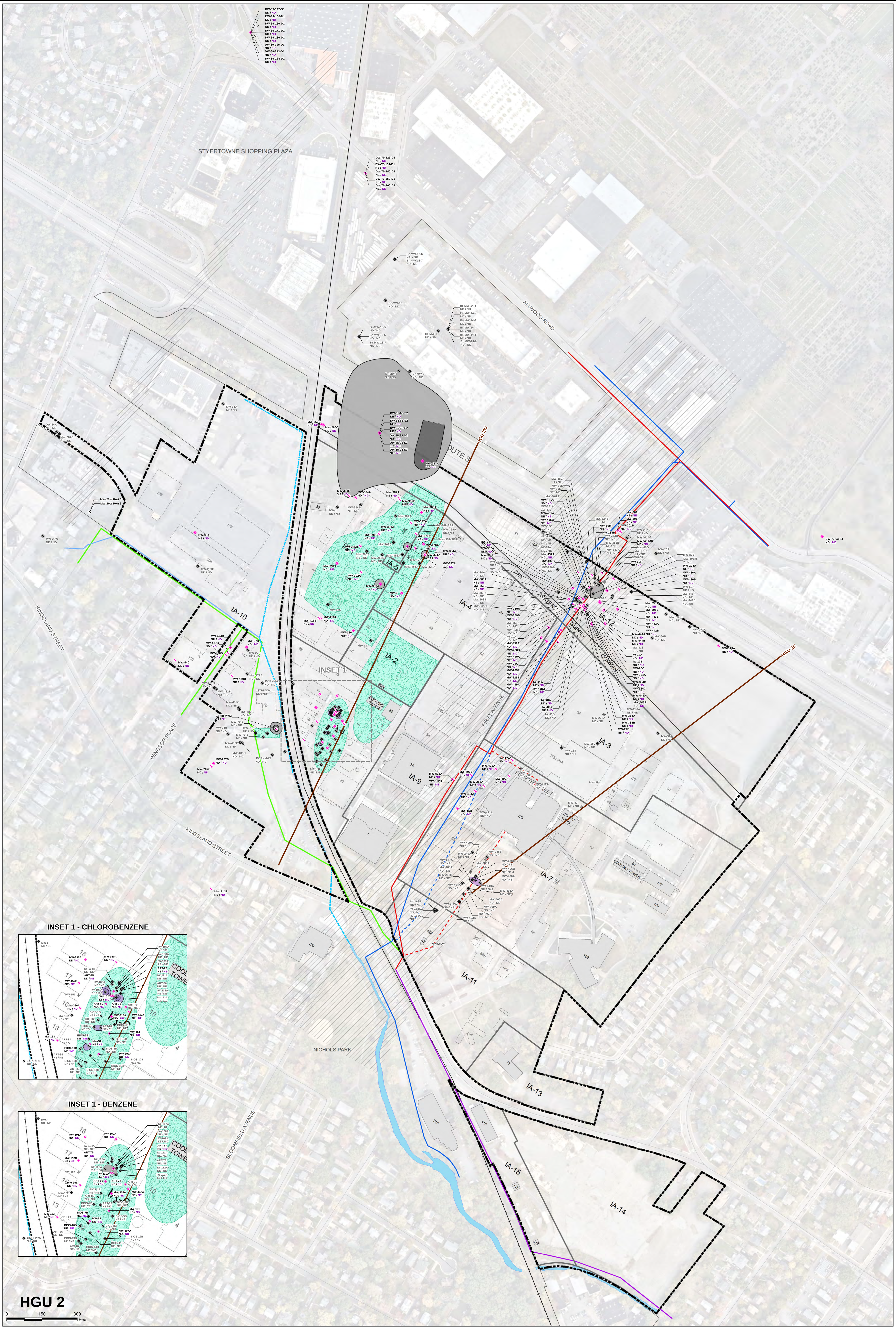

N

LEGEND

HOFFMANN-LA ROCHE INC. SITE PROPERTY BOUNDARY
INVESTIGATIVE AREAS
OFF-SITE PROPERTY BOUNDARY
DEMOLISHED BUILDING
CURRENT BUILDING
RAILROAD
ROADWAY
HGU SUBCROP BOUNDARY
APPROXIMATE FAULT ZONE
APPROXIMATE EXTENT OF IRM TREATMENT AREA(S)
ST. PAUL'S BROOK
SPRINGER BROOK (CULVERT)
ST. PAUL'S BROOK (CULVERT)
VALLEY DRAIN
FORMER VALLEY DRAIN
CLIFTON-ALLWOOD MUNICIPAL SEWER
FORMER CLIFTON-ALLWOOD MUNICIPAL SEWER
NUTLEY MUNICIPAL SEWER
TRUNK SEWER

