FINAL PLAN OF REMEDIAL ACTION

CHRYSLER NEWARK ASSEMBLY PLANT SITE – OPERABLE UNIT 6
(-AKA- University of Delaware's Science and Technology Campus)

550 South College Avenue
Newark, Delaware

March 20, 2012
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 6.

DNREC issued public notice of the Final Plan of Remedial Action (Final Plan) for Operable Unit 6 (OU-6) of the Site on February 29, 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.

DNREC requires the following remedial actions be performed on OU-6 of the Chrysler Newark Assembly Plant Site:

1. Design and installation of a vapor barrier entirely beneath any enclosed, continuously-occupied structures constructed on OU-6 within a 100 foot radius of MW-4,
2. 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 and b) identify the Site as located within a Groundwater Management Zone,
3. Development and implementation of a DNREC-approved Long-Term Stewardship (LTS) Plan. The LTS Plan will detail the groundwater monitoring network and schedule to be followed in order to monitor the attenuation of the groundwater COCs; and
4. Development and implementation of a Contaminated Materials Management Plan (CMMP) to ensure that contaminated materials encountered during intrusive activities are handled properly.

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

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

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PROPOSED PLAN OF REMEDIAL ACTION

Chrysler Newark Assembly Plant Site – Operable Unit 6
(-AKA- University of Delaware's Science and Technology Campus)
Newark, Delaware
DNREC Project No. DE-0105

February 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

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PROPOSED PLAN OF REMEDIAL ACTION

Chrysler Newark Assembly Plant Site (OU-6)
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

2.20.12
Date

Chrysler Newark Assembly Plant Site (OU-6)

What is the Chrysler Newark Assembly Plant Site (OU-6)?

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 6 (OU-6) of the Site. The boundaries of OU-6 are depicted on Figure 2.**

Tax Parcel Number: 18-039.00-002 (See Figure 2 for OU-6 boundaries)
Address: 550 South College Avenue; Newark, Delaware
Nearest major intersection: Christina Parkway (Route 4) and South College Avenue (Route 896)
Area: ~18.6 acres
Surrounding Property: The property to the east of OU-6 was formerly the westernmost portion of the Main Assembly Building. The property line is located along the western boundary of OU-6 on the other side of which is a wooded area and Route 4.
Zoning: MI- General Industrial
Site Utilities: Underground utility lines in OU-6 currently are limited to sanitary sewer laterals. Underground water service lines and industrial wastewater lines have been abandoned. Overhead electric service lines have been removed.
Surface water: There are no surface water bodies present on OU-6.
Topography: The OU-6 portion of the Site generally slopes from west to east. The area is mostly covered with bituminous concrete pavement and concrete slab from former building foundations with a few small patches of grass.
Groundwater: Groundwater was encountered at depths ranging from 7.5 to 16 feet below ground surface. Flow direction beneath OU-6 is generally southward; with eastern and western components in an apparent divide where some groundwater flows east toward Silver Brook and some flows west towards a tributary to the Christina River. (Figure 4)

What happened at the Chrysler Newark Assembly Plant Site (OU-6)?

Prior to the late 1940s/early1950s, the Site was utilized for agricultural purposes. Subsequently, military tanks and later, automobiles were assembled at the Site. OU-6 specifically was where a test track and water test pool were originally constructed. Sometime in the 1990s, the former Paint Shop and Paint-By-Products buildings were constructed in place of the test track and water test pool.

What is the environmental problem at the Chrysler Newark Assembly Plant Site (OU-6)?

The evaluation of data collected during multiple environmental investigations conducted on the OU-6 portion of the Site indicated that there are no contaminants of concern (COCs) in soil for either an unrestricted use (residential) or restricted (commercial/industrial) exposure scenario. There were detections of some metals, pesticides, VOCs and semi-VOCs, in the groundwater samples. Based on the comprehensive evaluation of the data, the COCs for groundwater are: benzene, 2-methylnapthalene, dibenzofuran, naphthalene, alpha-BHC and delta-BHC. The Johnson-Ettinger model was run using the concentrations of the COCs in groundwater to determine the potential for increased risk due to vapor intrusion into a future building. The results of the model indicated an unacceptable risk and therefore, a remedial action is warranted should an enclosed structure be built atop this operable unit in the vicinity of the groundwater detections.

