 10279
WILMINGTON, NORTH CAROLINA 28404-0279
(910) 452-5861**

CORPORATE LICENSURE NUMBER FOR ENGINEERING SERVICES C-0585



Post Office Box 10279
Wilmington, North Carolina 28404-0279

Telephone: (910) 452-5861
Fax: (910) 452-7563

www.catlinusa.com

June 14, 2012

North Carolina Department of Environment
and Natural Resources
Division of Waste Management
Attn: Ms. Genevieve M. Henderson, P.G.
127 Cardinal Drive Extension
Wilmington, North Carolina 28405-3845

**Re: Revised Soil Investigation Plan
INVISTA S.à r.l. - North Terminal – Paraxylene Facility
Wilmington, North Carolina
CATLIN Project No. 201125
NCDENR-IHSB-ID NO. NONCD0002797**

Dear Ms. Henderson:

On behalf of Flint Hills Resources, LP, (FHR) CATLIN Engineers and Scientists (CATLIN) hereby submits the attached Revised Soil Investigation Plan (Revised Plan) concerning the above-referenced site. The North Carolina Department of Environment and Natural Resources (NCDENR) sent a letter dated April 28, 2011 which requested that a remedial investigation be conducted under the supervision of the NCDENR - Inactive Hazardous Sites Branch (IHSB). CATLIN submitted the July 26, 2011 Remedial Investigation Workplan (Workplan) in response to the April 2011 NCDENR letter. The IHSB sent a letter dated November 18, 2011 which generally approved the Workplan but requested clarification of a few items in the Workplan and identified potential areas of concern with potential soil contamination. CATLIN submitted the February 20, 2012 Soil Investigation Plan in response to the November 2011 IHSB letter. The IHSB sent a letter dated April 23, 2012 in response to the Soil Investigation Plan. We have reviewed the comments regarding the February 20, 2012 Soil Investigation Plan and offer the following response to the comments/concerns offered by Ms. Genevieve Henderson:

**Genevieve Henderson's Comments via the April 23, 2012 IHSB Letter with
CATLIN's responses as follows**

Comment #1 – Section 2.0 of the Plan states that historical soil analytical data was compared against the IHSB's Industrial Health-Based Preliminary Soil Remediation Goals (PSRGs). As stated in the first note of the Branch's PSRG Table found on the Branch's website, the Industrial RGs can only be used with Branch approval and land use restriction (LURs). The Branch is not aware that LURs have been applied to this site, thus the Industrial RGs are not currently applicable to this site.

Acknowledged. Sections 2.0 and 3.0 of the Revised Plan have been modified to clarify that the Industrial Health-Based PSRGs are not currently applicable but will be pursued in the future. It should be noted that a deed restriction on the property has been in effect since August 2006. This document contains verbiage that includes the following: the property is only to be used for the purpose of terminaling and storage activities; no water wells will be installed on the property; FHR should have reasonable access to the property for performing remediation activities; and a statement of responsibility by FHR regarding the remediation activities. It should be noted that the verbiage of this current deed restriction is similar to a portion of the verbiage that will be utilized in a LUR if obtained for the property.

Comment #2 – When referencing previous documents for the site as is Sections 3.1 and 3.4 of the Plan, specific page or section references should be used (i.e., this information can be found in the Remedial Investigation Work Plan on page _ or in Section _).

Acknowledged. Sections 3.1 and 3.4 of the Revised Plan have been modified accordingly.

Comment #3 – In Section 3.2, the Plan states that a number of historical soil samples which contained concentrations of xylenes above the Branch's RGs were taken from below the historical high water table, thus no additional investigation was proposed for these areas. Soil samples from above the water table should be taken from these areas to verify that the contamination detected in these areas was indeed a reflection of groundwater contamination and not soil contamination.

Acknowledged. Proposed soil samples SB-57 through SB-64 referenced in Table 3 and illustrated on Figure 4 will address these locations of concern.

Comment #4 – Confirmatory samples were not taken from the edges of the excavations that were conducted around Tank 301 and additional soil samples should be taken in these areas.

Acknowledged. Proposed soil samples SB-65 through SB-77 referenced in Table 3 and illustrated on Figure 4 will address this area of concern. It is our understanding that the excavations went to the water table so additional soil samples are not proposed for the bottom of the excavations.

Comment #5 – Please verify that the S-1 sample from 1999 is plotted in the right place. The Branch's review of the file indicated that its location might be to the west of S-7.

Acknowledged. Upon further review of the previously submitted documents we agree that the location of S-1 (1999) is to the west of S-7. This location has been revised on Figure 4.

Comment #6 – There is no longer a need to submit hard copies of reports and correspondence. When submitting documents, the entire document should be submitted in electronic PDF format including the appendices (i.e. laboratory results, well construction records). As a reminder, they should be submitted with a minimum resolution of 300 dpi. Additionally, if possible, the documents should be submitted in sections with file sizes no larger than 20 MB and any sections of the submittal that are scanned should be optimized with optical character recognition applied to all pages. Generation of PDFs directly from the original electronic documents is preferred to the scanning of printed material. The documents should not be electronically certified when creating the PDF versions for submittal. For additional information on electronic document submittal, please see guidance on the Branch’s website at <http://portal.ncdenr.org/web/wm/sf/ihs/home>.

Acknowledged. All future documents will be submitted accordingly. The attached CD includes the PDF for the referenced Revised Plan for your use.

Upon your review of this Revised Plan, please contact Mr. Michael Christopher at (713) 544-9256 or Mr. Jeffery K. Becken, P.E. at CATLIN Engineers and Scientists at (910) 452-5861 if you should have any questions concerning this project.

Sincerely,



Jeffery K. Becken, P.E.
Project Manager



Alan Jarrett, E.I.
Project Engineer

Enclosure

- CC: Mr. Michael Christopher – Koch Remediation & Environmental Services, LLC (w/ encl.)
Ms. Nicole Cory – Flint Hills Resources, LP (w/ encl.)
Mr. Rick Bayless – INVISTA S.à.r.l. (w/ encl.)
Mr. Todd Walton – North Carolina State Ports Authority (w/ encl.)
Mr. Devon Watts – Sunoco (w/ encl.)

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REVISED SOIL INVESTIGATION PLAN

INVISTA S.à r.l.
NORTH TERMINAL – PARAXYLENE FACILITY
3325 RIVER ROAD
WILMINGTON, NORTH CAROLINA

ORIGINAL: FEBRUARY 20, 2012
REVISED: JUNE 14, 2012

1.0 INTRODUCTION AND PURPOSE

Correspondence from the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Waste Management (DWM) dated November 18, 2011 (DWM Letter) requested that an additional soil contamination assessment be conducted at the INVISTA S.à r.l. (INVISTA) North Terminal Paraxylene Facility (PX Facility) under the supervision of the DWM Inactive Hazardous Sites Branch (IHSB), resulting in the preparation of a Soil Investigation Plan (submitted February 20, 2012) by CATLIN Engineers and Scientists (CATLIN) on behalf of Flint Hills Resources, LP (FHR). The PX Facility is located on River Road in Wilmington, North Carolina (See Figure 1). FHR sold the operations of the subject site to an affiliated company, INVISTA, on June 1, 2006. However, FHR retained the obligations regarding remediation of site soil and groundwater areas of concern that originated prior to the operations transfer. The November 2011 DWM Letter was in response to the July 26, 2011 Remedial Investigation Workplan (Workplan) for the subject site. The request for additional soil assessment was based on a determination by IHSB that:

- A number of historical soil samples at the site contained xylenes at concentrations in excess of the IHSB remedial goals.
- One historical sample contained methylene chloride above its applicable remedial goal.
- Additional delineation of some of the spill and soil excavation areas was necessary.

