FINAL PLAN OF REMEDIAL ACTION

CHRYSLER NEWARK ASSEMBLY PLANT SITE – OPERABLE UNIT 4
(-AKA- University of Delaware's Science and Technology Campus)

550 South College Avenue — *May 8, 2012*
Newark, Delaware — *DNREC Project No. DE-0105*

This Final Plan of Remedial Action (Final Plan) presents the Department of Natural Resources and Environmental Control's (DNREC's) intention to address environmental contamination at the Chrysler Newark Assembly Plant Site – Operable Unit 4.

DNREC issued public notice of the Proposed Plan of Remedial Action (Proposed Plan) for Operable Unit 4 (OU-4) of the Site on April 18, 2012 and opened a 20-day public comment period. The Proposed Plan is attached. There were no comments from the public; therefore, the Proposed Plan is adopted as the Final Plan.

Approval:
This Final Plan meets the requirements of the Hazardous Substance Cleanup Act.

Timothy T. Ratsep, Program Administrator
Site Investigation and Restoration Section

WAM/LJH:vdh; WAM12042.doc; DE 0105 II B 9

PROPOSED PLAN OF REMEDIAL ACTION

Chrysler Newark Assembly Plant Site – Operable Unit 4
(-AKA- University of Delaware's Science and Technology Campus)
Newark, Delaware
DNREC Project No. DE-0105

April 2012

Delaware Department of Natural Resources and Environmental Control
Division of Waste and Hazardous Substances
Site Investigation & Restoration Section
391 Lukens Drive
New Castle, Delaware 19720

CONTENTS

- Proposed Plan: Questions and Answers
- Figures 1, 2, & 3
- Glossary of Terms
- Attachment: *What is a Proposed Plan?*

PROPOSED PLAN OF REMEDIAL ACTION

Chrysler Newark Assembly Plant Site (OU-4)
Newark, Delaware
DNREC Project No. DE-0105

Approval:
This Proposed Plan meets the requirements of the Hazardous Substance Cleanup Act.

Approved by:

Marjorie A. Crofts, Director
Division of Waste and Hazardous Substances

4.12.12

Date

Chrysler Newark Assembly Plant Site (OU-4)

What is the Chrysler Newark Assembly Plant Site (OU-4)?

The Site is the former location of the Chrysler Newark Assembly Plant. The Site is depicted on Figure 1. It is currently owned by 1743 Holdings, LLC, a wholly-owned subsidiary of the University of Delaware. 1743 Holdings, LLC entered into a Brownfields Development Agreement (BDA) with the Department of Natural Resources and Environmental Control (DNREC) – Site Investigation and Restoration Section (SIRS) to perform a Brownfield Investigation and address contamination determined to be present on the Site. The Site has been divided into operable units or smaller areas to more easily manage its investigation and cleanup. **This proposed plan specifically addresses Operable Unit 4 (OU-4) of the Site. The boundaries of OU-4 are depicted on Figure 2.**

Tax Parcel Number: 18-039.00-002 (See Figure 2 for OU-4 boundaries)
Address: 550 South College Avenue; Newark, Delaware
Nearest major intersection: Christina Parkway (Route 4) and South College Avenue (Route 896)
Area: ~24.6 acres
Surrounding Property: The property is bounded by OU-9 (eastern portion of the former Assembly Building) to the north, South College Avenue to the east, residential and commercial properties to the south, and OU-8 to the west.
Zoning: MI- General Industrial
Site Utilities: Underground utility lines in OU-4 consist of sanitary interceptor and sewer laterals, underground water service lines and overhead electric service lines. Industrial wastewater lines have been abandoned. Storm sewer and inlets are present beneath the paved areas of OU-4 and convey drainage to Silver Brook.
Surface water: Silver Brook flows in an open channel for approximately 1,100 feet along the western boundary of OU-4.
Topography: Ground elevations within OU-4 range from approximately 80 to 100 feet, sloping gently from the northeast to the south.
Groundwater: Groundwater was encountered at depths ranging from 2 to 10 feet below ground surface. Shallow groundwater in the western portion of OU-4 has been estimated to flow southwestward toward Silver Brook, while groundwater flow beneath the eastern portion of OU-4 appears to flow southward toward the Christina River. (Figure 3)

What happened at the Chrysler Newark Assembly Plant Site (OU-4)?

