FINAL PLAN OF REMEDIAL ACTION

December 2010
DELAWARE AIR NATIONAL GUARD SITE
IRP Sites 1, 2, 3, 4(A&B), 6, and Groundwater Operable Unit

New Castle, Delaware DNREC Project No. DE-1003

This Final Plan of Remedial Action (Final Plan) presents the Department of Natural Resources and Environmental Control's (DNREC's) requirements to address environmental contamination at the Delaware Air National Guard Site (Site) consisting of IRP Sites 1,2,3,4(A&B),6, and the Groundwater Operable Unit.

DNREC issued public notice of the Proposed Plan of Remedial Action (Proposed Plan) for the Site on April 25, 2010 and opened a 30-day public comment period, which ended on May 28, 2010. The Department received written comments from the public regarding the Proposed Plan. The Department coordinated with the interested parties and prepared a response to these comments which is included in Attachment A. The Proposed Plan has been adopted as the Final Plan with the changes of treating the source area of the chlorinated hydrocarbon groundwater plume with Enhanced In-Situ Bioremediation at the start of the remediation instead of a later date, as originally proposed, and installing additional monitoring wells to further monitor the migration of the chlorinated groundwater plume and the effectiveness of natural attenuation and source remediation. These changes will have a positive effect on the remediation.

DNREC requires the following remedial actions to be performed at the site:

- Treat the chlorinated hydrocarbon groundwater plume's source area with Enhanced In-Situ Bioremediation (EISB).
- Implement monitored natural attenuation for the downgradient portion of the chlorinated groundwater plume and the remainder of the Groundwater Operable Unit.
- Install additional monitoring wells downgradient of existing wells in order to monitor the migration of the groundwater plume and the effectiveness of natural attenuation. Based on the monitoring results, further action may be required. Submit a work plan for the installation of the additional monitoring wells for DNREC's approval.
- Treat the chlorinated hydrocarbon contaminated soil with a soil vapor extraction system at IRP Site 4B.
- Remove the underground storage tanks and petroleum-contaminated soil and restart the bioventing system at IRP Site 2.
- No further action for soil at IRP Sites 1, 3, 4A, and 6.
- Establish a groundwater management zone (GMZ) for the groundwater underlying the Base.

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

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

12.14.10
Date

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ATTACHMENT A
Response to the Public Comments on the Proposed Plan of Remedial Action
Delaware Air National Guard Site

Comments from Artesian Water Company, Inc were the only comments received for the Proposed Plan. The comment letter was received from Artesian Water Company, Inc. (Artesian) on May 27, 2010. The Department met with Artesian, the National Guard Bureau, and the National Guard Bureau's consultant, AECOM, to discuss these comments, and the following response to the comments is based on this coordination.

Comment #1: Artesian indicated they do not agree that chlorinated volatile organic compounds have not left the Delaware Air National Guard Base (DANGB) site. They also expressed concerns that there are no wells to the south-southwest of the plume to define a known limit of contamination.

Response #1: The 2009 groundwater sampling data shows chlorinated volatile organic compounds (VOCs), with concentrations below EPA's Maximum Contaminant Levels (MCLs), at the DANG base boundary. However, the Department agrees that the potential exists that groundwater contaminants have left the DANGB site in the past.

As an initial step, DNREC is requiring installation of monitoring wells at three locations downgradient of the Base boundary. To monitor the migration of the groundwater plume and the effectiveness of natural attenuation, the ANG will initially install the following:

- intermediate monitoring well south of Runway 27 and downgradient of MWR134
- intermediate monitoring well south of Runway 27 near shallow monitoring well MW303
- intermediate monitoring well south of Runway 27 and west of Runway 19.

Please note that the location of the monitoring wells may vary based on access approved by the Delaware River & Bay Authority at the New Castle Airport. A work plan will be submitted by the ANG prior to the construction of the three additional monitoring wells. DNREC will review the work plan and obtain input from Artesian prior to approval of the work plan.

Groundwater monitoring will also include shallow, intermediate, and deep wells located along the southern boundary of the DANGB. The ANG will conduct further investigation if monitoring data indicates a consistent trend of chlorinated VOCs migrating beyond the DANGB boundary at concentrations in excess of the Delaware Uniform Risk Based Standards for groundwater or should other investigations in the area between the DANGB and the AIP Wells indicate that the source of the AIP Wells' contamination is coming from the DANGB.

In addition, the ANG volunteered to install the aggressive remediation of the source area of the chlorinated groundwater plume at the beginning of the remedial action. (Previously, EISB or another active remedy was proposed if contamination levels were not decreasing after 2 years of monitored natural attenuation.) This more active remedy will likely increase the degradation rate of the chlorinated groundwater contamination at the DANGB site. The Final Plan of Remedial Action reflects this change. Attached Figure 1 (AECOM) shows the 2009 total chlorinated and non-chlorinated VOCs in shallow groundwater at the DANGB. The total chlorinated detections for the southern area of the Base ranged from non-detect (ND) in wells SENW2 and MWR126, to 0.5 in MW316 (combined PCE/TCE concentrations of 0.3J ug/L and 0.2 J ug/L, respectively).

Along the western boundary, total chlorinated detects range from 0.3 ug/L in well MW132, to 3.2 ug/L in well MW322 (carbon tetrachloride at 2.3 ug/L, chloroform at 0.4 J ug/L, cis-1,2-dichloroethene at 0.1 J ug/L and TCE at 0.4 J ug/L). Attached Table 1, Comparison of March 2006 and August 2009 Groundwater Analytical Data, presents all detected compounds from the 2009 groundwater monitoring events.

Comment #2: Artesian showed concern in regards to the depiction of the isoconcentration lines on Figure 3-2, Total Chlorinated Contamination Isoconcentration Contour Map, from the 2009 Feasibility Study.

Response #2: Figure has been revised. Figure 1 (AECOM) shows total chlorinated (and non-chlorinated) isoconcentration contour lines redrawn with August 2009 groundwater data.

Comment #3: Artesian shared concerns regarding their Airport Industrial Park (AIP) Wells and indicated that AIP Wells 1 and 2 have nearly the exact type and concentration of chlorinated organic compounds as found at the DANGB site, specifically tetrachloroethene (PCE) and trichloroethene (TCE).