A Soil Investigation Plan (Plan) was submitted in response to IHSB's request in February 2012. This Plan was prepared to serve as a guidance document and procedural manual for performing tasks to evaluate the presence of potential soil contamination in the identified areas of concern.

NCDENR - IHSB wrote a letter dated April 23, 2012 which requested revisions to the February 2012 Plan. This Revised Soil Investigation Plan (Revised Plan) has been prepared in response to the April 2012 IHSB letter. The Revised Plan was prepared in general accordance with the current (August 2011) *IHSB Guidelines for Assessment and Cleanup* (Guidelines). It should be noted that upon approval by IHSB, FHR will coordinate with the property owner for approval of access prior to implementing this Revised Plan.

1.1 SITE INFORMATION

The North Terminal project site is a bulk chemical storage and transfer facility, which occupies an area of approximately thirty-seven acres. Thirty-three of the thirty-seven acres are located on the east side of River Road and are owned by INVISTA. The remaining four (4) acres are located west of River Road and are owned by FHR. The North Terminal is subdivided into four areas of environmental concern. These areas of concern are identified as the PX Facility, the Gasoline/#2 Fuel Oil Facility, the Loading Rack Area and the Water Treatment Plant (WTP) Area. Figure 2 illustrates the location of each area of environmental concern. Regulatory responsibility for the Gasoline/#2 Fuel Oil Facility, the Loading Rack Area, and the Water Treatment Plant (WTP) Area resides with NCDENR – DWM – Underground Storage Tank (UST) Section.

The PX Facility has seven active aboveground storage tanks (ASTs) and associated pipelines for the storage and transfer of PX. In addition, there is an inactive PX truck loading rack and an active railcar loading rack area.

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS

A list of previous reports documenting the historical investigations for the subject site was included in the Workplan.

Additional evaluation of the historical releases and soil samples collected at the site in response to the November 2011 and April 2012 letters from IHSB was performed during preparation of this document. Table 1 and Figure 3 illustrate approximate locations and known information from historical releases and excavations. Table 2 and Figure 4 illustrate all known historical soil analytical data and approximate soil sample locations for the subject site compared to the lowest of the IHSB Residential Health-Based Preliminary Soil Remediation Goals (PSRGs), the IHSB Industrial Health-Based PSRGs and also the Protection of Groundwater PSRGs. As discussed in Section 4.1.1 of the Guidelines, the soil remediation goals for the site consist of a health-based remediation goal for total concentrations of contaminants and a protection of groundwater remediation goal for leachable concentrations of contaminants. Currently, the Residential PSRGs are the applicable health-based remediation goals for this site as discussed in the April 2012 IHSB letter.

As mentioned previously, Table 2 compares historical soil analytical data to the lowest of the IHSB PSRGs. Table 2 also includes historical high groundwater table elevation information. The historical soil samples which revealed contaminant concentrations above the lowest IHSB PSRGs and were collected from above the historical groundwater table are shaded on Table 2. Additional samples are proposed to be collected at these locations and are highlighted in red on Figure 4. Table 2 also indicates that a number of the soil samples with historical exceedances of the lowest IHSB PSRGs were collected from within the limits of the historical

groundwater table. The April 2012 IHSB letter requested that additional soil samples be collected from these areas at depths above the historical groundwater table to verify that the contamination revealed by these previous soil samples is due to groundwater contamination and not representative of soil contamination. These proposed soil sample locations are highlighted in blue on Figure 4.

3.0 PROPOSED METHODS OF INVESTIGATION

As discussed previously, the Residential PSRGs are currently the applicable health-based remediation goals for this site. Per Note 1 in the February 2012 IHSB PSRG Table of the Guidelines, the Industrial PSRGs can only be used with Branch approval and Land Use Restrictions (LURs). In order to obtain Branch approval and pursue the use of LURs as a remedial approach, an approval process as discussed in Appendix D of the Guidelines will need to be implemented. Based on the current and future uses of the property as well as the surrounding properties the use of LURs will be pursued for a portion or the entire site as the site remedial approach. Therefore, it is our understanding that the Industrial PSRGs will be applicable in the future and thus the soil contamination will be delineated to the Industrial PSRGs during implementation of this Revised Plan.

It should be noted that a deed restriction on the property has been in effect since August 2006. This document contains verbiage that includes the following: the property is only to be used for the purpose of terminaling and storage activities; no water wells will be installed on the property; FHR should have reasonable access to the property for performing remediation activities; and a statement of responsibility by FHR regarding the remediation activities. It should be noted that the verbiage of this current deed restriction is similar to a portion of the verbiage that will be utilized in a LUR if obtained for the property.

It is recognized that there is a potential threat to groundwater from soil contamination above the Protection of Groundwater PSRGs as identified in historical soil samples. Therefore, additional soil samples will be collected at each of the proposed soil sample locations and held for potential laboratory submittal for Synthetic Precipitation Leaching Procedure (SPLP) analysis. Prior to submittal for SPLP analysis, the laboratory analytical results for the proposed soil samples will be evaluated by the engineer/geologist of record to determine if any total contaminant concentrations exceed the Protection of Groundwater PSRGs. The additional, collected sample will then be submitted to the laboratory for SPLP analysis for any soil sample which reveals exceedances of the Protection of Groundwater PSRGs. The SPLP analysis data will be utilized to more accurately determine the leachability of the contaminants at the subject site. This site specific leachability data will be compared to the applicable groundwater remediation goals (2L Groundwater Quality Standards – 2L GWQS) to determine if the protection of groundwater soil remediation goals (as discussed in Section 4.1.1.2 of the Guidelines) have been met.

Additionally, it should be noted that the existing, approved, on-site groundwater treatment system will address the potential groundwater contamination stemming

from the potential soil contamination in the areas of concern.

3.1 SITE GEOLOGY AND HYDROGEOLOGY

Site specific geologic and hydrogeological conditions were reported to NCDENR in Section 3.1.1 of the July 2011 Remedial Investigation Workplan.

3.2 SOIL SAMPLING LOCATIONS AND METHODS

Soil samples will be collected from eight locations (S-1 (1995), MW-4, RW-1, S-1 (1999), S-5, S-8, S-9 and BH-19) where samples revealed historical contamination above the lowest IHSB PSRGs and were collected from above the historical high groundwater table as discussed in Section 2.0. The proposed soil borings are illustrated on Figure 4 with the following nomenclature as they correlate to the above referenced historical nomenclature: SB-47, SB-49, SB-48, SB-52, SB-53, SB-51, SB-50 and SB-46.

Soil samples will also be collected, as requested by NCDENR (also discussed in Section 2.0), from eight locations (MW-2, S-13, 601-7, BH-15, 401-13, BH-17, 801-4 and BH-6) where samples revealed historical contamination above the applicable IHSB remedial goals and were collected from within the historical groundwater table. The proposed soil borings are illustrated on Figure 4 with the following nomenclature as they correlate to the above referenced historical nomenclature: SB-60, SB-62, SB-64, SB-59, SB-61, SB-63, and SB-58. These proposed soil samples will be collected from above the historical groundwater table. A soil sample is not proposed in the location of the S-2 (1995) historical soil sample; this soil sample revealed contamination above the lowest IHSB PSRGs, but this soil sample was collected prior to the excavation illustrated around Tank 301 on Figures 3 and 4.

In addition, soil samples will be collected in areas of known historical releases from which no historical soil samples were collected in the vicinity. Three soil samples (SB-54, SB-55 and SB-56) will be collected from the area near the boiler house. This area is shown as the location for historical release number (2) on Figures 3 and 4.

The April 2012 NCDENR letter recommended the collection of additional samples around the edges of the excavations near Tank 301 and historical release number (3). Soil samples will be collected in 13 locations (See Figure 4 – SB-65 to SB-77) around the edges of these excavations per Section B.2.2.1 of Appendix B in the Guidelines. The excavations reportedly went to the water table so additional soil samples are not proposed from the bottom of the excavations.