The following environmental investigations were performed on the OU-6 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-6 portion of the Site during this investigation. The investigation did not recommend any follow-up activities at the Site.

- 1995: On behalf of Chrysler, McLaren Hart, an environmental consulting firm, conducted a soil and groundwater investigation in the area of OU-6 in advance of construction of the Paint-By-Products and Paint shop buildings. Sixteen soil borings and five monitoring wells were installed and one sample was collected from each location. The samples were analyzed for VOCs and SVOCs. Limited site-related contamination was detected in groundwater at a concentration below corresponding Delaware Uniform Risk-Based Standards (URS) values. Reportedly, soils impacted with gasoline-related organics were encountered during construction. Documents indicate that the soils were excavated and stockpiled elsewhere on the Site.

- 2008: ATC, an environmental consulting firm, conducted Phase I and Phase II investigations on the entire Site, on behalf of Chrysler. Two soil samples and two groundwater samples were collected on the OU-6 portion of the Site. The soil samples were analyzed for VOCs, Total Petroleum Hydrocarbons (TPH)-Diesel Range Organics (DRO) and TPH-Gas Range Organics (GRO). There were no analytes detected above DNREC standards for soil. The groundwater samples were analyzed for VOCs. There were no detections above DNREC standards for groundwater.

- 2008: Duffield Associates, an environmental consulting firm, conducted Phase I and Phase II Environmental Site Assessments on behalf of 1743 Holdings, LLC. Five (5) soil samples and three (3) groundwater samples were collected on the OU-6 portion of the Site. The soil

samples were analyzed for petroleum hydrocarbons, Priority Pollutant List metals, and Target Compound List (TCL) VOCs. There were no detections exceeding Delaware URS values for unrestricted use. The groundwater samples were analyzed for TCL VOCs, Priority Pollutant List (PPL) metals. There were no detections exceeding Delaware URS values for groundwater. The report indicated that additional investigation of the entire Site was warranted.

- 2011: Duffield Associates conducted a limited investigation entitled "Paint-By-Products Basin Drainage Assessment Report" on OU-6 on behalf of 1743 Holdings, LLC. This investigation was prompted by the impending demolition of the Paint-By-Products building and the plan to crack the large concrete basins housed within the building in order to allow rainwater infiltration into the ground. Three soil borings were installed and two soil samples were collected from each. Three groundwater monitoring wells were installed and one groundwater sample was collected from each well. All samples were analyzed for Target Analyte List (TAL) and TCL constituents. Based on the analytical results and groundwater flow direction, DNREC approved the request to crack the basins.

- 2011: Duffield Associates conducted a Brownfield Investigation (BFI) consisting of soil and groundwater sampling on the OU-6 portion of the Site on behalf of the 1743 Holdings, LLC. Initially, 44 Gore Sorber ® modules were installed in a grid pattern in the soil beneath the building foundation of the Paint-By-Products building (Figure 2). The modules were used to indicate the presence or absence of soil gas vapor in order to strategically place soil borings and collect samples within the footprint of the building foundation. A total of fifty soil and five groundwater samples were collected across OU-6 and analyzed for TAL/TCL parameters (Figure 3). Based on the analytical results, there were no COCs identified for soil. The following constituents were determined to be COCs in groundwater because they were detected at concentrations exceeding the corresponding Delaware URS values: benzene, 2-methylnapthalene, dibenzofuran, naphthalene, alpha-BHC and delta-BHC. Based on the results of the Johnson and Ettinger model run using the COCs, vapor intrusion is possible should a building be constructed in the area of the groundwater detections.

What does the owner want to do at the Chrysler Newark Assembly Plant Site (OU-6)?