Prior to the late 1940s/early1950s, the Site was utilized for agricultural purposes. Subsequently, military tanks and later, automobiles were assembled at the Site. During the 1950's, a large vehicle assembly building was constructed adjacent to the northern boundary and was used for assembling military tanks. The northern

portion of OU-4 was developed into a parking lot and the southern portion was left as an undisturbed wooded flood plain. Based on historical aerial photographs, the Assembly Building was expanded southward sometime before 1961 and the Former Paint Mix Building was constructed. Painting support operations continued until approximately 1996 when the new paint facility was constructed to the west of the Assembly Building.

What is the environmental problem at the Chrysler Newark Assembly Plant Site (OU-4)?

Historical processes, incidences, and/or releases that reportedly occurred in and adjacent to the Former Paint Mix Building have resulted in environmental impacts to soil and groundwater. These included a release of paint purge solvent, consisting of xylenes, toluene and methyl ethyl ketone (MEK), from a 7,500-gallon underground storage tank (UST) that was discovered in 1986. Historical information indicates that a fire occurred in the paint shop building to the north of OU-4. Substances of environmental concern may have been released during that event. The northwestern portion of OU-4 appears to have been filled with coal, ash, and slag as part of the installation of the Silver Brook Culvert.

The following environmental investigations were performed on the OU-4 portion of the Site:

- 1985: DNREC conducted a Preliminary Assessment on the entire Site, on behalf of the United States Environmental Protection Agency (US EPA). The assessment recommended further investigation at the Site due to repeated detections of perchloroethylene (PCE) and trichloroethylene (TCE) in the City of Newark municipal wells to determine if the Site was a contributor to the contamination.

- 1986: DNREC conducted a Desktop Site Inspection (SI). There were no soil or groundwater samples collected on the OU-4 portion of the Site during this investigation. The investigation did not recommend any follow-up activities at the Site.

- 2008: ATC, an environmental consulting firm, conducted Phase I and Phase II investigations on the entire Site, on behalf of Chrysler. During the Phase I investigation, the Former Paint Mix Area was labeled as a Recognized Environmental Condition (REC) due to the documented release of paint purge solvents. No soil or groundwater samples were collected within the bounds of OU-4 during ATC's Phase II investigation.

- 2008: Duffield Associates, an environmental consulting firm, conducted Phase I and Phase II Environmental Site Assessments on behalf of 1743 Holdings, LLC. Six (6) soil samples and four (4) groundwater samples were collected on the OU-4 portion of the Site and analyzed for Priority Pollutant List metals, Target Compound List (TCL) Volatile Organic Compounds (VOCs) and total petroleum hydrocarbons. Analytical results for soils indicated no concentrations in excess of the Delaware URS values. Two groundwater samples were reported to have elevated concentrations of arsenic, chromium, and lead with respect to the URS values for groundwater.

- 2010: Duffield Associates submitted a Limited Current Conditions Assessment (LCCA) to DNREC-SIRS that included testing results for light non-aqueous phase liquid (LNAPL), groundwater, and soil sampling in the Former Paint Mix Area. The information generated by the 2010 LCCA provided: a characterization of the prominent substances of concern that were in the LNAPL observed within AOC-4-1; an understanding of transference of those substances to groundwater; as well as a general characterization of the vertical and areal extent of impacted groundwater and soils associated with AOC-4-1.

- 2011: Duffield Associates conducted an LNAPL Assessment to assess the potential that substances of concern might have migrated preferentially along subsurface utility lines located to the south of AOC-4-1 and to better understand the probable thickness and volume of the LNAPLs in AOC-4-1. Based on findings in the assessment, there were no indications of preferential substance migration along either the abandoned sanitary sewer interceptor or the active storm sewer that extend into AOC-4-1. Estimated LNAPL thicknesses ranging from 0.05 feet to 0.2 feet were calculated from monitoring well drawdown test data, whereas measured static LNAPL thicknesses in monitoring wells SWM-51 and SWM-54 were 0.53 and 0.52 feet, respectively.