The proposed soil sample locations listed in the previous paragraphs should be sufficient to address potential soil contamination in the area of historical

release number (4) (south side of Tank 801).

The pipeline leak associated with historical release number (1) occurred at the location described on Table 1 and Figure 3. The pipeline depth was reported to be at four feet below land surface (BLS) while historical groundwater in the area has been at a depth of 4.35 feet BLS. Therefore, contamination in this area should be considered groundwater contamination.

It should be noted that the proposed soil boring at historical sample RW-1 is in close proximity to this area and will be evaluated accordingly.

As discussed above, if laboratory analytical results from the collected samples reveal contamination above the Protection of Groundwater PSRGs, the collected samples will be submitted to the laboratory for SPLP analysis. If laboratory analytical results from the collected samples reveal contamination above the Industrial PSRGs, additional sampling may be needed to delineate any areas of potential contamination. This additional sampling will be conducted in general accordance with the methods referenced in this Revised Plan and the frequencies within the Guidelines.

3.2.1 SAMPLING ACTIVITIES

A private utility locator will be met on-site to clear each proposed boring location. In addition, the current property owner will approve the locations in order to attempt to minimize disturbance to their existing operations. Subsurface soil samples will be collected by hand auger boring advancement down to the water table at each proposed soil sample location as described below and in Table 3. Soil samples will be collected continuously and lithology will be described at two foot intervals. One (1) soil sample will be obtained for laboratory analysis, from the interval with the highest PID reading. In the absence of elevated PID readings, the sample from just above the capillary fringe shall be selected for laboratory analysis. However, for soil samples SB-57 through SB-64, the soil sample selected for laboratory analysis will be above the historical groundwater table (See Table 2 for historical groundwater information and Table 3 for sampling details). All boring locations will be established with a survey grade GPS.

New disposable nitrile gloves will be worn during sampling activities. All samples will be placed into the appropriately labeled glassware and packed on ice in an insulated cooler for transportation to the laboratory. Sample integrity will be maintained by following proper Chain-of-Custody (COC) procedures.

The borehole will be abandoned to the surface using three-eighth inch bentonite chips. Bentonite and water will be poured into the borehole simultaneously to facilitate hydration.

Samples will be transported to Pace Analytical Services, Inc. (PACE) in Huntersville, North Carolina. At the laboratory, the soil samples will be analyzed as described in Section 3.5 and in Table 3.

3.3 PRINCIPAL CONSULTANT AND LABORATORY

The principal consultant and laboratory information for the site is as follows:

Consultant:

CATLIN Engineers and Scientists
Contact: Jeffery K. Becken, P.E.
220 Old Dairy Road
Wilmington, NC 28405
(910) 452-5861

Consultant Qualifications/Certifications:

CATLIN Engineers and Scientists is licensed to practice geology and engineering in North Carolina. Our company's engineering certification number is C-0585 and geology certification number is C-118.

Laboratory

Pace Analytical Services, Inc.
Contact: Ashley Nifong (Cell: (910) 610-5964))
9800 Kinsey Avenue, Suite 100
Huntersville, NC 28078
(704) 875-9092

Consultant Qualifications/Certifications:

The principal laboratory for the site possesses the following certifications: North Carolina Drinking Water Certification #37706, North Carolina Waste Water Certification #12, and North Carolina Field Services Certification #5432.

3.4 QUALITY ASSURANCE AND QUALITY CONTROL

Quality assurance and quality control protocols associated with the soil investigation will be conducted in general accordance with Section 3.4 of the July 2011 Remedial Investigation Workplan.

3.4.1 LABORATORY PROCEDURES

Characteristics used to define chemical data quality include accuracy, precision, completeness, comparability, representativeness, method detection limit, calibration procedures, and data reduction, validating, and reporting. The definition and application of these parameters were discussed in Section 3.4.1 of the July 2011 Remedial Investigation Workplan.

3.5 ANALYTICAL PARAMETERS AND METHODS

Soil samples to be collected will only be analyzed for compounds with historical exceedances of the applicable IHSB soil remedial goals. These compounds, which are the contaminants of concern for soil contamination, include EPA Method 8260 compounds (Benzene; Ethylbenzene; Toluene; Xylenes; 1,2,4-Trimethylbenzene; 1,3,5-Trimethylbenzene; Naphthalene; MTBE; Methylene Chloride; sec-Butylbenzene; p-Isopropyltoluene; n-Butylbenzene; n-Propylbenzene) and EPA Method 8270 compounds (Naphthalene; 2-Methylnaphthalene; Butylbenzylphthalate; 3&4-Methylphenol; 2,4-Dimethylphenol; Dibenzofuran; Fluorene). A subsurface investigation summary with analytical parameters and methods is provided on Table 3.

3.6 EQUIPMENT AND PERSONNEL DECONTAMINATION PROCEDURES

New disposable nitrile gloves will be worn during field data collection activities and a new pair of gloves will be donned for sample collection activities. Personnel will also wear the appropriate Personal Protective Equipment (PPE) for site activities.

The hand auger and any reusable equipment used in the sampling activities will be decontaminated with a steam cleaner prior to use for each boring.

4.0 SCHEDULE

It is anticipated that soil sampling activities will be conducted in 2012 upon approval from IHSB. The approximate timeline for the soil investigation is as follows:

- Conduct soil sampling over an anticipated time period of 2 to 3 days.
- Receive and review lab data approximately two (2) weeks after sample submittal to the laboratory. This time period may be extended if necessary.
- If laboratory analytical results from the collected samples reveal contamination above the Protection of Groundwater PSRGs, soil samples will be submitted for SPLP analysis as discussed in Section 3.0.
- Results will be compiled and included in the next Remediation Update Report.

5.0 CERTIFICATION STATEMENT

The certification statements by the remediating party (FHR) and the principal consultant (CATLIN) as recommended in the IHSB Guidelines are provided in Appendix G.

6.0 REFERENCES

CATLIN, Remediation Update Report for September 2009 – August 2010, INVISTA S.à r.l. North Terminal Paraxylene Facility, February 2011.

CATLIN, Remedial Investigation Workplan, INVISTA S.à r.l. North Terminal Paraxylene Facility, July 2011.

CATLIN, Remediation Update Report for September 2010 – August 2011, INVISTA S.à r.l. North Terminal Paraxylene Facility, January 2012.

NCDENR, Letter Regarding Remedial Investigation Plan for Koch North Terminal – Paraxylene Facility, November 18, 2011.

NCDENR DWM Superfund Section IHSB, *Guidelines for Assessment and Cleanup*, August 2010.

USEPA, *Environmental Investigations Standard Operating Procedures and Quality Assurance Manual*, November 2001.