The entire Site is the location of the University of Delaware's Science and Technology Campus. A portion of OU-6, specifically, may be utilized for infrastructure associated with future light industrial/manufacturing development on OU-1 and OU-8, which will include associated buildings, underground utilities, access roads and parking.

What remedial actions are proposed at the Chrysler Newark Assembly Plant Site (OU-6)?

With no unacceptable risk associated with low levels of contaminants found in the soil under either an unrestricted or restricted exposure scenario, there is no remedial action required for soils. For groundwater, however, DNREC will require an environmental covenant, or restriction, be recorded on the property deed. The covenant will prohibit future use of groundwater in OU-6 for drinking water purposes without the prior written approval of DNREC.

DNREC requires the following remedial actions be performed on the Former Chrysler Newark Assembly Plant Site (OU-6):

1. Design and installation of a vapor barrier entirely beneath any enclosed, continuously-occupied structures constructed on OU-6 within a 100 foot radius of MW-4. 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 should be provided to DNREC for review and approval prior to installation.
2. 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: 1) prohibit the installation of groundwater wells for drinking water purposes without the prior written approval of DNREC, and 2) identify the property as located within a Groundwater Management Zone.
3. 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 testing procedure and schedule to be followed for the vapor barrier.
4. Development and implementation of a 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-6)?

The long-term stewardship requirements proposed for the OU-6 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-6) 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, February 29, 2012, and ends at close of business (4:30 pm) on Monday, March 19, 2012. Please send written comments to the DNREC office or call Lindsay Hall or Wendy March, Project Managers, at: 302-395-2600.

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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.

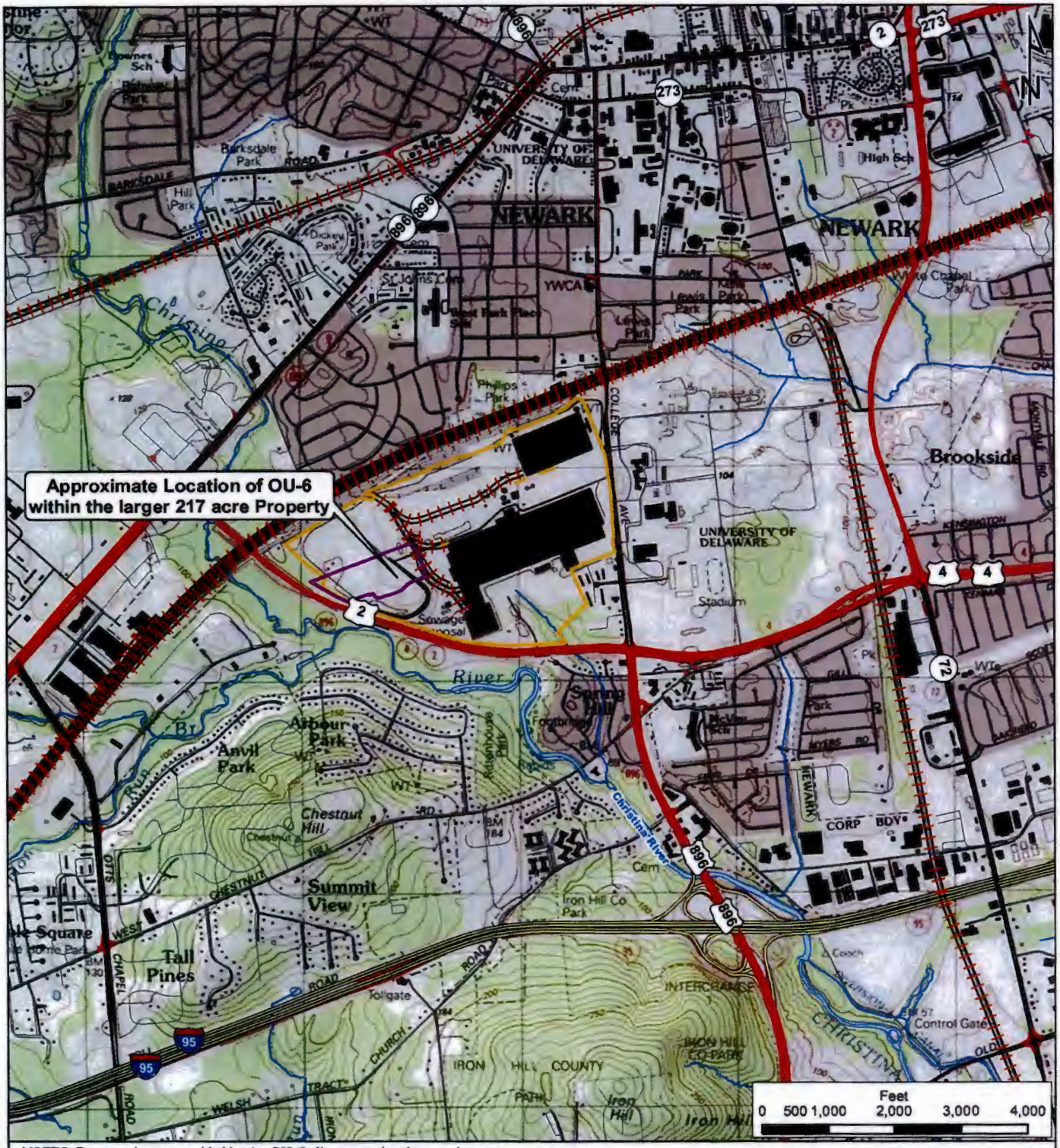
After DNREC studies a site, it summarizes the problems there and proposes one or more possible solutions in a Proposed Plan. The Proposed Plan contains enough information to allow lay persons to understand the site. More detailed information can be found in the reports and documents approved by DNREC. 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: Basemap image provided by ArcGIS Online streaming data service.