Response #3: DNREC is also concerned about the contamination in the Airport Industrial Park Wells, located at Hares Corner. DNREC plans to conduct a separate investigation of all potential sources of the contamination in these wells. At the same, DNREC will closely monitor the groundwater contamination at the DANGB boundary and require additional downgradient wells if needed as stated in Response #1.

Comment #4: Artesian pointed out that although DANGB reports indicate groundwater flows to the south-southwest a change of flow direction to a more southerly direction is probable.

Response #4: As shown in Figure 2 (AECOM), groundwater at the DANGB appears to be generally flowing to the southwest. However, DNREC agrees that a change of flow direction to the south is possible. Groundwater will be closely monitored in both the shallow and intermediate wells at the southern and the southwestern Base boundary.

Comment #5: Artesian states that a sentry well (SENW2) is not screened within the shallow zone of the Potomac aquifer and therefore does not adequately represent groundwater quality at this location.

Response #5: SENW2 is screened from 39 to 49 feet bgs. The attached well log indicates that at a depth from 46 – 50 feet bgs the material is described as white silty sand and silt, wet. This is the water bearing unit at that location and is consistent with the shallow water bearing unit in that area. Copies of the well logs of the closest available AECOM [Earth Tech] monitoring wells, MW303 and MW304, are attached. At approximately 42 feet bgs in MW303 and 36 ft bgs in MW304, a wet very pale brown (could be described as white) silty sand or very fine-grained sand is described; this can be correlated to the white silty sand at 46 ft bgs in SENW2. This is the shallow water bearing unit in this location. Note that the Potomac Formation in this locality is

described as heterogeneous with interconnected layers and lenses of sands and silty sands interbedded with clays and silty clays.

Attached Table 2 contains recent water level data (August 2009) and includes nearby wells screened in the same unit. The water level elevation for SENW2 is consistent with nearby wells screened in the same water bearing zone.

Comment #6: Artesian states that the lower sand unit of the upper Potomac aquifer is not adequately monitored for potential off-site migration of chlorinated compounds that are heavier than water.

Response #6: MW401, 403, 404, and 406 are screened in the intermediate water-bearing zone (which may also be referred to as the lower sand unit of the upper Potomac aquifer). MWR134 and MWR136, located near the southern Base boundary, are also screened in the intermediate water-bearing zone. These wells will be sampled as part of the groundwater monitoring plan.

Note: Table 1 includes three intermediate wells that were sampled in August 2009 -- MW401, MW404 and MW406, with depths of 85 feet below ground surface (bgs), 95 feet bgs, and 80 feet bgs respectively. MW404 is the most downgradient well of the three (located approximately 75 feet west of the firehouse/Building 2900), and was all ND during August 2009 sampling.

Comment #7: Artesian requested that additional groundwater data be collected between the DANGB and the AIP Wells.

Response #7: As stated in the Response to Comment #3, DNREC plans to investigate potential sources of contamination of the AIP Wells, including the area between the DANGB and the AIP Wells. During this investigation for the Airport Industrial Park Well field, DNREC plans to install a monitoring well(s) between the New Castle Airport and the AIP Wells.

In addition, as stated in the Response to Comment #1, the ANG will initially install the following:

- intermediate monitoring well south of Runway 27 and downgradient of MWR134
- intermediate monitoring well south of Runway 27 near shallow monitoring well MW303
- intermediate monitoring well south of Runway 27 and west of Runway 19.

Please note that the location of the monitoring wells may vary based on access approved by the Delaware River & Bay Authority at the New Castle Airport. A work plan will be drafted prior to the construction of the three additional monitoring wells. DNREC will review the work plan and obtain input from Artesian prior to approval of the work plan.
Groundwater monitoring will also include shallow, intermediate and deep wells located along the southern boundary of the DANGB. The ANG will conduct further investigation if monitoring data indicates a consistent trend of chlorinated VOCs migrating beyond the DANGB boundary at concentrations in excess of the Delaware Uniform Risk Based Standards for groundwater or should other investigations in the area between the DANGB and the AIP Wells indicate that the source of the AIP Wells' contamination is coming from the DANGB.

Attachments:

- Table 1 – Comparison of March 2006 and August 2009 Groundwater Analytical Data
- Table 2 – Comparison of Shallow Wells in the Vicinity of SENW2
- Figure 1 – Total Chlorinated and Non-chlorinated VOCs in Shallow Groundwater Isoconcentration Map, August 2009
- Figure 2 – Groundwater Potentiometric Surface Map, August 2009
- Boring logs for MW303 and MW304
- Well log for SENW2

Table 1 (Revised 06-04-2010)
Comparison of March 2006 and August 2009 Groundwater Analytical Data