HGU 2 WELL LOCATIONS

MW-237A 21 / ND — WELL SAMPLED 1Q 2018 SEMI-ANNUAL & IRM PROGRAMS
MW-27C ND / ND — WELL SAMPLED DURING PREVIOUS SAMPLING EVENTS - 1Q 2015 THROUGH 4Q 2017 (DATA USED FOR CONTOURING)
MW-20W Port 5 — WELL SAMPLED PRIOR TO 1Q 2015 (DATA NOT SHOWN)
MW-406A ND / NE — DECOMMISSIONED WELL THROUGH 1Q 2018

BENZENE ISOCONCENTRATION CONTOURS

>1 AND ≤10 PPB
>10 AND ≤100 PPB

CHLOROBENZENE ISOCONCENTRATION CONTOURS

>50 AND ≤100 PPB
>100 AND ≤1,000 PPB

Benzene/Chlorobenzene Data Presentation

Data from Current Reporting Period - 1Q 2018

MW-237A 21 / ND — Chlorobenzene (PPB), Benzene (PPB)

Data From Previous Sampling Events

MW-27C ND / ND — Chlorobenzene (PPB), Benzene (PPB)

Well ID

MW-237A		
Benz	CB	TICS
21	ND	4544

Data From Current Reporting Period - 1Q 2018

Asterisk indicates well not sampled for 1,4-dioxane
Well ID
Sample Date (Month/Year)

* MW-27C (1/2016)	
Benz	CB
ND	ND

Data From Previous Sampling Events (used for contouring purposes)

ABBREVIATION	GWQS (ppb)	COMPOUND
1,2-DCA	2	1,2-Dichloroethane
Benz	1	Benzene
BDCM	1	Bromodichloromethane
BF	4	Bromoform
CT	1	Carbon tetrachloride
CB	50	Chlorobenzene
CA	5	Chloroethane
CF	70	Chloroform
DBCM	1	Dibromochloromethane
MTBE	70	Methyl Tert Butyl Ether (MTBE)
MC	3	Methylene chloride
TICS	500	Total VOC TIC

HGU 2 MAP

NOTES:

1. HGU = HYDROGEOLOGIC UNIT.
2. THIS FIGURE DEPICTS THE VOLATILE ORGANIC COMPOUNDS (VOCs) GROUNDWATER QUALITY DATA WITHIN HGUs, AS DEFINED IN THE JANUARY 2018 CONCEPTUAL SITE MODEL (CSM) REPORT.
3. HGUs DIP TO THE NORTHWEST AND THEREFORE HGUs 1, 2, 3, AND 4 ARE NOT UNIFORMLY PRESENT BENEATH THE ENTIRE SITE AS THEY SUBCROP (i.e., INTERSECT THE BEDROCK SURFACE) FROM EAST TO WEST ACROSS THE SITE. HGU SUBCROP BOUNDARIES FOR HGUs 1, 2, 3, AND 4 ARE SHOWN AND THE RESPECTIVE HGUs ARE NOT PRESENT EAST OF THESE LINES.
4. ALL CONCENTRATIONS ARE IN PARTS PER BILLION (PPB).
5. THE CURRENT EXTENT OF THE BENZENE (BENZ) AND CHLOROBENZENE (CB) PLUMES ARE SHOWN ON THIS FIGURE.
6. THE DATA BOXES SHOW ALL GROUNDWATER CONTAMINANT EXCEEDANCES OF THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUND WATER QUALITY STANDARDS (GWQS) FOR "OTHER VOCs" (EXCLUDES PCE+, TCA+, AND 1,4-DIOXANE COMPOUNDS).
7. BENZ AND CB GROUNDWATER RESULTS GREATER THAN THEIR RESPECTIVE GWQS ARE SHOWN ON THE LEFT PORTION OF THE DATA BOX. THE OTHER VOC EXCEEDANCES ARE SHOWN ON THE RIGHT PORTION OF THE DATA BOX.
8. WELLS WITH SAMPLES THAT DO NOT EXCEED THE GWQS ARE MARKED "NE". WELLS WITH SAMPLES THAT HAVE NO DETECTIONS ARE MARKED "ND".
9. THE DATA SUMMARIZED ON THIS FIGURE INCLUDE THE SITE-WIDE SEMI-ANNUAL SAMPLING EVENT CONDUCTED IN 1Q 2018 AND INTERIM REMEDIAL MEASURES (IRM) PERFORMANCE MONITORING DATA.
10. THE MOST RECENT HISTORICAL DATA WERE USED FOR WELLS THAT WERE NOT SAMPLED DURING THE CURRENT REPORTING PERIOD TO INTERPOLATE BENZ AND CB CONTOURS.
11. DURING THE 1Q 2018 SAMPLING EVENT, ALL WELLS WERE SAMPLED VIA PASSIVE DIFFUSION BAG (PDB) FOR VOCs BETWEEN FEBRUARY 26, 2018 AND MARCH 29, 2018. DURING IRM PERFORMANCE MONITORING EVENTS WELLS WERE SAMPLED VIA LOW-FLOW AND PDBs FOR VOCs BETWEEN JANUARY 16, 2018 AND APRIL 19, 2018. WESTBAY PORT SAMPLING (DW-65, DW-69, DW-70, AND DW-72) FOR VOCs WAS CONDUCTED BETWEEN MARCH 6, 2018 AND MARCH 12, 2018.
12. IN SOME CASES, ADJACENT WELLS SCREENED AT DIFFERENT DEPTH INTERVALS HAVE CONCENTRATIONS THAT DIFFER BY MORE THAN AN ORDER OF MAGNITUDE. IN THESE CASES, THE WELL WITH THE HIGHEST CONCENTRATION WAS USED FOR CONTOURING PURPOSES.
13. BENZ AND CB ISOCONCENTRATION CONTOURS ARE SHOWN DASHED WHERE INFERRED.
14. GROUNDWATER QUALITY DATA OF OFF-SITE WELLS ON THE BRIAD PROPERTY (NORTH OF ROUTE 3), COLLECTED BETWEEN JANUARY AND DECEMBER 2016, WERE USED FOR CONTOURING THE EXTENT OF BENZ AND/OR CB IN THIS AREA. SELECT BRIAD WELLS NOT SAMPLED FOR BENZ ARE MARKED "NS". REFER TO RANSOM RIR APRIL 2017.
15. DELUXE WELLS LOCATED ON-SITE AND OFF-SITE WERE LAST SAMPLED BY ROCHE IN 2015 OR 2016.
16. GROUNDWATER IRM PROGRAMS TARGETING ON-SITE BENZ AND/OR CB CONSTITUENTS WERE INITIATED IN IA-1/IA-4 AND IA-6 IN 2Q 2016 AND IN IA-10 B70 IN 1Q 2015. EXCEPT FOR THE IA-1/IA-4 IRM, ALL GROUNDWATER IRMs HAVE BEEN COMPLETED.
17. PRE-IRM GROUNDWATER QUALITY DATA FOR BENZ AND CB ARE EXCLUDED FROM THE PRESENT DEPICTION OF BENZ AND CB IMPACTS IN THE FOLLOWING WELLS: MW-135, MW-