DATE: FEBRUARY 2012	Site Location Sketch **BROWNFIELD INVESTIGATION**	BASEMAP: USGS Digital Raster Graphic	**Duffield Associates, Inc.** 5400 LIMESTONE ROAD WILMINGTON, DE 19808 TEL. (302)239-6634 FAX (302)489-2203
SCALE: 1 inch = 2,000 feet	OPERABLE UNIT NO. 6 SCIENCE AND TECHNOLOGY CAMPUS FORMER CHRYSLER ASSEMBLY PLANT (DE-0105)	DRAWN BY: ADK	
PROJECT NO. 7333.ES		CHECKED BY: MRB	OFFICES IN DELAWARE, MARYLAND, PENNSYLVANIA, AND NEW JERSEY
SHEET: FIGURE I	NEWARK-NEW CASTLE COUNTY-DELAWARE	FILE: 7333ES_Figure1_SiteLocation.mxd	E-MAIL: DUFFIELD@DUFFNET.COM

Figure 1: Site Location Map

Figure 2: Soil Gas Screening Location Map

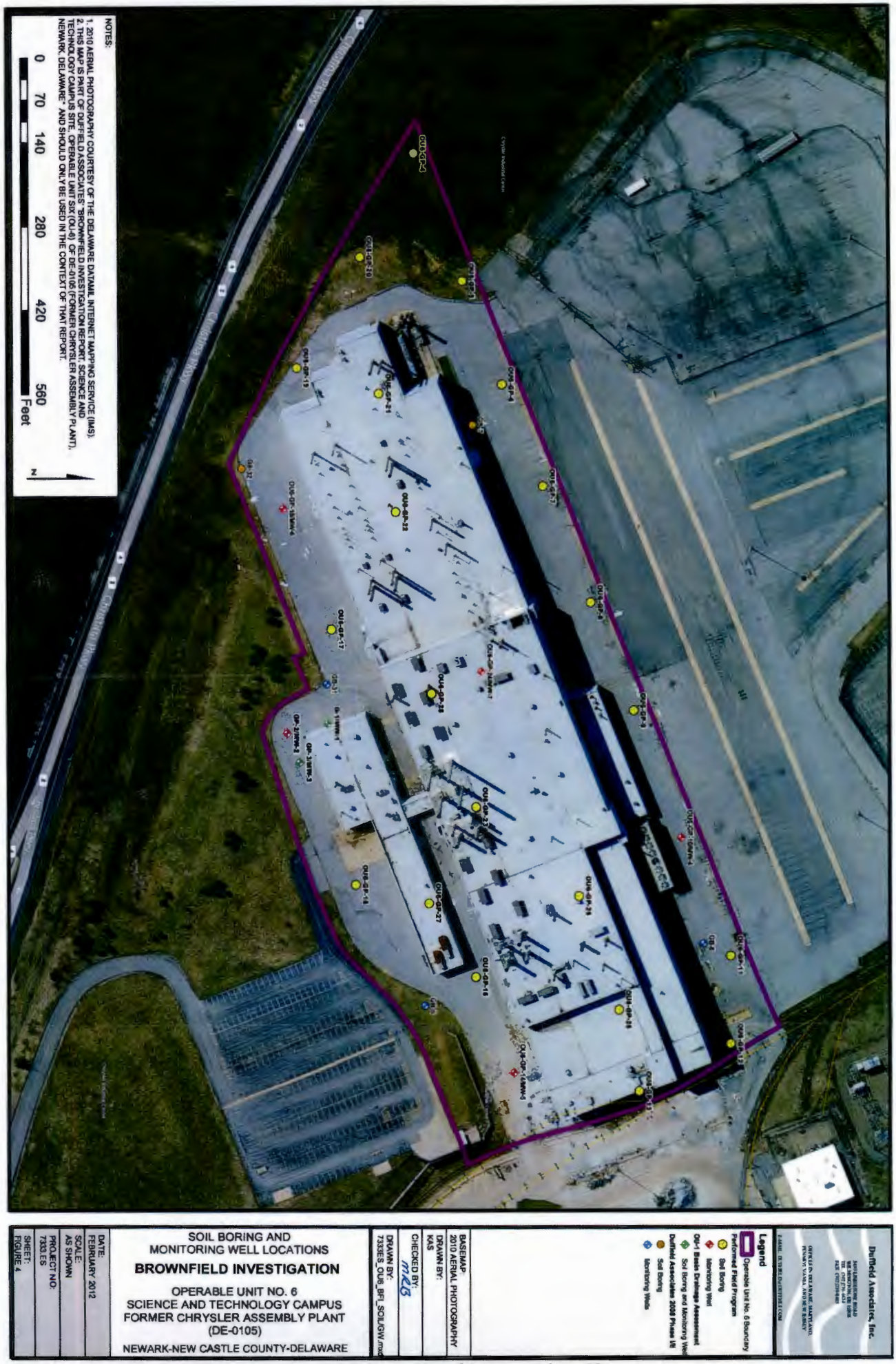


Figure 3: OU-6 Soil and Groundwater Sample Location Map

DUFFIELD ASSOCIATES

Legend

Monitoring Well

- Operable Unit No. 6
- Operable Unit No. 5
- Operable Unit No. 6 Boundary
- Operable Unit Boundary

NOTE:
WTEL = Water-Table Elevation (ft NAVD88)

BASEMAP: 2010 AERIAL PHOTOGRAPHY

DRAWN BY: ADK

CHECKED BY: MRB

DRAWN BY: 7333ES_OU6_WTElev(rev).mxd

ESTIMATED GROUNDWATER FLOW DIRECTION

BROWNFIELD INVESTIGATION

OPERABLE UNIT NO. 6
SCIENCE AND TECHNOLOGY CAMPUS
FORMER CHRYSLER ASSEMBLY PLANT
(DE-0105)

NEWARK-NEW CASTLE COUNTY-DELAWARE

DATE: JANUARY 2012

SCALE: AS SHOWN

PROJECT NO: 7333.ES

SHEET: FIGURE 11

Figure 4: OU-6 Groundwater Contour Map