- 2011: Duffield Associates conducted a Brownfield Investigation (BFI) consisting of soil and groundwater sampling on the OU-4 portion of the Site on behalf of the 1743 Holdings, LLC. A total of forty-four soil and thirteen groundwater samples were collected across OU-4 and analyzed for Target Analyte List/Target Compound List (TAL/TCL) parameters (Figure 3). Two areas of concern were identified as AOC-4-1 (Former Paint Mix Area) and AOC-3-1 (coal slag fill area in the Silver Brook floodplain). Soils outside AOC-3-1 and AOC-4-1 (approximately 20.3 acres), are acceptable for Unrestricted Use. Site data and assessment of potential health risks indicate that soils within the two AOCs, as well as groundwater throughout OU-4, require action to protect human health. The following constituents were determined to be Contaminants of Concern (COCs) in soil for AOC-3-1 because they were detected at concentrations exceeding the corresponding Delaware URS values for restricted use: arsenic, aluminum, antimony, copper, iron, lead, manganese, selenium, thallium, vanadium, and zinc and polynuclear aromatic hydrocarbons. The following constituents were determined to be COCs in groundwater for AOC-3-1: metals such as arsenic, barium, cobalt, iron and manganese. VOCs and SVOCs were determined to be COCs in soil for AOC-4-1. The following constituents were determined to be COCs in groundwater for AOC-4-1: xylenes, toluene, ethyl benzene, 4-methyl-2-pentanone (MIBK), isopropylbenzene (cumene), tetrachloroethene (PCE), cis-1,2-dichloroethene, and vinyl chloride. Also, petroleum-based semi-volatile organics naphthalene and 2-methylnapthalene are elevated with respect to Groundwater URS values.

What does the owner want to do at the Chrysler Newark Assembly Plant Site (OU-4)?

The entire Site is the location of the University of Delaware's Science and Technology Campus. Portions of OU-4 may be utilized for infrastructure associated with future development, which will include associated buildings, underground utilities, access roads and parking.

What remedial actions are proposed at the Chrysler Newark Assembly Plant Site (OU-4)?

Two AOCs (AOC-4-1 and AOC-3-1) have been identified in OU-4, where the past use of the land has impacted soil conditions and created conditions of potential human health concern. The areas warrant remedial action. Substances present in groundwater located within the bounds of OU-4 warrant remedial action. For groundwater DNREC will require an environmental covenant, or restriction, be recorded on the property deed. The covenant will prohibit future use of groundwater in OU-4 for drinking water purposes without the prior written approval of DNREC and restrict property to non-residential use. Conditions in shallow and deep soils outside the bounds of AOC-3-1 and AOC-4-1 pose acceptable human health risks and will not require further action.

DNREC requires the following remedial actions be performed on the Former Chrysler Newark Assembly Plant Site (OU-4):

1. Recording of an environmental covenant consistent with Delaware's Uniform Environmental Covenants Act (Title 7, Del. Code Chapter 79, Subtitle II) (UECA) on the property deed. The covenant will: a) prohibit the installation of groundwater wells for drinking water purposes without the prior written approval of DNREC, b) identify the property as located within a Groundwater Management Zone, c) prohibit digging, drilling, excavating, grading, trenching, or any other earth disturbing activities within the bounds of AOC-3-1 and AOC-4-1 without prior written DNREC approval and d) restrict property to non-residential (restricted) use.
2. Maintenance of physical barriers that are in place in AOC-3-1 and AOC-4-1 to limit human contact with soils. When earth disturbing activities are performed within AOC-3-1, a barrier such as pavement, building slab, or one foot clean soil cap will be re-installed with marker fabric.
3. Implementation of soil vapor extraction and groundwater air sparging within the bounds of AOC-4-1 to promote removal of LNAPL and organic substances of concern from soil, groundwater, and soil gas.
4. Design and installation of a vapor barrier entirely beneath any enclosed, continuously-occupied structures constructed on OU-4 within a 100 foot radius of AOC-4-1. The vapor barrier will consist of a material placed beneath the building foundation to trap any soil vapor, along with a piping manifold that will divert the soil vapor so that it will vent outside of the structure. The piping will also allow for future access to test the integrity of the system components. The design will be provided to DNREC for review and approval prior to installation.
5. Development and implementation of a DNREC-approved Long-Term Stewardship (LTS) Plan. The LTS Plan will detail: 1) the groundwater monitoring network and schedule to be followed in order to monitor the attenuation of the groundwater COCs, and 2) the inspection schedule to be followed in order to ensure the long-term integrity of the cap placed atop impacted soil left in place.
6. Development and implementation of a DNREC-approved Contaminated Materials Management Plan (CMMP) to ensure that contaminated materials encountered during

intrusive activities are handled properly.