DATA FROM CURRENT REPORTING PERIOD - 1Q 2018

Well	Benz	CB	Other
187RI-MW2	14	NE	ND
ART-75	ND	NE	NE
ART-77	NE	NE	NE
ART-78	ND	NE	NE
ART-79	ND	ND	ND
ART-80	NE	ND	NE
DW-35A	NE	ND	ND
DW-65-60-S2	NE	ND	NE
DW-65-66-S2	NE	ND	MTBE 200
DW-65-73-S2	NE	ND	MTBE 200
DW-65-84-S2	ND	ND	NE
DW-65-91-S3	3.7	ND	CA 7.3; MTBE 270
DW-65-96-S3	NE	ND	NE
DW-69-142-S3	ND	ND	NE
DW-69-150-D1	ND	ND	NE
DW-69-160-D1	ND	ND	NE
DW-69-171-D1	ND	ND	NE
DW-69-186-D1	ND	ND	NE
DW-69-195-D1	ND	ND	NE
DW-69-213-D1	ND	ND	NE
DW-69-224-D1	ND	ND	NE
DW-70-123-D1	NE	ND	NE
DW-70-131-D1	NE	ND	NE
DW-70-140-D1	NE	ND	NE
DW-70-150-D1	NE	NE	NE
DW-70-160-D1	NE	NE	NE
DW-72-63-S1	ND	ND	ND
IW-13A	ND	ND	BDCM 8.4; BF 19; CT 180; DBCM 11
IW-13B	ND	ND	BDCM 1.2; BF 5.9; CT 3.6; DBCM 2
IW-40A	ND	ND	BDCM 4.3; BF 7.8; CT 53; DBCM 5.9
IW-40B	ND	ND	BDCM 2.7; BF 8.3; CT 19; DBCM 3.8
IW-41A	ND	ND	BDCM 2.1; BF 8.2; CT 23; DBCM 6
IW-41B2	ND	ND	CT 1.5
IW-109A	1.4	NE	ND
IW-110A	NE	NE	NE
IW-117A1	ND	ND	ND
MW-2	ND	ND	NE
MW-15B	ND	ND	NE
MW-24	ND	ND	BDCM 2.8; BF 14; DBCM 4.2
MW-24B	NE	ND	NE
MW-24C	ND	ND	BDCM 1.7; BF 4.1; CT 5; DBCM 2.7
MW-27B	ND	ND	NE
MW-44C	ND	ND	NE
MW-52	NE	NE	NE
MW-60F	ND	ND	NE
MW-60M	ND	ND	NE
MW-60-Z2R	ND	ND	NE
MW-80C	ND	ND	BDCM 6; BF 4.5; CF 130; CT 110; DBCM 5.7
MW-80-Z2R	ND	ND	NE
MW-136	ND	ND	NE
MW-157B	NE	NE	NE
MW-161	ND	ND	NE
MW-163	NE	NE	NE
MW-201	NE	NE	1,2-DCA 3
MW-201A	NE	NE	1,2-DCA 4.3
MW-201B	NE	NE	1,2-DCA 4.3
MW-207B	ND	ND	NE
MW-207C	ND	ND	NE
MW-214B	NE	ND	NE
MW-225A	ND	BD ND	BDCM 1.2; CT 4.7; DBCM 1.5
MW-225B	ND	ND	BDCM 1.9; BF 6.3; CT 10; DBCM 2.8
MW-237A	21	ND	TICS 4544
MW-253A	NE	ND	NE
MW-255B	NE	ND	NE
MW-266B	ND	ND	NE
MW-266C	ND	ND	NE
MW-294A	NE	NE	NE
MW-295A	ND	NE	NE
MW-295B	ND	ND	NE
MW-318A	NE	NE	NE
MW-350A	ND	ND	NE
MW-354A	22	ND	NE
MW-357A	NE	ND	BF 45; DBCM 1.1
MW-359A	NE	ND	BDCM 2.2; DBCM 1.8
MW-359B	ND	ND	NE
MW-360A	NE	NE	NE
MW-360B	NE	NE	NE
MW-362A	ND	ND	BDCM 13; BF 6; DBCM 9.6
MW-362B	NE	ND	NE
MW-364A	ND	ND	BDCM 7; BF 7.3; CT 12; DBCM 7.4
MW-364B	ND	ND	NE
MW-364C	ND	ND	NE
MW-365A	ND	ND	BDCM 20; BF 13; CF 96; CT 2.2; DBCM 19
MW-365B	ND	ND	NE
MW-370A	NE	ND	NE
MW-371A	2.4	ND	NE
MW-372A	ND	ND	NE
MW-375A	ND	ND	NE
MW-384A	ND	ND	NE
MW-387A	NE	ND	NE
MW-387B	NE	ND	NE
MW-388A	NE	ND	NE
MW-390A	NE	ND	NE
MW-390B	NE	ND	NE
MW-391A	ND	NE	ND
MW-392A	NE	ND	NE
MW-393A	3.7	ND	NE
MW-394B	3.2	ND	MTBE 100
MW-395A	ND	ND	NE
MW-396A	ND	ND	NE
MW-397A	ND	ND	NE
MW-416A	ND	ND	NE
MW-416B	NE	ND	NE
MW-426A	NE	ND	MC 50
MW-435A	NE	NE	1,2-DCA 2.1
MW-435B	NE	NE	1,2-DCA 2.1
MW-436A	ND	ND	BDCM 1.1
MW-436B	ND	ND	ND
MW-437A	ND	ND	BDCM 5.6; DBCM 2.4
MW-437B	ND	ND	BDCM 1.6
MW-438A	ND	ND	NE
MW-438B	ND	ND	NE
MW-439A	NE	ND	NE
MW-440A	NE	NE	NE
MW-442A	ND	ND	NE
MW-442B	ND	ND	BDCM 1.4; DBCM 1.1
MW-443B	ND	ND	NE
MW-444A	ND	ND	NE
MW-444B	ND	ND	NE
MW-445A	ND	ND	NE
MW-445B	ND	ND	NE
MW-447A	NE	ND	NE
MW-474B	ND	ND	NE
MW-479B	ND	ND	CT 10
MW-487B	ND	ND	NE
MW-488B	ND	ND	CT 1.2
MW-491A	ND	NE	NE
MW-492A	NE	ND	ND
MW-493B	NE	ND	NE
MW-494A	NE	NE	NE
MW-502A	ND	ND	NE
MW-502B	NE	NE	NE