Compound	Delaware URS	Region III RBC	Units	MW101		MW104		MW115		MW120	MW132		MW147		MW202-1	MW302		MW304		MW306		MW307	
				March 2006	August 2009	March 2006	August 2009	March 2006	August 2009	August 2009	March 2006	August 2009	March 2006	August 2009	August 2009	March 2006	August 2009	March 2006	August 2009	March 2006	August 2009	March 2006	August 2009
Volatile Organic Compounds by SW8260																							
1,1,1 -Trichloroethane	200	540	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	81	800	ug/L	**1.1**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	0.04	0.12	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.10	0.044	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	190	1900	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	150	1500	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	61	610	ug/L	**3.4J**	ND	**5.8J**	ND	**21J**	**3.5J**	ND	ND	**4.7J**	ND	ND	ND	**3J**	ND	ND	ND	ND	ND	ND	ND
Benzene	0.4	0.36	ug/L	**2.8**	ND	**1.8**	**0.1J**	**14**	**0.4J**	ND	**580**	**29**	ND	ND	ND	**0.2J**	ND	**230**	**20**	ND	ND	ND	ND
Bromodichloromethane	0.2	0.17	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.1J**	ND	ND	ND
Carbon Disulfide	100	1000	ug/L	ND	ND	**0.2J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	2	0.16	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**9**	**15**
Chlorobenzene	11	110	ug/L	**11**	**1.6**	ND	ND	ND	ND	ND	**1.4J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	4	3.6	ug/L	**0.2J**	**0.1J**	**1.3**	**0.2J**	**2.4J**	ND	ND	ND	**0.2J**	ND	ND	ND	**0.2J**	ND	ND	ND	ND	ND	ND	ND
Chloroform	0.1	0.15	ug/L	ND	ND	ND	ND	**1.1**	ND	ND	ND	ND	ND	**0.2J**	ND	ND	ND	ND	ND	**0.7**	ND	**1.2**	**2.2**
Chloromethane	2	2.1	ug/L	ND	ND	**0.2J**	ND	**0.9J**	ND	ND	ND	ND	ND	ND	ND	**0.1J**	ND	ND	**0.2J**	ND	ND	ND	ND
cis-1,2-dichloroethene	61	61	ug/L	**0.1J**	ND	ND	ND	**2.2J**	**1.4**	ND	ND	**0.1J**	ND	ND	ND	ND	ND	**6.7**	**0.7**	**0.5J**	**0.3J**	ND	ND
Ethylbenzene	700	1300	ug/L	ND	ND	**3.7**	ND	**220**	**8.3**	ND	ND	**0.3J**	ND	ND	ND	ND	ND	ND	**1.0**	ND	ND	ND	ND
Methylene Chloride	4	4.1	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100	1600	ug/L	**0.2J**	ND	ND	ND	ND	ND	**0.2J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1	1.1	ug/L	ND	ND	ND	ND	ND	**0.1J**	**3.1**	ND	ND	ND	**0.2J**	ND	ND	ND	**0.6J**	**0.4J**	**12**	**8.1**	**0.3J**	**0.3J**
Toluene	750	750	ug/L	ND	ND	ND	ND	**3.7**	**0.9**	**0.1J**	ND	**0.7**	ND	ND	ND	ND	ND	ND	**0.2J**	ND	ND	ND	ND
trans-1,2-dichloroethene	100	120	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.2J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	2	1.6	ug/L	ND	ND	ND	ND	**5.8**	**0.2J**	**2.2**	ND	ND	ND	ND	ND	ND	ND	**7**	**0.6**	**5.9**	**2.4**	**0.2J**	**0.2J**
Vinyl Chloride	0.02	0.02	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	1200	12000	ug/L	ND	ND	ND	ND	**540**	**2.8**	ND	ND	**0.7**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Petroleum Hydrocarbons by SW8015																							
TPH-DRO	--	--	ug/L	NA	**86J**	NA	**510**	NA	**560**	ND	NA	**620**	NA	**57J**	**450**	NA	**100**	NA	**110**	NA	ND	NA	ND
TPH-GRO	--	--	ug/L	NA	ND	NA	**48**	NA	**930**	ND	NA	**270**	NA	ND	**70**	NA	**37**	NA	**380**	NA	ND	NA	**49J**

Notes:
1. ug/L = micrograms per liter
2. J = Estimated concentration
3. NA = Not Analyzed. Analysis was not performed for this compound.
4. ND = Non Detect. Compound was not detected in the sample from this location.
5. Detections of analytes above the detection limits are shown in bold type.
6. Detections in excess of Delaware URS values for groundwater are highlighted in yellow.
7. Detections in excess of USEPA Region III RBCs for tap water are highlighted in blue.
8. Detections in excess of both Delaware URS and Region III RBCs are highlighted in green.

Table 1 Continued
Comparison of March 2006 and August 2009 Groundwater Analytical Data

Compound	Delaware URS	Region III RBC	Units	MW309	MW310		MW311		MW312		MW313		MW314		MW315		MW316		MW317		MW318	
				August 2009	March 2006	August 2009	March 2006	August 2009	March 2006	August 2009	March 2006	August 2009	March 2006	August 2009	March 2006	August 2009	March 2006	August 2009	March 2006	August 2009	March 2006	August 2009
Volatile Organic Compounds by SW8260																						
1,1,1 -Trichloroethane	200	540	ug/L	ND	**0.7**	**0.9**	**1.5**	**0.5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	81	800	ug/L	ND	ND	**0.2J**	**0.1J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	0.04	0.12	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	**2.2J**	**0.1J**	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.10	0.044	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	190	1900	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	150	1500	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	61	610	ug/L	**24**	ND	ND	ND	ND	**15**	**16**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	0.4	0.36	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	0.2	0.17	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	100	1000	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	2	0.16	ug/L	ND	ND	ND	ND	ND	ND	ND	**2.9**	**5.5**	ND	**3.9**	ND	ND	ND	ND	**2.1**	**3**	ND	ND
Chlorobenzene	11	110	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	4	3.6	ug/L	**0.2J**	ND	ND	ND	ND	**1.5**	**0.5J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	0.1	0.15	ug/L	ND	ND	ND	ND	ND	ND	ND	**0.2J**	**0.3J**	ND	**2.3**	ND	ND	ND	ND	**0.5**	**0.7**	**0.1J**	ND
Chloromethane	2	2.1	ug/L	**0.3J**	ND	ND	ND	ND	**0.8J**	**0.5J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.2J**
cis-1,2-dichloroethene	61	61	ug/L	ND	ND	ND	ND	ND	**1.2J**	**10**	ND	ND	**2400**	**42**	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	1300	ug/L	**23**	ND	ND	ND	ND	**150J**	**100**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	4	4.1	ug/L	ND	ND	ND	ND	ND	ND	ND	**3.6**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100	1600	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1	1.1	ug/L	ND	ND	ND	**0.2J**	ND	**0.3J**	**0.2J**	**0.3J**	**0.3J**	**9.2J**	**1**	**0.1J**	**0.1J**	**0.3J**	**0.2J**	**0.4J**	**0.2J**	**0.3J**	**0.3J**
Toluene	750	750	ug/L	**0.2J**	ND	ND	ND	ND	**0.5J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-dichloroethene	100	120	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	**34**	**0.8**	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	2	1.6	ug/L	ND	ND	ND	ND	ND	**0.3J**	ND	ND	ND	**330**	**13**	ND	ND	**0.2J**	**0.3J**	**0.1J**	ND	ND	ND
Vinyl Chloride	0.02	0.02	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	1200	12000	ug/L	**52**	ND	ND	ND	ND	**400J**	**63**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Petroleum Hydrocarbons by SW8015																						
TPH-DRO	--	--	ug/L	ND	NA	**110**	NA	**58J**	NA	**11000**	NA	**78**	NA	**83J**	NA	ND	NA	ND	NA	**48**	NA	ND
TPH-GRO	--	--	ug/L	**1200**	NA	ND	NA	ND	NA	**4100**	NA	ND	NA	**41J**	NA	ND	NA	ND	NA	ND	NA	ND