TABLES

TABLE 1

SUMMARY OF KNOWN HISTORICAL RELEASES

PARAXYLENE FACILITY
 INVISTA, NORTH TERMINAL
 WILMINGTON, NORTH CAROLINA

DATE OF RELEASE	RELEASE NUMBER ON FIGURE	LOCATION	SUBSTANCE	VOLUME OF RELEASE	REMEDIAL APPROACH	LATEST SOURCE DOCUMENTED IN
January 1981	1	Subsurface pipeline approx. 100 feet northwest of Tank 301 (just within diked area at a depth of four feet)	Paraxylene	291,000 gallons	Air sparging, SVE, Recovery wells, Pump-and-Treat, Chemical oxidation	Corrective Action Plan Addendum (CATLIN, August 2002)
January 1981	2	Boiler Room Fuel Oil Tank	Fuel Oil	"Several hundred" gallons	No details regarding remedial actions.	Corrective Action Plan Addendum (CATLIN, August 2002)
March 19, 1995	3	AST 301 (north and west side)	Paraxylene	12,306 gallons	Excavation, Recovery wells, SVE, Chemical oxidation	Corrective Action Plan Addendum (CATLIN, August 2002)
July 20, 1999	4	AST 801 (south side)	Paraxylene	594 gallons	Excavation, Free-phase product recovery from excavations, Chemical oxidation	Corrective Action Plan Addendum (CATLIN, August 2002)

TABLE 2
SUMMARY OF HISTORICAL SOIL ANALYTICAL DATA

PARAXYLENE FACILITY
INVISTA, NORTH TERMINAL
WILMINGTON, NORTH CAROLINA

SAMPLE ID	DEPTH (FEET BLS)	DATE	SOURCE OF DATA #	TYPE OF SAMPLE (A = Assessment; C = Confirmation)	HISTORICAL DEPTH TO HIGHEST GROUNDWATER TABLE ELEVATION (FEET BLS)	MONITORING WELL USED FOR DEPTH TO GROUNDWATER	CONTAMINANT OF CONCERN >>>	SOURCE OF DATA FOR DEPTH TO GROUNDWATER #	Benzene	Ethylbenzene	Toluene	Xylenes	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Naphthalene	2-Methylnaphthalene	Other Analyzed Compounds		TPH/Gas	TPH/Diesel
																	(a) MTBE; * = 43; ** = 220; *** = 0.085	(g) p-Isopropyltoluene; * = NAV; ** = NAV; *** = 0.68		
*IHSB Preliminary Residential Health-Based Soil Remediation Goal (mg/kg)								1.1	5.4	820	130	12	160	3.6	62	(a) MTBE; * = 43; ** = 220; *** = 0.085	(g) p-Isopropyltoluene; * = NAV; ** = NAV; *** = 0.68	NCDENR ACTION LEVEL = 10 mg/kg	NCDENR ACTION LEVEL = 40 mg/kg	
IHSB Preliminary Industrial Health-Based Soil Remediation Goal (mg/kg)								5.4	27	820	260	52	180	18	370	(b) Methylene Chloride; * = 11; ** = 53; * = 0.023	(h) n-Butylbenzene; * = 110; ** = 110; *** = 2.4			
***Protection of Groundwater PSRG (mg/kg)								0.0073	8.1	5.5	5.8	6.7	6.7	0.21	1.8	(c) Butylbenzylphthalate; * = 280; ** = 910; *** = 150	(i) Dibenzofuran; * = 16; ** = 170; *** = 5.2			
S-1 (1995)	2-2.5	3/20/1995	11	A			Latest RUR	0.0122	<0.0022	5.31	80,000	NA	NA	NA	NA	NA			<2.2	NA
	5.5 - 6	3/20/1995	11	A	4.35	MW-36	Latest RUR	<1.34	<1.34	<1.34	47,000	NA	NA	NA	NA	NA			<5.0	NA
		7/7/1995	12	C				NA	NA	NA	7,960	NA	NA	NA	NA	NA			NA	NA
S-2 (1995)	5.5 - 6	3/20/1995	11	A	4.35	MW-36	Latest RUR	<0.0009	<0.0009	0.0116	380	NA	NA	NA	NA	NA			<1.9	NA
S-3 (1995)	5.5 - 6	3/20/1995	11	A	4.35	MW-36	Latest RUR	<0.0029	<0.0029	<0.0029	<0.0087	NA	NA	NA	NA	NA			<1.7	NA
MW-1	10 - 12	11/28/1995	15	A	6.75	MW-1	Latest RUR	<0.0005	<0.0005	0.0008	0.0036	NA	NA	NA	NA	NA			<0.005	NA
MW-2	2 - 4	11/28/1995	15	A	2.25	MW-2	Latest RUR	<1	1.94	3.06	158	NA	NA	NA	NA	NA			<11.8	NA
MW-3	5 - 7	11/28/1995	15	A	6.76	MW-3	Latest RUR	<0.0005	0.001	<0.0005	0.0112	NA	NA	NA	NA	NA			<0.005	NA
MW-4	5 - 7	11/28/1995	15	A	6.66	MW-4	Latest RUR	<0.454	<0.454	<0.454	92,516	NA	NA	NA	NA	NA			<5.22	NA
MW-5	ND	2/26/1996	15	A	6.15	MW-5	Latest RUR	<0.0012	<0.0012	<0.0012	<0.0025	NA	NA	NA	NA	NA			<3.1	NA
MW-6	ND	2/26/1996	15	A	7.73	MW-6	Latest RUR	<0.0012	<0.0012	<0.0012	<0.0024	NA	NA	NA	NA	NA			<3.0	NA
MW-30	ND	2/26/1996	15	A	7.55	MW-30	15	<0.001	<0.001	<0.001	<0.0021	NA	NA	NA	NA	NA			<2.6	NA
102	ND	2/26/1996	15	A	2.90	102	Latest RUR	<0.0012	<0.0012	<0.0012	<0.0024	NA	NA	NA	NA	NA			<3.1	NA
117	ND	2/26/1996	15	A	7.65	117	Latest RUR	<0.001	<0.001	<0.001	<0.0021	NA	NA	NA	NA	NA			<2.6	NA
119	ND	11/28/1995	15	A	3.10	119	Latest RUR	<0.0005	0.0017	0.0013	0.956	NA	NA	NA	NA	NA			<0.005	NA
120	ND	2/26/1996	15	A	5.69	120	15	<0.0011	<0.0011	<0.0011	0.04	NA	NA	NA	NA	NA			<2.8	NA
RW-1	ND	11/2/1995	15	A	4.35	MW-36	Latest RUR	NA	NA	NA	3,700	NA	NA	NA	NA	NA			NA	NA
TW-1	7 - 9	12/5/1995	15	A	9.89	TMW-1	15	NA	NA	NA	NA	NA	NA	NA	NA	NA			<2.9	<32
S-1 (1999)	2.5	10/5/1999	19	A	6.84	MW-8	Latest RUR	NA	NA	NA	37,000	NA	NA	NA	NA	NA			NA	NA
S-1 (2000)	3.5	2/24/2000	20	A	5.36	MW-9	Latest RUR	NA	NA	NA	<0.011	NA	NA	NA	NA	NA			NA	NA
S-2 (2000)	3.5	2/24/2000	20	A	5.36	MW-9	Latest RUR	NA	NA	NA	<0.011	NA	NA	NA	NA	NA			NA	NA
S-3 (2000)	3	2/24/2000	20	A	6.15	MW-5	Latest RUR	NA	NA	NA	0.011	NA	NA	NA	NA	NA			NA	NA
S-4	3	2/24/2000	20	A	7.73	MW-6	Latest RUR	NA	NA	NA	0.230	NA	NA	NA	NA	NA			NA	NA
S-5	3	2/24/2000	20	A	7.73	MW-6	Latest RUR	NA	NA	NA	110,000	NA	NA	NA	NA	NA			NA	NA
S-6	3	2/24/2000	20	A	6.64	MW-8	Latest RUR	NA	NA	NA	0.024	NA	NA	NA	NA	NA			NA	NA
S-7	3	2/24/2000	20	A	6.64	MW-8	Latest RUR	NA	NA	NA	0.090	NA	NA	NA	NA	NA			NA	NA
S-8	3	2/24/2000	20	A	3.39	MW-10	Latest RUR	<270	<270	<270	100,000	<270	<270	<270	NA	NA			NA	NA
S-9	3	2/24/2000	20	A	3.39	MW-10	Latest RUR	NA	NA	NA	970	NA	NA	NA	NA	NA			NA	NA
S-10	3	2/24/2000	20	A	5.90	MW-11	Latest RUR	NA	NA	NA	0.013	NA	NA	NA	NA	NA			NA	NA
S-11	3	2/24/2000	20	A	5.41	MW-12	Latest RUR	NA	NA	NA	<0.011	NA	NA	NA	NA	NA			NA	NA
S-12	3	2/24/2000	20	A	5.83	MW-13	Latest RUR	NA	NA	NA	<0.010	NA	NA	NA	NA	NA			NA	NA
S-13	4	2/24/2000	20	A	3.87	MW-37	Latest RUR	NA	NA	NA	150,000	NA	NA	NA	NA	NA			NA	NA
S-14	3	2/24/2000	20	A	3.53	MW-14	Latest RUR	NA	NA	NA	<0.011	NA	NA	NA	NA	NA			NA	NA
S-15	6	2/24/2000	20	A	6.50	MW-18	Latest RUR	NA	NA	NA	<0.011	NA	NA	NA	NA	NA			NA	NA
601-7	7 - 7.5	5/26/2000	20	A	6.64	MW-8	Latest RUR	<300	<300	<300	10,000	<300	<300	<300	<300	<0.39			NA	NA
BH-15	6.5 - 7	5/26/2000	20	A	3.53	MW-14	Latest RUR	<300	<300	<300	240,310 ##	390	<300	1.7	3.7		(c) 2.3 ; (d) 1.3 ; (e) 2.7		NA	NA
401-13	5 - 5.5	5/26/2000	20	A	4.35	MW-36	Latest RUR	<260	550	<260	680,360 ##	<260	<260	0.53	1.7		(c) 0.35		NA	NA
	7 - 7.5	5/26/2000	20	A				<300	<300	<300	120,000	1,900	890	500	41		(g) 350 ; (h) 350		NA	NA
BH-17	7 - 7.5	5/29/2000	20	A	4.31	MW-16	Latest RUR	<310	<310	<310	29,000	4,600	3,000	980	35		(c) 0.68 ; (f) 430 ; (g) 790 ; (h) 330 ; (i) 0.77 ; (j) 0.64		NA	NA
BH-19	8 - 8.5	5/29/2000	20	A	7.80	KRW-3	Latest RUR	<280	<280	<280	21,000	<280	<280	1.1	5.7		(e) 3.7		NA	NA
801-4	7 - 7.5	5/26/2000	20	A	5.90	MW-11	Latest RUR	<300	<300	<300	58,000	<300	<300	<0.4	<0.4				NA	NA
BH-6	5.5 - 6	5/26/2000	20	A	5.33	121	Latest RUR	<300	1,200	<300	511,900 ##	5,400	2,500	820	35		(f) 360 ; (g) 530 ; (h) 330 ; (k) 490		NA	NA