What are the long-term stewardship requirements that are proposed for the Chrysler Newark Assembly Plant Site (OU-4)?

The long-term stewardship requirements proposed for the OU-4 portion of the Site include: following the groundwater monitoring schedule set forth in the DNREC-approved LTS Plan, as well as, continued adherence to the environmental covenant to be recorded on the property deed.

DNREC will issue a Certification of Completion of Remedy (COCR) for the Chrysler Newark Assembly Plant Site (OU-4) following the completion of the aforementioned remedial actions.

How can I find additional information and/or comment on the Proposed Plan?

The complete file on the Site, including the Environmental Site Assessment and the Brownfield Investigation report, is available at the DNREC office located at 391 Lukens Drive in New Castle. Most documents are also found on:

http://www.nav.dnrec.delaware.gov/DEN3/

The 20-day public comment period begins on Wednesday, April 18, 2012, and ends at close of business (4:30 pm) on Monday, May 7, 2012. Please send written comments to the DNREC Lukens Drive office to either call Lindsay Hall or Wendy March, Project Managers.

WAM:vdh
WAM12033.doc
DE 0105 II B 8

Glossary of Terms Used in this Proposed Plan

Contaminants of Concern (COC)	These are potentially harmful substances at concentrations above acceptable levels (e.g. metals and PAHs).
Certification of Completion of Remedy (COCR)	A formal determination by the Secretary of DNREC that remedial activities required by the Final Plan of Remedial Action have been completed.
Final Plan of Remedial Action	DNREC's adopted plan for cleaning up a hazardous site.
Hazardous Substance Cleanup Act (HSCA)	Delaware Code Title 7, Chapter 91. The law that enables DNREC to identify parties responsible for hazardous substances releases and requires cleanup with oversight of the Department.
Proposed Plan of Remedial Action	DNREC's initial plan for cleaning up a hazardous site, which is subject to public comment before being adopted as final.
Site Inspection (SI)	Environmental study of a site which includes the sampling of soils, groundwater, surface water, sediment and/or wastes on the property, as appropriate. This evaluation is performed on behalf of the United States Environmental Protection Agency (U.S. EPA).
Brownfield Investigation (BFI)	Thorough environmental study of a site which includes 1) sampling of site environmental media and/or wastes on the property and 2) conducting a preliminary risk assessment using the data collected to determine the risk posed to human health and the environment.
Risk	Likelihood or probability of injury, disease, or death.
Brownfield Development Agreement (BDA)	This legal agreement is between a potential developer of a Delaware-certified Brownfields Site and the DNREC. The developer agrees to investigate and cleanup a Brownfields property under the oversight of the Department in exchange for liability protection.
Uniform Environmental Covenant Act (UECA)	Deed restrictions on the site. These can include restrictions on soil intrusion, groundwater usage or usage of the site based on the extent of the cleanup.
Uniform Risk-Based Remediation Standards (URS)	A set of concentration criteria for various contaminants potentially present in site media that are developed for protection of human health and the environment

What is a *Proposed Plan?*

A Proposed Plan of Remedial Action (Proposed Plan) is a summary of how DNREC plans to clean up a contaminated site. A Final Plan of Remedial Action (Final Plan) is the adoption of the Proposed Plan after all comments made by the public, within the comment period of twenty days, have been considered and addressed by DNREC.

The Delaware State Legislature passed the Hazardous Substance Cleanup Act (HSCA) in 1990. The Legislature made sure that members of the public would be informed about environmental problems in their own neighborhoods and have a chance to express their opinion concerning the cleanup of those environmental problems before DNREC takes action.