Notes:
1. ug/L = micrograms per liter
2. J = Estimated concentration
3. NA = Not Analyzed. Analysis was not performed for this compound.
4. ND = Non Detect. Compound was not detected in the sample from this location.
5. Detections of analytes above the detection limits are shown in bold type.
6. Detections in excess of Delaware URS values for groundwater are highlighted in yellow.
7. Detections in excess of USEPA Region III RBCs for tap water are highlighted in blue.
8. Detections in excess of both Delaware URS and Region III RBCs are highlighted in green.

Table 1 Continued
Comparison of March 2006 and August 2009 Groundwater Analytical Data

Compound	Delaware URS	Region III RBC	Units	MW319		MW320		MW321		MW322		MW323		MW324		MW325	MW326	MW401
				March 2006	August 2009	March 2006	August 2009	March 2006	August 2009	March 2006	August 2009	March 2006	August 2009	March 2006	August 2009	August 2009	August 2009	August 2009
Volatile Organic Compounds by SW8260																		
1,1,1 -Trichloroethane	200	540	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	81	800	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	0.04	0.12	ug/L	**0.6J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.10	0.044	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	190	1900	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	150	1500	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**4.6J**	ND	ND	ND	ND
Acetone	61	610	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	0.4	0.36	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**2.1**	ND	ND	ND	ND
Bromodichloromethane	0.2	0.17	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.6**	ND	ND	ND	ND	ND
Carbon Disulfide	100	1000	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	2	0.16	ug/L	ND	ND	ND	ND	ND	ND	**6.8**	**2.3**	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	11	110	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	4	3.6	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	0.1	0.15	ug/L	**0.3J**	ND	**0.3J**	**0.1J**	ND	**0.1J**	**1.1**	**0.4J**	ND	**0.2J**	ND	ND	**0.3J**	ND	ND
Chloromethane	2	2.1	ug/L	ND	**2.3J**	ND	**0.3J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-dichloroethene	61	61	ug/L	**620**	**510**	ND	ND	ND	ND	ND	**0.1J**	ND	ND	ND	ND	**1.5**	**4.8**	ND
Ethylbenzene	700	1300	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	4	4.1	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100	1600	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1	1.1	ug/L	**8.5**	**4.1J**	**0.3J**	**0.4J**	ND	ND	**0.1J**	ND	**0.4J**	ND	**1.3**	**0.2J**	**3.3**	**0.8**	ND
Toluene	750	750	ug/L	ND	ND	ND	**0.7**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-dichloroethene	100	120	ug/L	**2.2**	**2.8J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	2	1.6	ug/L	**250**	**75**	**0.8**	ND	ND	ND	**0.5J**	**0.4J**	0.3J	ND	**0.4J**	**0.4J**	**14**	**3.9**	ND
Vinyl Chloride	0.02	0.02	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	1200	12000	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Petroleum Hydrocarbons by SW8015																		
TPH-DRO	--	--	ug/L	NA	**390**	NA	ND	NA	**140**	NA	ND	NA	**35J**	NA	ND	ND	**39J**	**4200**
TPH-GRO	--	--	ug/L	NA	**370**	NA	ND	NA	ND	NA	ND	NA	**50**	NA	ND	ND	ND	ND

Notes:
1. ug/L = micrograms per liter
2. J = Estimated concentration
3. NA = Not Analyzed. Analysis was not performed for this compound.
4. ND = Non Detect. Compound was not detected in the sample from this location.
5. Detections of analytes above the detection limits are shown in bold type.
6. MW325 and MW326 were not yet installed in March 2006.
7. MW401 was not sampled in March 2006.
8. Detections in excess of Delaware URS values for groundwater are highlighted in yellow.
9. Detections in excess of USEPA Region III RBCs for tap water are highlighted in blue.
10. Detections in excess of both Delaware URS and Region III RBCs are highlighted in green.

Table 1 Continued
Comparison of March 2006 and August 2009 Groundwater Analytical Data