DATA FROM PREVIOUS SAMPLING EVENTS - 1Q 2015 THROUGH 3Q 2017

Well (Date)	Benz	CB
* 187RI-MW1 (3/2015)	ND	ND
187RI-MW3 (3/2017)	ND	ND
190RI-MW1 (3/2017)	ND	ND
* 190RI-MW2 (1/2016)	ND	ND
ART-76 (7/2017)	NE	NE
ART-82 (7/2017)	NE	62
ART-84 (7/2017)	NE	73
ART-86 (7/2017)	NE	NE
ART-87 (7/2017)	NE	NE
ART-88 (7/2017)	NE	NE
ART-89 (7/2017)	ND	ND
BIOS-1B (7/2017)	NE	NE
BIOS-2B (7/2017)	NE	NE
BIOS-4B (7/2017)	NE	74
BIOS-5B (7/2017)	NE	NE
BIOS-7B (10/2017)	NE	NE
BIOS-8B (7/2017)	ND	ND
BIOS-10B (10/2017)	NE	NE
BIOS-11B (7/2017)	NE	NE
BIOS-12B (7/2017)	NE	NE
BIOS-13B (7/2017)	ND	NE
BIOS-14B (7/2017)	ND	ND
BIOS-15B (7/2017)	ND	ND
Br-MW-5 (2/2016)	3.6	ND
Br-MW-6 (1/2016)	ND	ND
Br-MW-8 (2/2016)	ND	ND
Br-MW-10 (2/2016)	ND	ND
* Br-MW-12-6 (4/2016)	NS	NE
Br-MW-12-7 (2/2016)	ND	NE
Br-MW-13-5 (2/2016)	ND	ND
Br-MW-13-6 (2/2016)	ND	ND
* Br-MW-13-7 (4/2016)	NS	ND
Br-MW-14-1 (2/2016)	ND	ND
Br-MW-14-2 (2/2016)	ND	ND
Br-MW-14-3 (2/2016)	ND	ND
Br-MW-14-4 (2/2016)	ND	ND
Br-MW-14-5 (2/2016)	ND	ND
Br-MW-14-6 (2/2016)	ND	ND
* DW-33A (6/2015)	NE	ND
* DW-34A (6/2015)	NE	ND
IW-10A (6/2017)	ND	ND
IW-11B (6/2017)	ND	ND
IW-35A (5/2017)	ND	ND
* IW-35B (4/2017)	ND	ND
IW-104A (7/2017)	NE	NE
IW-105A (7/2017)	NE	NE
IW-106A (7/2017)	2.6	180
IW-107A (7/2017)	NE	81
IW-108A (7/2017)	NE	NE
IW-111A (7/2017)	NE	NE
IW-112A (7/2017)	NE	NE
IW-113A (7/2017)	1.3	110
* IW-168B (8/2017)	ND	NE
* IW-168C1 (8/2017)	ND	NE
* IW-168C2 (8/2017)	ND	NE
MW-1 (10/2017)	ND	ND
* MW-5 (6/2015)	ND	NE
* MW-24A (6/2015)	ND	NE
* MW-27C (1/2016)	ND	ND
* MW-29W (8/2015)	ND	ND
* MW-37 (6/2015)	ND	ND
* MW-42 (6/2015)	ND	ND
* MW-60A (12/2015)	ND	ND
* MW-60B (6/2015)	ND	ND
* MW-60C (6/2015)	ND	ND
* MW-60L (3/2015)	NE	NE
* MW-70-1 (1/2016)	ND	ND
* MW-70-2 (1/2016)	ND	ND
* MW-70-3 (1/2016)	ND	ND
* MW-80A (11/2015)	NE	NE
* MW-80BR (12/2015)	2	NE
* MW-113 (4/2017)	ND	ND
* MW-150 (3/2015)	ND	ND
* MW-162 (6/2015)	ND	NE
* MW-188 (3/2015)	ND	ND
* MW-202 (11/2015)	ND	ND