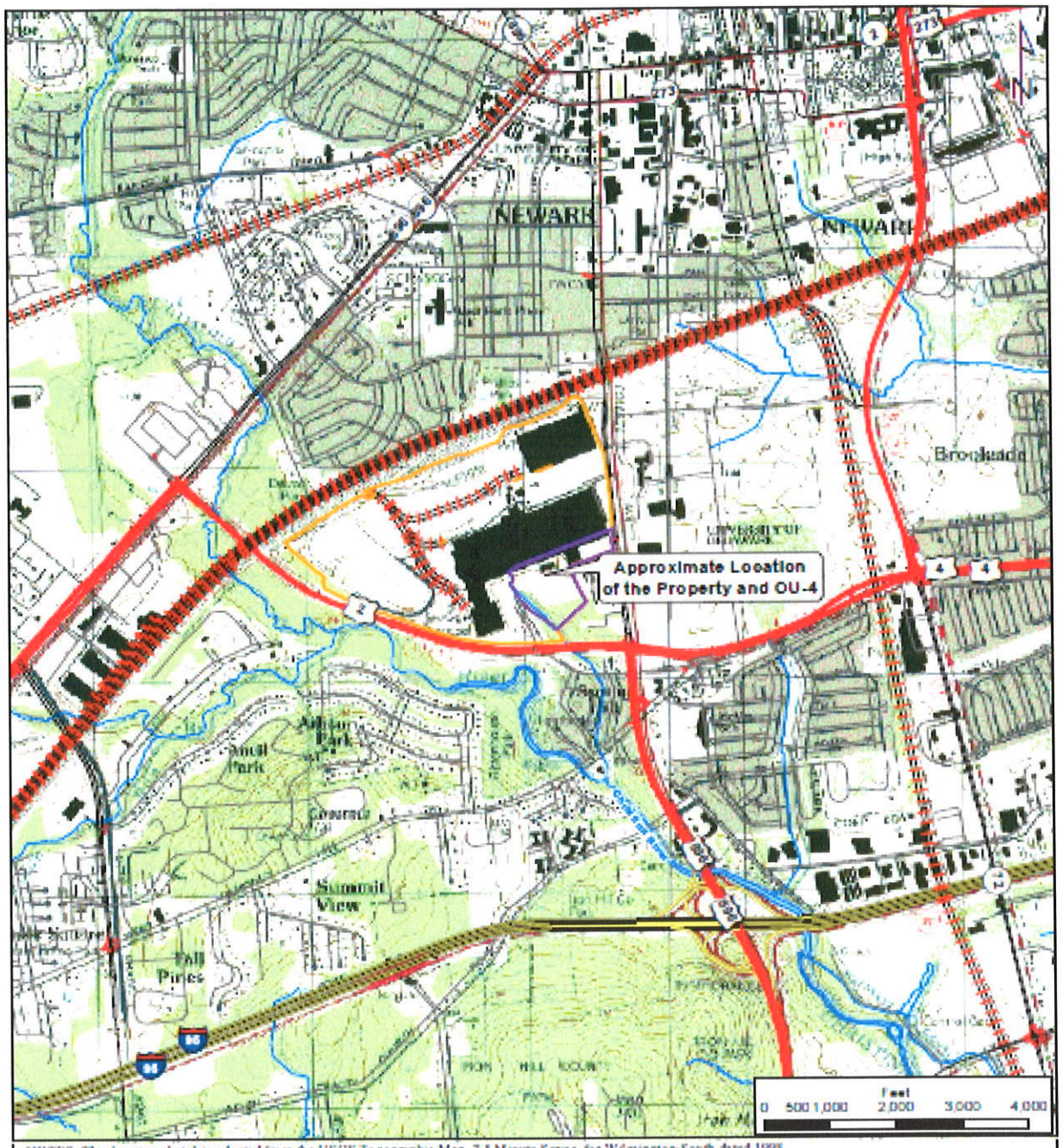
After DNREC studies a site, it summarizes the problems there and proposes one or more possible solutions in a Proposed Plan. The Proposed Plan contains enough information to allow lay persons to understand the site. More detailed information can be found in the reports and documents approved by DNREC. All of the documents and reports created by DNREC or consultants during the course of the investigation of the site are available to the public at the offices of DNREC-SIRB or at DNREC's Delaware Environmental Navigator website:

http://www.nav.dnrec.delaware.gov/DEN3/

DNREC issues the Proposed Plan by advertising it in at least one newspaper in the county where the site is located. The legal notices for the Proposed Plans and the Final Plans usually run on Wednesdays or Sundays in the legal classified section of the News Journal and/or the Delaware State News. The public comment period begins on the day (Wednesday), or the day after (Sunday) the newspaper publishes the legal notice for the Proposed Plan.

DNREC frequently holds public meetings during the comment period. Those meetings are usually held during a weekday evening, at a location near the site. Citizens can request a public meeting if DNREC did not already schedule one.

The public may comment on the Proposed Plan by letter or email, or at the public meeting. DNREC considers all comments and questions from the public before the Proposed Plan is finalized and adopted as a Final Plan.