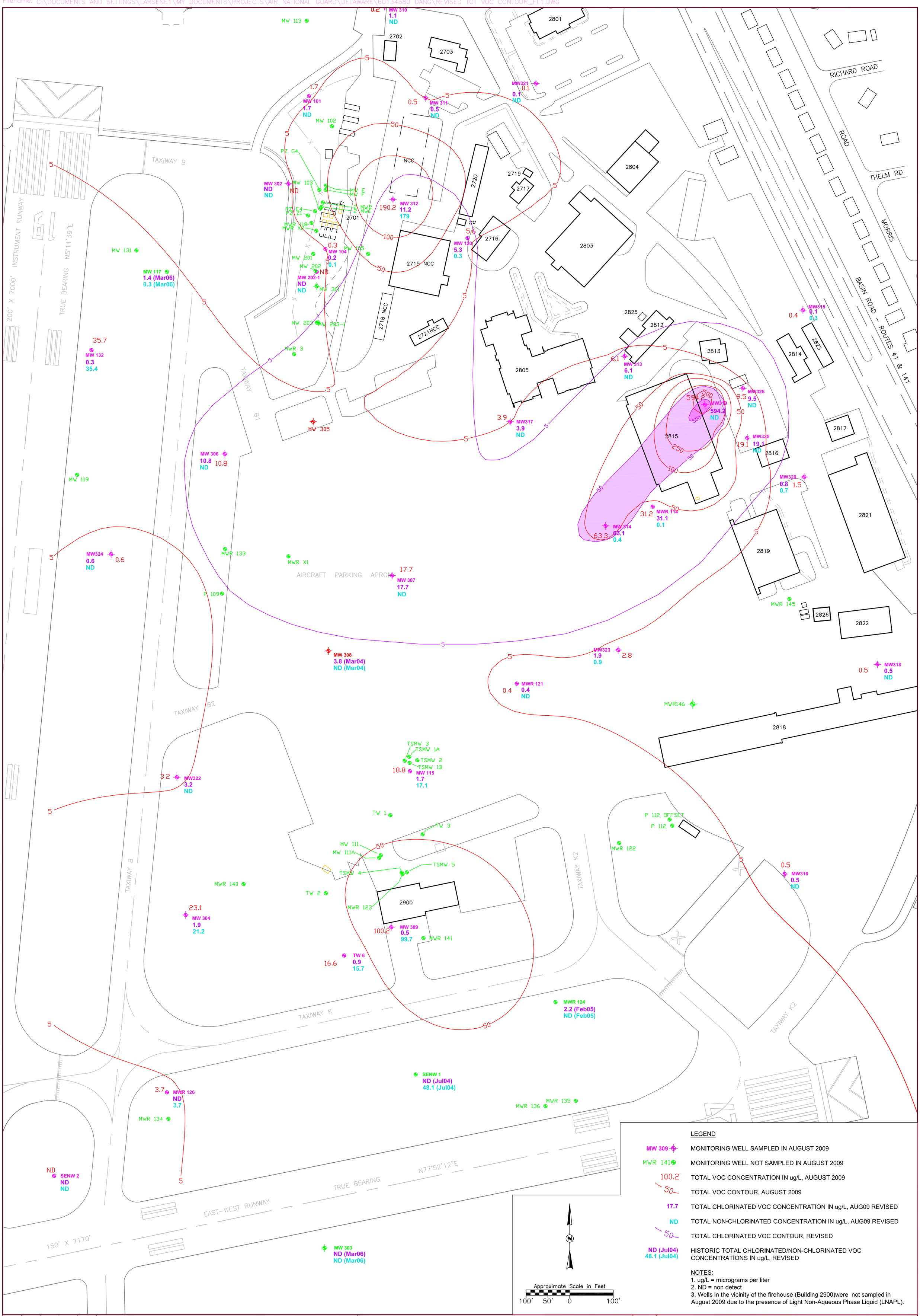
Compound	Delaware URS	Region III RBC	Units	MW404	MW406	MWR114		MWR121	MWR126		SENW2	TW6	
				August 2009	August 2009	March 2006	August 2009	August 2009	March 2006	August 2009	August 2009	March 2006	August 2009
Volatile Organic Compounds by SW8260													
1,1,1 -Trichloroethane	200	540	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	81	800	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	0.04	0.12	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.10	0.044	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	190	1900	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	150	1500	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	61	610	ug/L	ND	ND	ND	ND	ND	ND	**3.7**	ND	ND	**13**
Benzene	0.4	0.36	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	**0.3J**	ND
Bromodichloromethane	0.2	0.17	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	100	1000	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	2	0.16	ug/L	ND	ND	ND	**1.0**	**0.13**	**0.5J**	ND	ND	ND	ND
Chlorobenzene	11	110	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	4	3.6	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.5J**
Chloroform	0.1	0.15	ug/L	ND	ND	**0.3J**	**0.8**	ND	ND	ND	ND	ND	ND
Chloromethane	2	2.1	ug/L	ND	**0.3J**	ND	ND	ND	ND	ND	ND	ND	**0.4J**
cis-1,2-dichloroethene	61	61	ug/L	ND	ND	**13**	**24**	ND	**0.3J**	ND	ND	ND	ND
Ethylbenzene	700	1300	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.9**
Methylene Chloride	4	4.1	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100	1600	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1	1.1	ug/L	ND	ND	**3.6**	**1.3**	ND	**0.3J**	ND	ND	ND	ND
Toluene	750	750	ug/L	ND	ND	ND	**0.1J**	ND	ND	ND	ND	**2.8**	ND
trans-1,2-dichloroethene	100	120	ug/L	ND	ND	ND	**0.2J**	ND	ND	ND	ND	ND	ND
Trichloroethene	2	1.6	ug/L	ND	ND	**12**	**3.8**	**0.3J**	**1.4**	ND	**0.3J**	ND	ND
Vinyl Chloride	0.02	0.02	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	1200	12000	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	**1.8**
Total Petroleum Hydrocarbons by SW8015													
TPH-DRO	--	--	ug/L	ND	ND	NA	**770**	ND	NA	ND	ND	NA	**370**
TPH-GRO	--	--	ug/L	ND	ND	NA	ND	ND	NA	ND	ND	NA	**1100**

Notes:
1. ug/L = micrograms per liter
2. J = Estimated concentration
3. NA = Not Analyzed. Analysis was not performed for this compound.
4. ND = Non Detect. Compound was not detected in the sample from this location.
5. Detections of analytes above the detection limits are shown in bold type.
6. Detections in excess of Delaware URS values for groundwater are highlighted in yellow.
7. Detections in excess of USEPA Region III RBCs for tap water are highlighted in blue.
8. Detections in excess of both Delaware URS and Region III RBCs are highlighted in green.
9. MW404 and MW406 were not sampled in March 2006.

Table 2
Comparison of Shallow Wells
in the Vicinity of SENW2

LocID	Northing	Easting	Screen Interval	TOC	DTW btoc	WL elev
MW304	613173.00	604417.00	34 - 49	63.87	38.89	24.98
MWR123	613268.15	604914.54	NA	67.59	41.86	25.73
SENW2	612575.00	604115.00	39 - 49	66.25	41.85	24.4
TSMW4	613271.19	604912.64	NA	67.78	41.96	25.82
TW3	613358.73	604961.40	35 - 45	65.86	40.87	24.99
BV026	613267.00	604909.00	33 - 48	66.50	40.69	25.81
BV031	613315.00	604831.00	32 - 47	65.57	39.78	25.79

Plotted By: larsene1
Plot File Date Created: Jun/08/2010 11:47 AM
Layout–Sheet Name: LAYOUT1
Filename: C:\DOCUMENTS AND SETTINGS\LARSENE1\MY DOCUMENTS\PROJECTS\AIR NATIONAL GUARD\DELAWARE\60134580 DANG\REVISED TOT VOC CONTOUR_EL1.DWG