All results in mg/kg.
 # = From January 2012 Remediation Update Report (Latest RUR) or from previous reports as listed in Table 1 from July 2011 Remedial Investigation Workplan: 11 = April 1995 Initial Site Characterization Report at Tank 301 ; 12 = July 1995 Site Remediation Update Report at Tank 301 ; 15 = April 1996 Comprehensive Site Assessment for Koch North Terminal Tank 301 ; 19 = December 1999 Site Status Report at Tank 801 ; 20 = August 2000 Comprehensive Site Assessment for Koch North Terminal Paraxylene Incidents
 * = From IHSB Preliminary Soil Remediation Goals (PSRG) Table, February 2012
 ** = From IHSB Preliminary Soil Remediation Goals (PSRG) Table, February 2012
 *** = From IHSB Preliminary Soil Remediation Goals (PSRG) Table, February 2012
 NAV = None Available
 NA = Not Analyzed
 ND = No Data
 NE = None Established
 BQL = Below Quantitation Limits
 ## = Concentration of O-Xylenes Included
 Bold values indicate concentrations exceeding the lowest of the IHSB PSRGs
 [Shaded Box] = Soil samples with IHSB PSRG exceedances collected above the historical high groundwater table

TABLE 3

SUBSURFACE INVESTIGATION SUMMARY

PARAXYLENE FACILITY
 INVISTA, NORTH TERMINAL
 WILMINGTON, NORTH CAROLINA

SAMPLE LOCATION IDENTIFICATION	BORING TYPE	TOTAL DEPTH (Feet BLS)	SOIL SAMPLE INTERVAL (SOIL DESCRIPTION AND OVA REQUIRED)		SOIL SAMPLE INTERVAL (LABORATORY ANALYSIS)	NO. SOIL LAB SAMPLES PER BORING	SAMPLE TYPE	NO. SOIL LAB SAMPLE LOCATIONS FOR PROJECT	METHOD OF ANALYSIS	
									EPA METHOD 8260 (Benzene; Ethylbenzene; Toluene; Xylenes; 1,2,4-Trimethylbenzene; 1,3,5-Trimethylbenzene; Naphthalene; MTBE; Methylene Chloride; sec-Butylbenzene; p-Isopropyltoluene; n-Butylbenzene; n-Propylbenzene)	EPA METHOD 8270 (Naphthalene; 2-Methylnaphthalene; Butylbenzylphthalate; 3&4-Methylphenol; 2,4-Dimethylphenol; Dibenzofuran; Fluorene)
SB-46 through SB-56	Hand auger	~ 3 - 8 (to the water table)	Land Surface	Every 2 ft.	Collect sample from interval with highest OVA reading; if no elevated OVA readings, collect sample from just above capillary fringe.	1	Grab Soil Samples	11	11	11
SB-57 through SB-64	Hand auger	~ 3 - 8 (to the water table)	Land Surface	Every 2 ft.	Collect sample from interval with highest OVA reading above the historical groundwater table; if no elevated readings, collect sample from just above historical groundwater table.	1	Grab Soil Samples	8	8	8
SB-65 through SB-77	Hand auger	~ 3 - 8 (to the water table)	Land Surface	Every 2 ft.	Collect sample from interval with highest OVA reading; if no elevated OVA readings, collect sample from just above capillary fringe.	1	Grab Soil Samples	13	13	13
							Quality Control (QC)	3	3	3
							Total Samples	--	35	35