* MW-203 (11/2015)	ND	ND
MW-210 (3/2017)	ND	ND
MW-218B (3/2017)	ND	NE
* MW-224B (3/2015)	ND	NE
* MW-228A (3/2015)	ND	ND
* MW-232B (6/2015)	ND	ND
MW-249A (3/2017)	ND	ND
* MW-250B (6/2015)	NE	NE
MW-254B (10/2017)	NE	ND
MW-256B (10/2017)	ND	ND
MW-259C (9/2015)	ND	ND
* MW-263B (3/2016)	NE	NE
* MW-267C (6/2015)	ND	ND
* MW-272A (6/2015)	ND	ND
* MW-288A (6/2015)	ND	ND
MW-288B (3/2017)	ND	ND
MW-292A (3/2017)	ND	NE
* MW-293A (3/2016)	ND	ND
* MW-296A (6/2015)	ND	NE
MW-358A (6/2017)	ND	ND
MW-358B (6/2017)	ND	ND
* MW-361A (6/2015)	ND	NE
* MW-361B (6/2015)	ND	ND
* MW-363A (4/2017)	ND	ND
* MW-363B (4/2017)	ND	ND
* MW-363C (4/2017)	ND	NE
MW-369A (7/2016)	ND	ND
* MW-379A (12/2015)	1.9	NE
* MW-380A (12/2015)	1.4	NE
* MW-381A (12/2015)	2.2	NE
* MW-382B (12/2015)	NE	NE
* MW-383A (12/2015)	ND	NE
* MW-399A (12/2015)	ND	NE
* MW-400A (9/2015)	ND	NE
* MW-401A (9/2015)	ND	NE
* MW-402A (12/2015)	ND	NE
* MW-403A (8/2015)	ND	ND
* MW-404A (12/2015)	ND	ND
* MW-405A (12/2015)	ND	ND
* MW-406A (12/2015)	ND	ND
* MW-406B (9/2015)	NE	91.4
* MW-407A (9/2015)	ND	NE
* MW-408A (12/2015)	ND	NE
* MW-409A (12/2015)	ND	NE
* MW-410A (8/2015)	ND	66.7
* MW-441A (12/2015)	ND	NE
* MW-441B (12/2015)	ND	ND
MW-477A (1/2017)	ND	ND
MW-481B (1/2017)	ND	ND
MW-481C (1/2017)	ND	ND
MW-482B (1/2017)	ND	ND
MW-482C (1/2017)	ND	ND
* MW-411A (7/2015)	ND	ND
* MW-412A (6/2015)	ND	ND
MW-483B (1/2017)	ND	ND
MW-483C (1/2017)	ND	ND
MW-500A (10/2017)	ND	ND

PROJECT:
HOFFMANN-LA ROCHE INC. SITE
NUTLEY, NEW JERSEY

TITLE: **BENZENE, CHLOROBENZENE, AND OTHER VOC EXCEEDANCES IN GROUNDWATER HGU 2 - 1Q 2018**

DATE: FEBRUARY 2019 | PROJ. NO.: 198233

FIGURE 38

TRC
TRC ENVIRONMENTAL CORP.
41 Spring Street, Suite 102
New Providence, New Jersey 07974
908-988-1700

FILE NO.: CBB_HGU2.mxd

Plot Date: 2/21/2019, 16:47:51 PM by TZORN -- LAYOUT: ANSI D (22"x34")
Path: \\newprov-fp1\Environmental\Drafting Files\ArcGIS Files\105009\GWPR\2018 1Q\MAP DOCUMENTS\CB_Benzene\CBB_HGU2.mxd