LEGEND

MW 309	MONITORING WELL SAMPLED IN AUGUST 2009
MWR 141	MONITORING WELL NOT SAMPLED IN AUGUST 2009
100.2	TOTAL VOC CONCENTRATION IN ug/L, AUGUST 2009
50	TOTAL VOC CONTOUR, AUGUST 2009
17.7	TOTAL CHLORINATED VOC CONCENTRATION IN ug/L, AUG09 REVISED
ND	TOTAL NON-CHLORINATED CONCENTRATION IN ug/L, AUG09 REVISED
50	TOTAL CHLORINATED VOC CONTOUR, REVISED
ND (Jul04) 48.1 (Jul04)	HISTORIC TOTAL CHLORINATED/NON-CHLORINATED VOC CONCENTRATIONS IN ug/L, REVISED

NOTES:
1. ug/L = micrograms per liter
2. ND = non detect
3. Wells in the vicinity of the firehouse (Building 2900)were not sampled in August 2009 due to the presence of Light Non-Aqueous Phase Liquid (LNAPL).

Delaware Air National Guard Basewide Groundwater Monitoring New Castle, Delaware

Figure 1 (REVISED Figure 3-2)
Total Chlorinated and Non-chlorinated VOCs in Shallow Groundwater Isoconcentration Map, August 2009

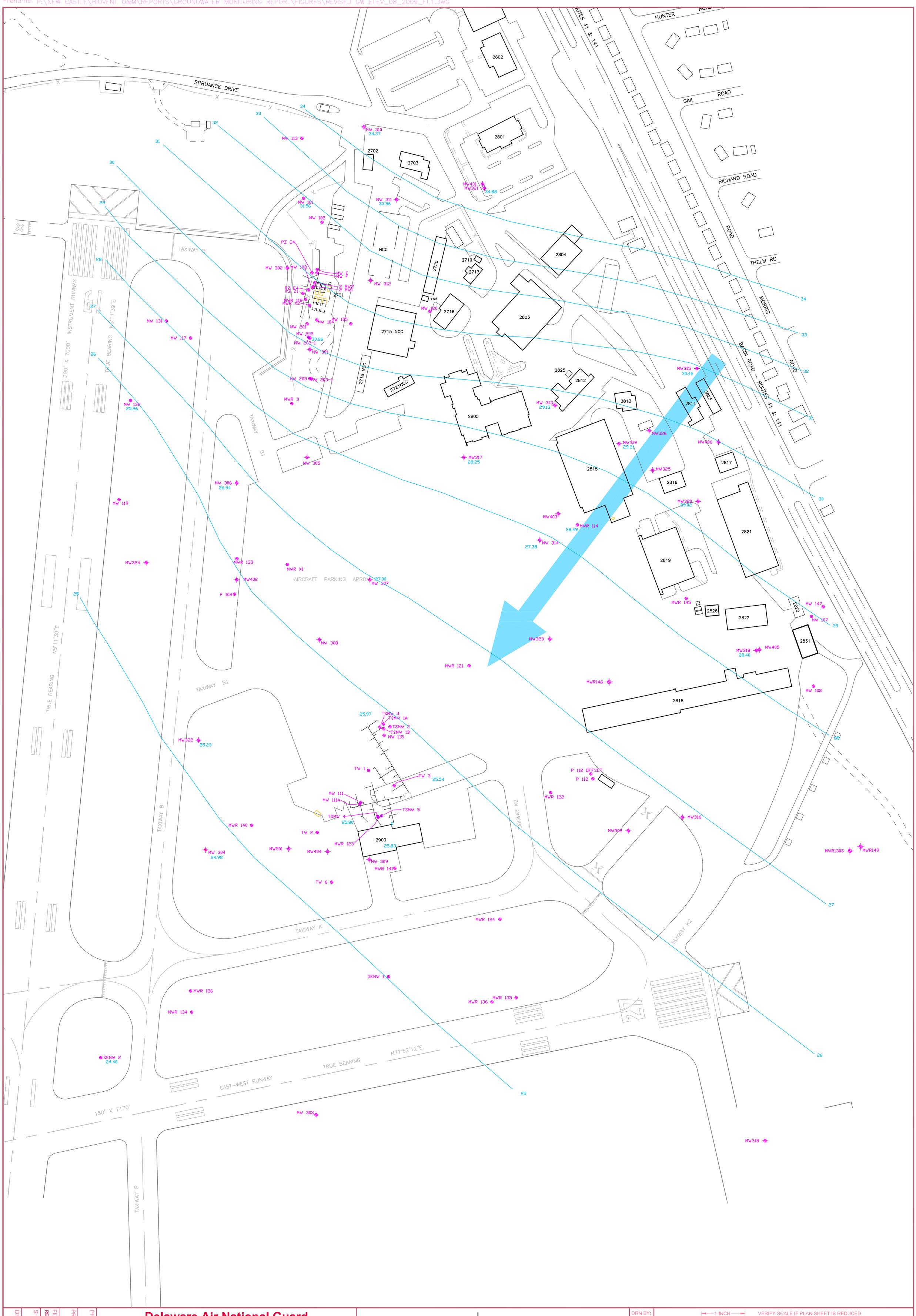
AECOM
675 N. WASHINGTON STREET
SUITE 300, ALEXANDRIA, VA 22314
T 703.549.8728 F 703.549.9134
WWW.AECOM.COM

DRAWING NO.	SHEET NO.	FILENAME	PROJECT NO.	PROJECT START DATE (M/Y)
3-2	XX-Y-Z	Revised Tot VOC Contour_EL1.dwg	60134580	08/2009

DRN BY:	REV	DESCRIPTION	DRN	CHK	DATE (M/D/Y)
MTS					
DES BY: MTS					
CHK BY: AG	2	added historical chlorinated detections	EL		06-04-2010
APP BY: AG	1	edited contours to reflect chlorinated VOCs	EL		06-04-2010

1-INCH VERIFY SCALE IF PLAN SHEET IS REDUCED

Plotted By: larsene1
Plot File Date Created: Jun/08/2010 11:43 AM
Layout-Sheet Name: LAYOUT1
Filename: P:\NEW CASTLE\BIOVENT O&M\REPORTS\GROUNDWATER MONITORING REPORT\FIGURES\REVISED GW ELEV_08_2009_EL1.DWG