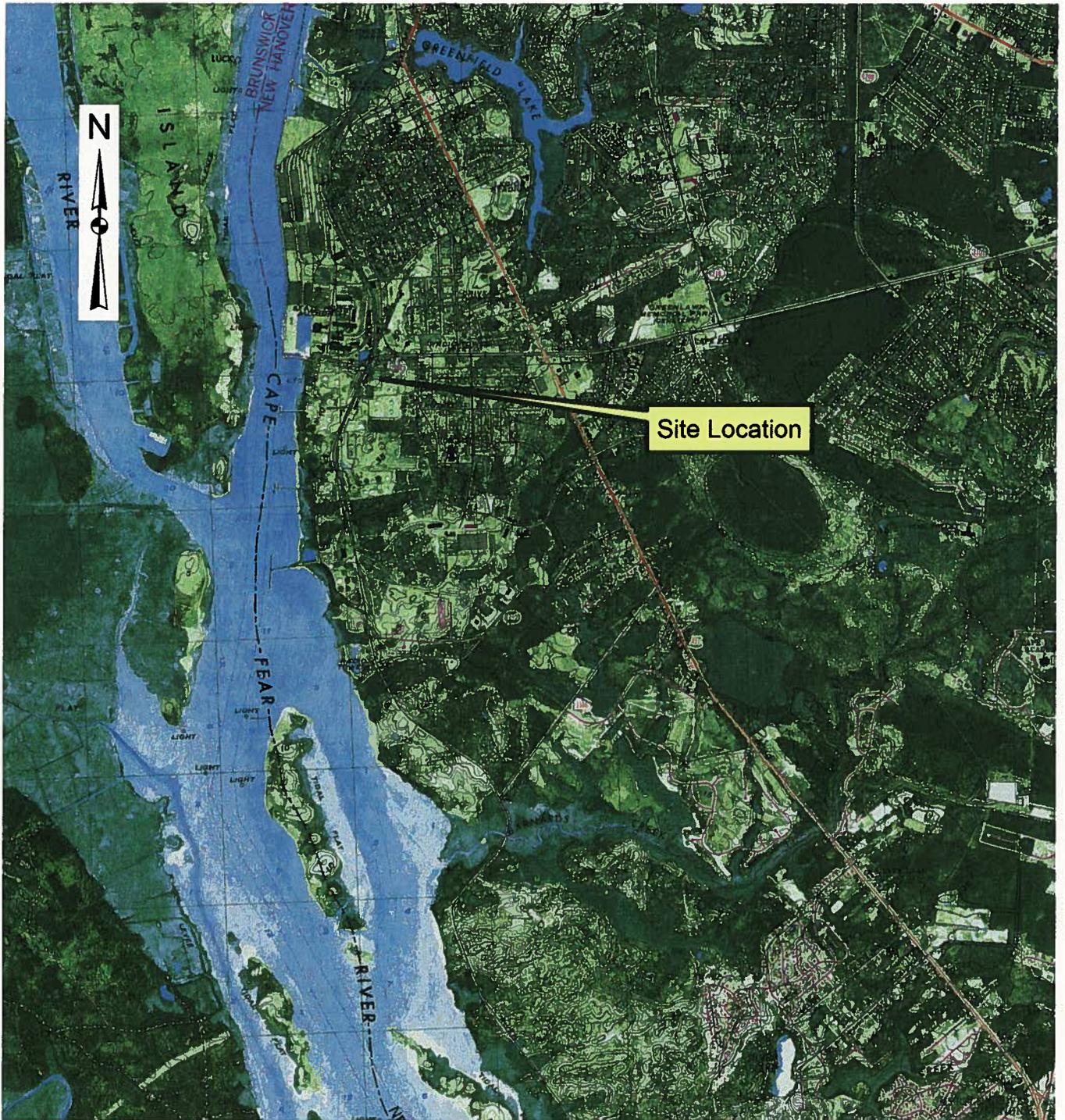
BLS = Below Land Surface

NA = Not Applicable

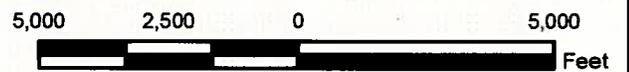
OVA = Organic Vapor Analyzer

QC Protocol for each analytical method: one duplicate sample, one equipment rinsate blank and one trip blank per each sampling day.

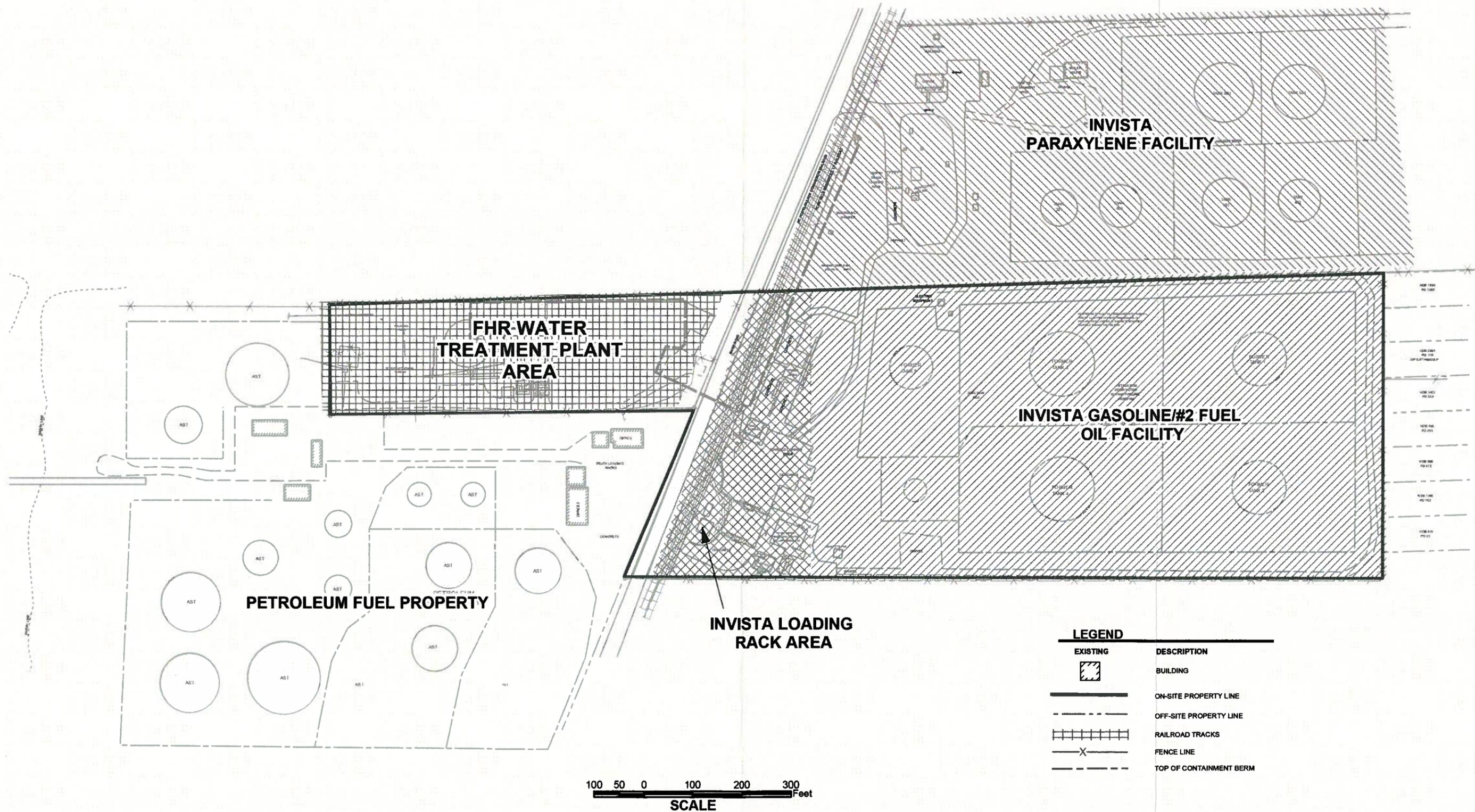
FIGURES



Data Source: Adapted from MapTech Terrian Professional (USGS Wilmington NC Quadrangle)



 220 Old Dairy Road Wilmington, NC 28405 Corporate Licensure No. for Engineering Services C-0586	PROJECT INVISTA S.à r.l. NORTH TERMINAL PARAXYLENE FACILITY RIVER ROAD WILMINGTON, N.C.		TITLE GENERAL LOCATION USGS QUADRANGLE TOPOGRAPHICAL MAP		FIGURE 1
	JOB NO. 201125	DATE FEB 2012	SCALE AS SHOWN ABOVE	DRAWN BY ACJ	



- NOTE:**
1. MAP PROVIDED BY ROBERT H. GOSLEE & ASSOCIATES, P.A. JULY 2004
 2. PROPERTY LINES NOT SURVEYED.
 3. PETROLEUM FUEL PROPERTY BASED ON AERIAL PHOTOGRAPHS.
 4. AREAS OF CONCERN WITHIN THE INVISTA NORTH TERMINAL PX FACILITY ARE ADDRESSED AS A SEPARATE PROJECT.
 5. A 7th TANK (1101) IS LOCATED EAST OF TANKS 601 AND 402 WITHIN THE PARAXYLENE FACILITY.