NOTES: This location sketch is adapted from the USGS Topographic Map, 7.5 Minute Series, for Wilmington-South dated 1998

DATE: FEBRUARY 2012	Site Location Sketch **BROWNFIELD INVESTIGATION REPORT** OPERABLE UNIT NO. 4 1743 HOLDINGS, LLC PROPERTY SCIENCE AND TECHNOLOGY CAMPUS NEWARK-NEW CASTLE COUNTY-DELAWARE	BASEMAP: USGS Digital Raster Graphic	
SCALE: As Shown		DRAWN BY: MPN	
PROJECT NO. 7333 EP		CHECKED BY: MRB	
SHEET: FIGURE 1		FILE: 7333EL Figure1 SiteLocation.mxd	

Figure 1: Site Location Map

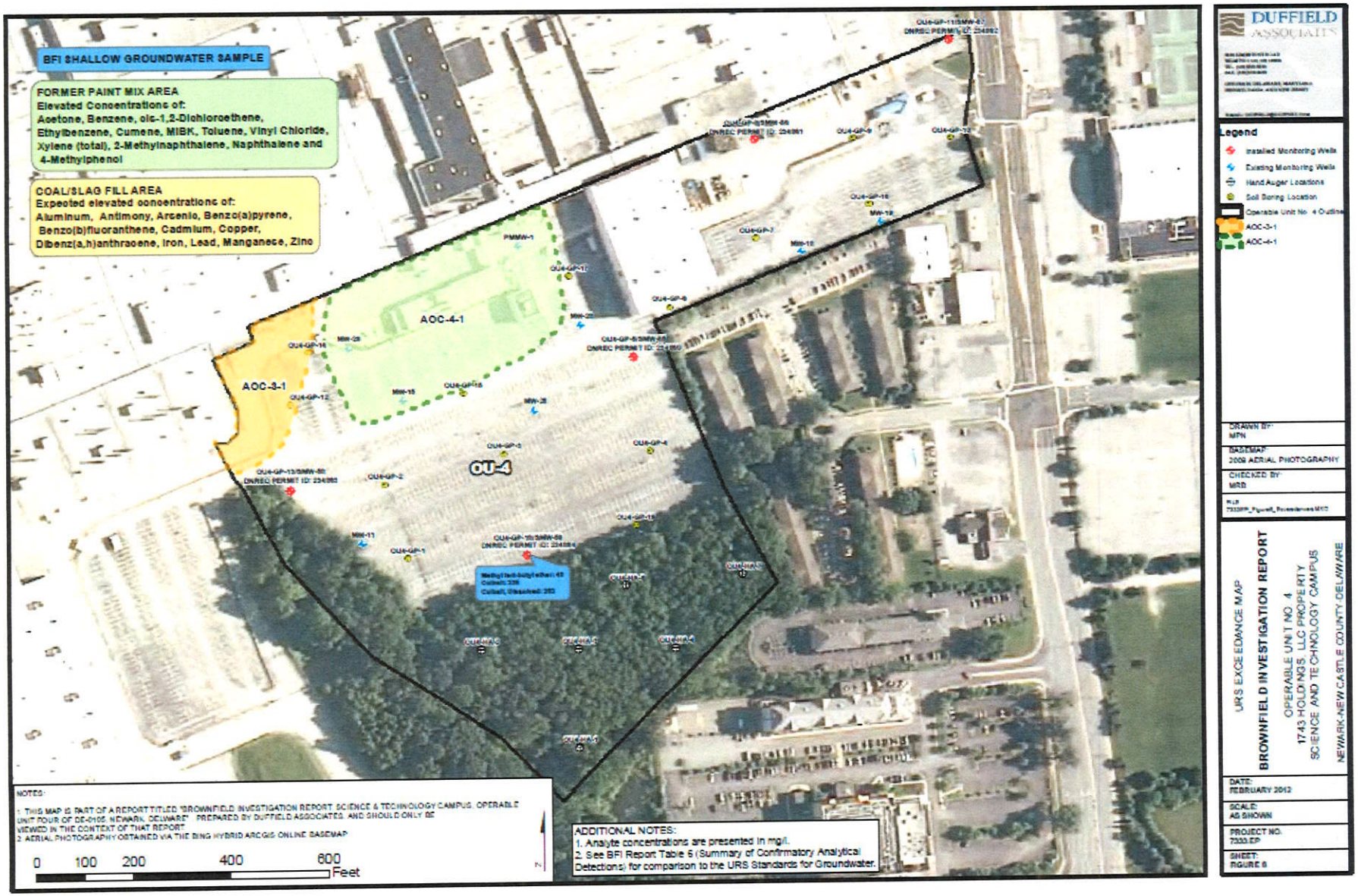


Figure 2: OU-4 Location Map

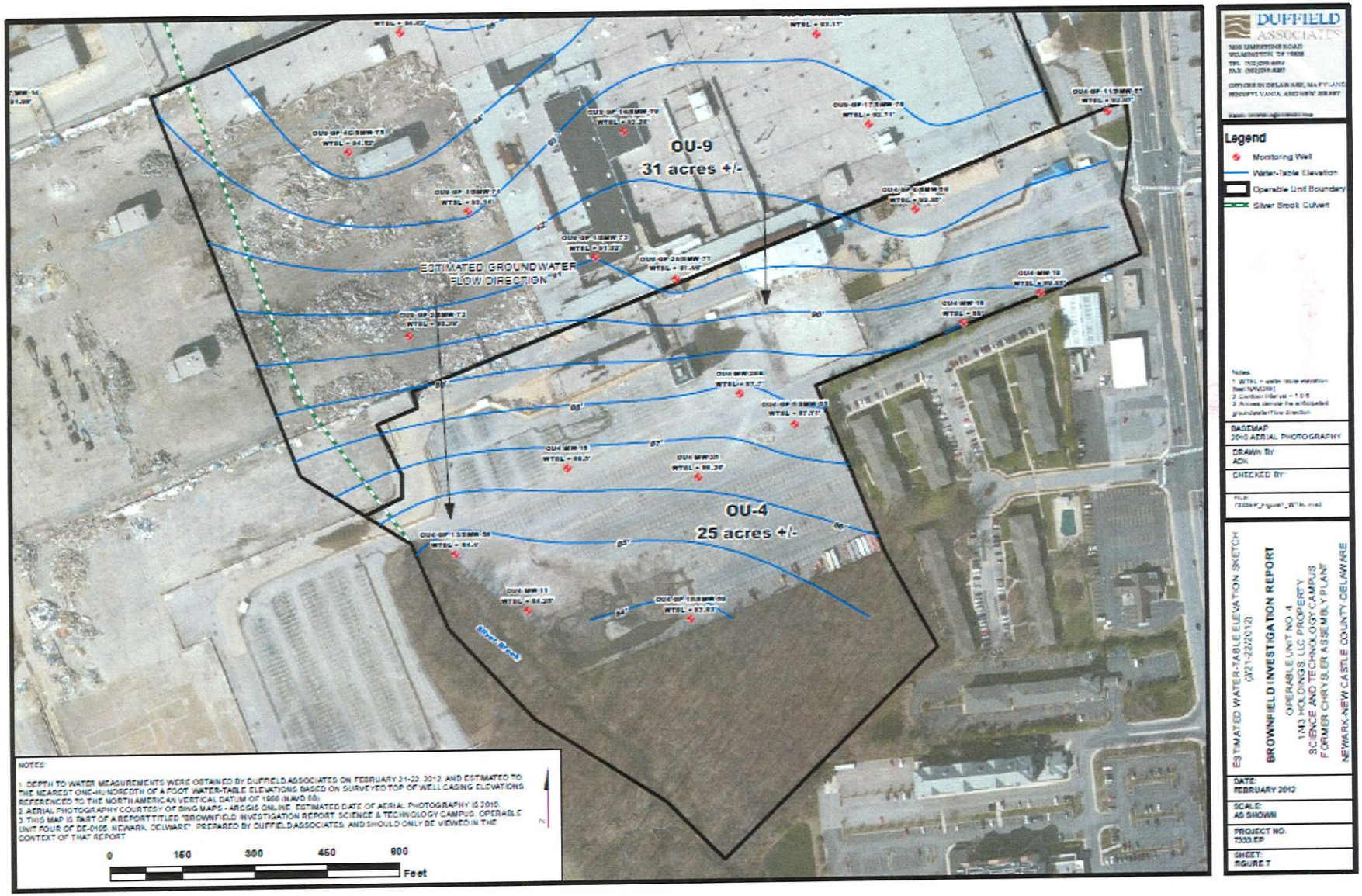


Figure 3: OU-4 Groundwater Contour Map