Delaware Air National Guard
Basewide Groundwater Monitoring
New Castle, Delaware

Figure 2-1 REVISED
Groundwater Potentiometric Surface Map
August 2009

AECOM
675 N Washington St, Suite 300
Alexandria, VA 22314
T 703.549.8728 F 703.549.9134
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DRAWING NO.	1
SHEET NO.	XX-Y-Z
FILENAME	REVISED GW Elev_08_2009_EL1.dwg
PROJECT NO.	60134580
PROJECT START DATE (M/Y)	08/2009
DRN BY:	MTS
DES BY:	MTS
CHK BY:	AG/LF
APP BY:	AG

1-INCH VERIFY SCALE IF PLAN SHEET IS REDUCED

REV	DESCRIPTION	DRN	CHK	DATE (M/D/Y)
1	removed anomolous water level elevations, edited contours	EL		06-04-2010

AECOM

Boring Log

Project Name: DE Air National Guard	Site: 4B	**Hole ID: MW303**
Project Number: 71329.10.01	*Northing:* 612409.7	Total Depth (feet): 50.0
Drilling Contractor: Parratt Wolff Inc.	*Easting:* 604735.9	Date / Time Started: 02-20-04 / 0716
Driller: D Richmond	Elevation (feet MSL): *Ground:* 67.47	Date / Time Finished: 02-20-04 / 0918
Drilling Equipment: CME-75	▼ Water Depth During Drilling (feet bgs): 40.3	Date / Time Completed: 02-20-04 / 1135
Drilling Method: Hollow Stem Auger	Logged By: E Larsen	Checked By: L Degueldre
Borehole Diameter (inches): 8.25	Weather/Comments: sunny, temps in 40s, light wind (estimated coords)	

Depth (feet)	USCS Description	Log: Graphic	Log: USCS or Rock Type	Samples: Attempted Recovered	Samples: Method	Samples: Blow Count	Samples: PID/FID (ppm)	Samples: Time	Well Diagram	Remarks (list sample numbers here)
	LEAN CLAY, soft, moist to wet, dark brown (10YR 3/3), 30% silt, <5% very fine grained sand, mica, low plasticity		CL		AU		--	0716		Grass surface Logged from cuttings, all depths, except spoon depths, are approximate, driller comments on depth of hard material or gravel layers noted BG: PID -1.53 ppm FID -7.68 ppm
	grading to yellowish brown [10YR 5/8]									
5					AU		--	0722		
	grading to dark yellowish brown (10YR 4/6)									
	grading to 5% very fine and fine grained sand									BG: PID -1.55 ppm FID -7.90 ppm
10	grading to yellowish brown (10YR 5/4)				AU		--	0730		
	grading to yellowish brown (10YR 5/6)									BG: PID -1.54 ppm FID -7.71 ppm
15	grading to 5% rounded gravel				AU			0737		no odor to cuttings no odor
20										

Tracking Codes: P:\NEW CASTLE\GINT\DE AIR NATIONAL GUARD.GPJ, 6/8/10, 09:51

Form: DE-ANG SOIL BORING LOG

AECOM

Boring Log (Continued)

Project Name: DE Air National Guard | Site: 4B | **Hole ID: MW303**

Depth (feet)	USCS Description	Log: Graphic	Log: USCS or Rock Type	Samples: Attempted Recovered	Samples: Method	Samples: Blow Count	Samples: PID/FID (ppm)	Samples: Time	Well Diagram	Remarks (list sample numbers here)
	grading to **LEAN CLAY WITH GRAVEL**, 5-10% rounded gravel				AU			0749		BG: PID -1.57 ppm FID -7.25 ppm no odor to cuttings
25	intermittent thin gravel lenses (~15-20%)				AU			0809		
	grading to **GRAVELLY LEAN CLAY**, 25% gravel									BG: PID -1.58 ppm FID -7.38 ppm
30					AU			0825		BG: PID -1.58 ppm FID -7.44 ppm
	increasing silt grading to **LEAN CLAY WITH GRAVEL**				AU			0835		BG: PID -1.57 ppm FID -7.25 ppm
40	**POORLY GRADED SAND**, very dense, wet, layers of yellow (10YR 7/8), strong brown (7.5YR 5/8), yellowish red (5YR 5/8) and yellow (10YR 7/6), <5% clay/silt, medium grained sand, non-cohesive		SP		SS	22 28 30 42	-1.37/ -6.89	0847		no odor to cuttings wet at 40.3' bgs no odor
	grading to pale yellow (2.5Y 8/3), <2% clay				AU			0853		BG: PID -1.54 ppm FID -7.35 ppm
45										

Tracking Codes: P:\NEW CASTLE\GINT\DE AIR NATIONAL GUARD.GPJ, 6/8/10, 09:51

AECOM

Boring Log
(Continued)

Project Name: DE Air National Guard	Site: 4B	Hole ID: MW303

Depth (feet)	USCS Description	Log: Graphic	Log: USCS or Rock Type	Samples: Attempted Recovered	Samples: Method	Samples: Blow Count	Samples: PID/FID (ppm)	Samples: Time	Well Diagram	Remarks (list sample numbers here)
					AU			0909		BG: PID -1.58 ppm FID -7.53 ppm
50	Total Depth 50.0' bgs.							0918		
55										
60										
65										
70										

Tracking Codes: P:\NEW CASTLE\GINT\DE AIR NATIONAL GUARD.GPJ, 6/8/10, 09:51

Form: DE-ANG SOIL BORING LOG

AECOM

Boring Log

Project Name: DE Air National Guard	Site: 4B	**Hole ID: MW304**
Project Number: 71329.10.01	*Northing:* 613174	Total Depth (feet): 47.0
Drilling Contractor: Parratt Wolff Inc.	*Easting:* 604417	Date / Time Started: 02-20-04 / 1245
Driller: D Richmond	Elevation (feet MSL): *Ground:* 64.35	Date / Time Finished: 02-20-04 / 1402
Drilling Equipment: CME-75	▼ Water Depth During Drilling (feet bgs): 37.2	Date / Time Completed: 02-20-04 / 1630
Drilling Method: Hollow Stem Auger	Logged By: E Larsen	Checked By: L Degueldre
Borehole Diameter (inches): 8.25	Weather/Comments: sunny, temp 48, light winds	