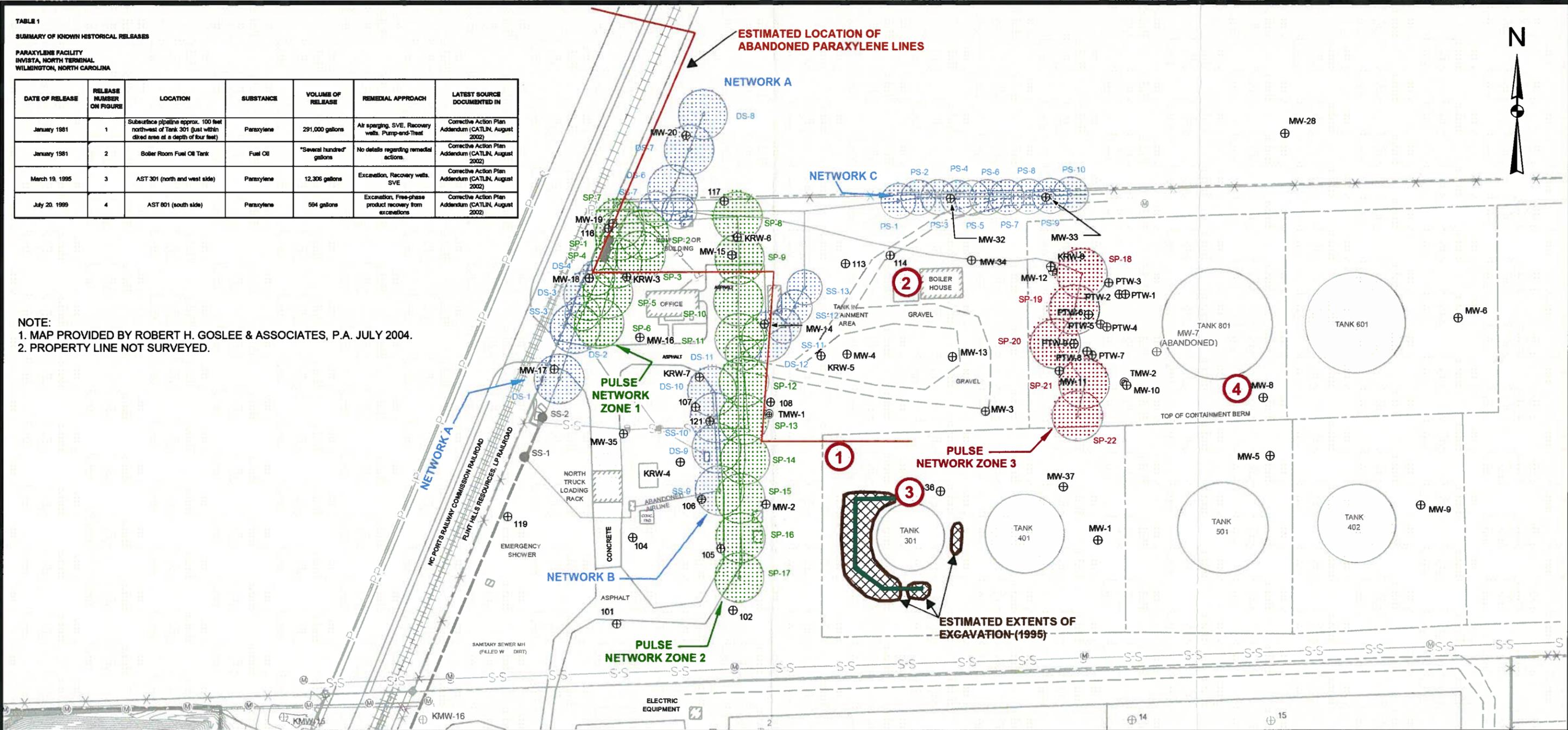
	PROJECT INVISTA S.a.r.l. NORTH TERMINAL PARAXYLENE FACILITY RIVER ROAD WILMINGTON, NC	TITLE 	FIGURE 	
	JOB NO. 201125	DATE FEB 2012		SCALE AS SHOWN

TABLE 1
SUMMARY OF KNOWN HISTORICAL RELEASES

PARAXYLENE FACILITY
INVISTA, NORTH TERMINAL
WILMINGTON, NORTH CAROLINA

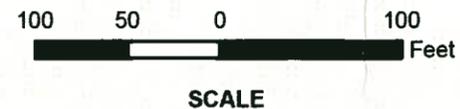
DATE OF RELEASE	RELEASE NUMBER ON FIGURE	LOCATION	SUBSTANCE	VOLUME OF RELEASE	REMEDIAL APPROACH	LATEST SOURCE DOCUMENTED IN
January 1981	1	Subsurface pipeline approx. 100 feet northwest of Tank 301 (just within diked area at a depth of four feet)	Paraxylene	291,000 gallons	Air sparging, SVE, Recovery wells, Pump-and-Treat	Corrective Action Plan Addendum (CATLIN, August 2002)
January 1981	2	Boiler Room Fuel Oil Tank	Fuel Oil	"Several hundred" gallons	No details regarding remedial actions.	Corrective Action Plan Addendum (CATLIN, August 2002)
March 19, 1995	3	AST 301 (north and west side)	Paraxylene	12,306 gallons	Excavation, Recovery wells, SVE	Corrective Action Plan Addendum (CATLIN, August 2002)
July 20, 1999	4	AST 801 (south side)	Paraxylene	594 gallons	Excavation, Free-phase product recovery from excavations	Corrective Action Plan Addendum (CATLIN, August 2002)

NOTE:
1. MAP PROVIDED BY ROBERT H. GOSLEE & ASSOCIATES, P.A. JULY 2004.
2. PROPERTY LINE NOT SURVEYED.



LEGEND

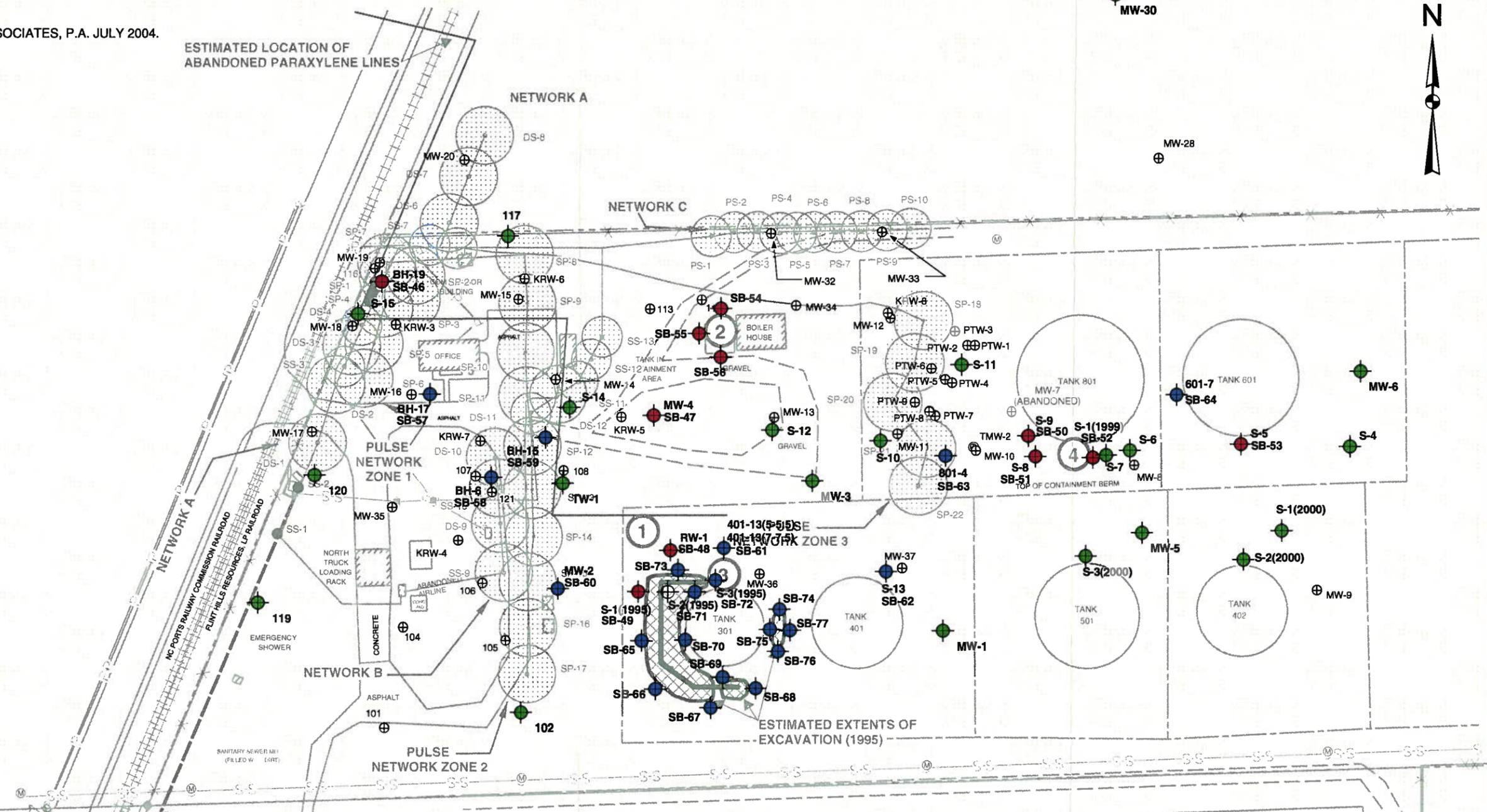
EXISTING	DESCRIPTION	SYMBOL	DESCRIPTION
	BUILDING		CATCH BASINS
	TYPE II MONITORING WELL		CLEAN OUT
	TYPE III MONITORING WELL		MANHOLE
	FORMER RECOVERY WELL CONVERTED TO MONITORING WELL		ABANDONED SPARGE WELL
	CONTINUOUS AIR SPARGE WELL WITH ESTIMATED INFLUENCE		OVERHEAD LIGHT
	PULSE AIR SPARGE WELL WITH ESTIMATED INFLUENCE		PROPERTY LINE
	PULSE AIR SPARGE WELL WITH ESTIMATED INFLUENCE - ZONE 3		SANITARY SEWER
			WATER SUPPLY
			POWER LINE
			TELEPHONE LINE
			FENCE LINE
			INVISTA STORMWATER LINE
			SOIL VENT SYSTEM



<p>CATLIN Engineers and Scientists 220 Old Dairy Road Wilmington, NC 28405 Corporate License No. for Engineering Services C-0685</p>	PROJECT: INVISTA S&P I. NORTH TERMINAL PARAXYLENE FACILITY RIVER ROAD WILMINGTON, NC	TITLE:	KNOWN HISTORICAL RELEASE LOCATIONS	FIGURE: 3
	JOB NO: 201125	DATE: MAY 2012		SCALE: AS SHOWN

NOTE:
 1. MAP PROVIDED BY ROBERT H. GOSLEE & ASSOCIATES, P.A. JULY 2004.
 2. PROPERTY LINE NOT SURVEYED.

ESTIMATED LOCATION OF
 ABANDONED PARAXYLENE LINES

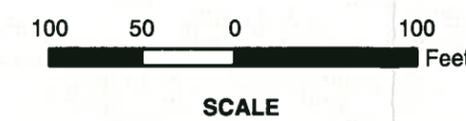


LEGEND

EXISTING	DESCRIPTION
	BUILDING
	HISTORICAL SOIL SAMPLES BELOW THE IHSB PSRGs
	TYPE II MONITORING WELL
	TYPE III MONITORING WELL
	FORMER RECOVERY WELL CONVERTED TO MONITORING WELL
	CONTINUOUS AIR SPARGE WELL WITH ESTIMATED INFLUENCE
	PULSE AIR SPARGE WELL WITH ESTIMATED INFLUENCE
	PULSE AIR SPARGE WELL WITH ESTIMATED INFLUENCE - ZONE 3
	CATCH BASINS
	CLEAN OUT
	MANHOLE
	ABANDONED SPARGE WELL
	OVERHEAD LIGHT
	PROPERTY LINE
	SANITARY SEWER
	WATER SUPPLY
	POWER LINE
	TELEPHONE LINE
	FENCE LINE
	INVISTA STORMWATER LINE
	SOIL VENT SYSTEM

- PROPOSED SOIL BORINGS (FEBRUARY 2012)
- ADDITIONAL PROPOSED SOIL SAMPLE LOCATIONS REQUESTED BY NCDENR (APRIL 2012)

*NOTE: HISTORICAL SOIL SAMPLE S-2 (1995) HAD IHSB PSRG EXCEEDANCES BUT WAS COLLECTED PRIOR TO EXCAVATION.



<p>CATLIN Engineers and Scientists 220 Old Dairy Road Wilmington, NC 28405 Corporate License No. for Engineering Services C-0885</p>	PROJECT INVISTA S.à r. l. NORTH TERMINAL PARAXYLENE FACILITY RIVER ROAD WILMINGTON, NC	TITLE HISTORICAL AND PROPOSED SOIL SAMPLE LOCATIONS		FIGURE 4
	JOB NO: 201125	DATE: MAY 2012	SCALE: AS SHOWN	DRAWN BY: ACJ CHECKED BY: JKB

APPENDICES

APPENDIX A
CERTIFICATION STATEMENTS

IHSB SITE NAME INVISTA S.à r.l. North Terminal Paraxylene Facility - ID NONCD0002797

DATE & NAME OF DOCUMENT June 14, 2012 Revised Soil Investigation Plan

REMIEDIATING PARTY CERTIFICATION STATEMENT

"I certify that, to the best of my knowledge, after thorough investigation, the information contained in or accompanying this certification is true, accurate, and complete."

Eric R. Kayser
Name of Remediating Party

[Signature]
Signature of Remediating Party

6/14/12
Date

NOTARIZATION

Kansas (Enter State)
Sedgwick COUNTY

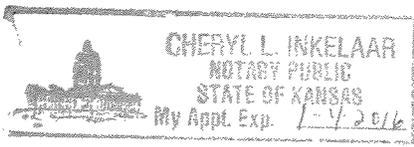
I, Cheryl L. Inkelaar, a Notary Public of said County and State, do hereby certify that Eric R. Kayser did personally appear and sign before me this day, produced proper identification in the form of personally known, was duly sworn or affirmed, and declared that, he or she is the duly authorized environmental consultant of the remediating party of the property referenced above and that, to the best of his or her knowledge and belief, after thorough investigation, the information contained in the above certifications is true and accurate, and he or she then signed these Certifications in my presence.

WITNESS my hand and official seal this 14th day of June, 2012.

[Signature]
Notary Public (signature)

(OFFICIAL SEAL)

My commission expires: 1-4-2016.



IHSB SITE NAME INVISTA S.à r.l. North Terminal Paraxylene Facility - ID NONCD0002797

DATE & NAME OF DOCUMENT _____ Revised Soil Investigation Plan

CONSULTING PARTY CERTIFICATION STATEMENT

"I certify that, to the best of my knowledge, after thorough investigation, the information contained in or accompanying this certification is true, accurate, and complete."

Jeffery K. Becken, P.E. for CATLIN Engineers and Scientists
Name of Consulting Party

[Signature]
Signature of Consulting Party

6/13/12
Date

NOTARIZATION

North Carolina (Enter State)

New Hanover COUNTY

I, Michelle M Johnson, a Notary Public of said County and State, do hereby certify that Jeffery K. Becken did personally appear and sign before me this day, produced proper identification in the form of personal knowledge, was duly sworn or affirmed, and declared that, he or she is the duly authorized environmental consultant of the remediating party of the property referenced above and that, to the best of his or her knowledge and belief, after thorough investigation, the information contained in the above certifications is true and accurate, and he or she then signed these Certifications in my presence.

WITNESS my hand and official seal this 13th day of June, 2012.

[Signature]
Notary Public (signature)

My commission expires: Nov 6, 2017