Depth (feet)	USCS Description	Log: Graphic	Log: USCS or Rock Type	Samples: Attempted Recovered	Samples: Method	Samples: Blow Count	Samples: PID/FID (ppm)	Samples: Time	Well Diagram	Remarks (list sample numbers here)
	SILT, moist, dark yellowish brown (10YR 4/6), 30% clay, 5% very fine grained sand, 5% rounded gravel, very fine mica, non-plastic		ML		AU	--	--	1245		Grass surface Logged from cuttings, all depths, except spoon depths, are approximate, driller comments on depth of hard material or gravel layers noted BG: PID -1.51 ppm FID -5.36 ppm
5	grading to **SILT WITH SAND**, soft, moist, dark yellowish brown (10YR 4/6), 35% clay, 10% fine and medium grained sand, fine mica, non-plastic grading to very dark grayish brown (2.5Y 3/2) and 5% rounded fine grained gravel				AU	--	--	1250		no odor BG: PID -1.52 ppm FID -5.33 ppm
	grading to **LEAN CLAY**, soft, moist, yellowish brown (10YR 5/6), 25% silt, <5% very fine grained sand, fine mica, non- to low plasticity		CL							
10					AU	--	--	1255		BG: PID -1.54 ppm FID -5.78 ppm
15					AU			1300		
	increasing sand grading to **LEAN CLAY WITH SAND**, 15% fine, medium and coarse grained sand, 25% silt									BG: PID -1.29 ppm FID -7.29 ppm
20										

Tracking Codes: P:\NEW CASTLE\GINT\DE AIR NATIONAL GUARD.GPJ, 6/8/10, 09:51

AECOM

Boring Log (Continued)

Project Name: DE Air National Guard | Site: 4B | **Hole ID: MW304**

Depth (feet)	USCS Description	Log: Graphic	Log: USCS or Rock Type	Samples: Attempted Recovered	Samples: Method	Samples: Blow Count	Samples: PID/FID (ppm)	Samples: Time	Well Diagram	Remarks (list sample numbers here)
	grading to 35-40% fine, medium, coarse and very coarse grained sand				AU			1305		BG: PID -1.56ppm FID -8.38 ppm
25					AU			1312		
	grading to **CLAYEY SAND**, loose, moist, dark yellowish brown (10YR 4/6), 35% clay, 10% silt, fine, medium, coarse and very coarse grained sand, slightly cohesive		SC-SW							BG: PID -1.53 ppm FID -8.83 ppm
	grading to 5% fine grained, rounded gravel									
30					AU			1317		
	increasing clay									BG: PID -1.52 ppm FID -9.81 ppm
	grading to **SANDY LEAN CLAY**		CL							
	POORLY GRADED SAND, loose, moist, dark yellowish brown (10YR 4/6), <2% clay, fine grained sand		SP							
35	grading to very pale brown (10YR 7/4)				SS	6 9 10 11	-1.11/ -9.0	1327		no odor
	grading to layers of very pale brown (10YR 8/2) and yellow (10YR 7/6)									
	grading to wet, very pale brown (10YR 8/2), fine grained sand				SS	10 12 9 17	-1.05/ -10.0	1330		no odor wet at 37.2' bgs
					AU			1332		
40					AU			1340		
										BG: PID -1.49 ppm FID -10.0 ppm
45										

Tracking Codes: P:\NEW CASTLE\GINT\DE AIR NATIONAL GUARD.GPJ, 6/8/10, 09:51

Form: DE-ANG SOIL BORING LOG

AECOM

Boring Log (Continued)

Project Name: DE Air National Guard	Site: 4B	Hole ID: MW304

Depth (feet)	USCS Description	Log: Graphic	Log: USCS or Rock Type	Samples: Attempted Recovered	Samples: Method	Samples: Blow Count	Samples: PID/FID (ppm)	Samples: Time	Well Diagram	Remarks (list sample numbers here)
	Total Depth 47.0' bgs				AU			1347 1402		
50										
55										
60										
65										
70										

Tracking Codes: P:\NEW CASTLE\GINT\DE AIR NATIONAL GUARD.GPJ, 6/8/10, 09:51

CLIENT:	ANG	**LOCATION:**	New Castle, DE
PROJECT NAME :	New castle	**DRILLING CO. :**	Tri-State Env. Serv.
Well No.:	Sentinel well No. 2	**DATE :**	4/21/98
CASED INTERVAL :	0-39	**DRILL RIG:**	STRATA STAR 15
SCREEN INTERVAL :	39-49	**DRILLING METD. :**	HAS/SPOON
TOTAL DEPTH:	50	**PERMIT NO. :**	

DEPTH (in Feet)	LITHOLOGICAL DESCRIPTION	HNu READING (in ppm)/BC	REMARKS
0-1	Top soil: Grass and top soil	0.4 ppm	.
1 to 5	Sand: Brown, tan clayey and silty sand. Matrix	3,7,4,9	5 to 7
	richer in clay at the bottom		
5 to 6	Clay: Brown and gray clay and silty clay	2,4,3,1	10 to 12
6 to 11	Sand/clay: Gray clay alternating with brown		
	clayey silt	6,4,8,12	15 to 17
11 to 17	Silty clay: Brown grayish silty clay becoming	0.4 ppm	
	richer in clay at the bottom.		
20-26	Gravel/sand: Tan Coarse grained sand mixed with		
	gravel. Hard to drill, dry	10-11 ppm	20-22
26-30	Gravel: Gray gravel with very coarse grained sand	4,3,6,7	25-27
	some clay in the matrix	0 ppm	
30-46	Clay: White tight clay and clayey silt	3,3,2,4	30-32
46-50	Silty sand: White slity sand and silt, wet	8,2,2,3	35-37
50-52	Sand/clay: white clayey silt alternating with sand	1,2,2,3	40-42
		2,2,3,6	45-47
		3,3,5,5	50-52
	bottom of the hole at 52 feet bgs		
	water at 44 feet bgs		