

APPENDIX B

**NJDEP Well Contour Reporting Forms
(September 2016, January 2017, February 2017)**

APPENDIX B

NJDEP Well Contour Reporting Forms - September 2016

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
Site-Wide Gauging Event - Zone S1
September 28, 2016

1. Did any surveyed well casing elevations change from the previous sampling event? Yes ___ No X . If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

All wells on-Site have been surveyed. The elevation data and surveyor Form Bs for all Roche-owned wells are included (if available at this time) in Appendix C of this report.

2. Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes X No ____ . If yes, identify these wells.

MW-255B, MW-256B, MW-356A, MW-357A, MW-368A, MW-370A, MW-372A, MW-387A, MW-388A, MW-389A, MW-390A, MW-391A, MW-392A, MW-393A, MW-416A, ART-MW-5BR, MW-137, MW-12, MW-225A, MW-35, MW-39A, MW-439A, MW-174, MW-175, MW-178, MW-179, MW-180, MW-182, MW-183AR, MW-184, MW-185AR, MW-2, MW-20AR, MW-200, MW-235, MW-354A, MW-355A, MW-371A, MW-426A, MW-427A, MW-428A, MW-440A, MW-490A, MW-162, MW-5, MW-52, MW-6A, MW-249A, MW-288A, MW-292A, MW-399A, MW-400A, MW-401A, MW-402A, MW-403A, MW-404A, MW-405A, MW-406A, MW-407A, MW-408A, MW-409A, MW-410A, MW-417A, MW-491A, MW-492A, MW-494A, MW-9A, 138RI-MW1, 179RI-MW1, 186RI-MW1, 186RI-MW2, 66RI-MW2, 66RI-MW8, MW-17AW, MW-22W, MW-23W, MW-27, MW-28, MW-280A, MW-284A, MW-43, MW-446A, MW-45, MW-472A, MW-476A, MW-480A, MW-35W, MW-33B, MW-62, MW-65, MW-68, MW-69, MW-72, MW-114A, MW-232B, MW-24, MW-266A, MW-271A, MW-272A, MW-358A, MW-359A, MW-360A, MW-361A, MW-362A, MW-363A, MW-364A, MW-365A, MW-375A, MW-435A, MW-436A, MW-437A, MW-58, MW-141, MW-142, MW-143, MW-111, MW-112, MW-496A, MW-2G, MW-213B, MW-209A, MW-171A, MW-201, MW-353A, MW-106A, MW-105A, MW-108A, MW-257A, MW-267A, DW-1B, MW-473A, MW-474A, MW-475A, MW-485A, MW-486A, MW-487A, MW-488A, and MW-489A

3. Are there any monitoring wells present at the Site but omitted from the contour map? Yes X No ____ . Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

Monitoring Wells: MW-372A, MW-59, MW-39-1, MW-266A, MW-289A, MW-404A, MW-292A, MW-72, MW-65, MW-33, MW-33B, MW-373A, MW-38, MW-12, and MW-35 were not included in the calculation for the contours because the groundwater measurements were anomalous compared to surrounding wells.

Monitoring Wells: MW-254B, MW-243A, MW-150, MW-188, 131RI-MW1, MW-15W, MW-207A, MW-36W, MW-172, MW-80BR, DW-72-63-S1, MW-339A, MW-2W, MW-3W, MW-4W, MW-5AW, MW-6W, MW-8W, MW-10W, MW-11W, MW-12W, MW-13W, MW-14W, MW-18W, MW-20W Port 1, MW-21W, MW-24W, MW-25W, MW-31W, MW-37W, and MW-38W were omitted from this map because of well access restrictions.

Monitoring Wells: MW-30 and MW-386A were omitted on this map because of decommissioned status.

4. Are there any monitoring wells containing separate phase product during this measuring event? Yes X No _____. Were any of the monitor wells with separate phase product included in the groundwater contour map? Yes X No _____. If yes, show the formula used to correct the water table elevation.

Product was detected at MW-237A. The following formula was used to correct the water table elevation.

Ground Water Elevation = Measuring Point Elevation – [Depth to Water – (Product Thickness * Product Specific Gravity)]

Product Specific Gravity is estimated to be 0.74

5. Has the groundwater flow direction changed more than 45 degrees from the previous groundwater contour map? Yes ____ No X. If yes, discuss the reasons for the change.
6. Has groundwater mounding and/or depressions been identified in the groundwater contour map? Yes X No _____. Unless the groundwater mounds and/or depressions are caused by the groundwater remediation system, discuss the reasons for this occurrence.

A shallow groundwater mounding was identified at an off-site location, northwest and upgradient of Nichols Park. The mounding is likely the result of ongoing groundwater discharge from potentially damaged sections of the Valley Drain or its trench and bedding material.

7. Are all the wells used in the contour map screened in the same water-bearing zone? Yes X No _____. If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the first occurrence of groundwater.

8. Were the groundwater contours computer generated ____, computer aided ____, or hand-drawn X? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
Site-Wide Gauging Event - Zone S2
September 28, 2016

- 1 Did any surveyed well casing elevations change from the previous sampling event? Yes No X. If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

All wells on-Site have been surveyed. The elevation data and surveyor Form Bs for all Roche-wells are included (if available at this time) in Appendix C of this report.

- 2 Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes ___ No ___. If yes, identify these wells. N/A
- 3 Are there any monitoring wells present at the Site but omitted from the contour map? Yes X No ___. Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

Monitoring Wells: MW-274B, MW-394B, MW-314B, MW-313B, MW-318B, MW-315B, MW-63, MW-217BR, MW-335B, MW-361B, MW-363B, MW-40A, and MW-60A-S2 were not included in the calculation for the contours because the groundwater measurements were anomalous compared to surrounding wells.

Monitoring wells: MW-30W, MW-7W, MW-20W Port 2, MW-9W, MW-307B, MW-264B, MW-425-S2, MW-20N, MW-9N, MW-6RN, MW-5N, MW-1N, MW-7N, MW-2N, MW-3RN, MW-18RN, MW-8N, MW- 12N, MW-228B, MW-19N, MW-17N, MW-115, MW-378B, PW-37 Port 1, and PW-37 Port 2 were not accessible.

- 4 Are there any monitoring wells containing separate phase product during this measuring event? Yes ___ No X. Were any of the monitor wells with separate phase product included in the groundwater contour map? Yes ___ No X. If yes, show the formula used to correct the water table elevation.
- 5 Has the groundwater flow direction changed more than 45 degrees from the previous groundwater contour map? Yes ___ No X. If yes, discuss the reasons for the change.
- 6 Has groundwater mounding and/or depressions been identified in the groundwater contour map? Yes ___ No X. Unless the groundwater mounds and/or depressions are caused by the groundwater remediation system, discuss the reasons for this occurrence.
- 7 Are all the wells used in the contour map screened in the same water-bearing zone? Yes X No ___. If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the first occurrence of groundwater.

- 8 Were the groundwater contours computer generated ____, computer aided ____, or hand-drawn X? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
Site-Wide Gauging Event - Zone S3
September 28, 2016

- 1 Did any surveyed well casing elevations change from the previous sampling event? Yes No X. If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

All wells on-Site have been surveyed. The elevation data and surveyor Form Bs for all Roche-owned wells are included (if available at this time) in Appendix C of this report.

- 2 Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes ___ No ___. If yes, identify these wells. N/A
- 3 Are there any monitoring wells present at the Site but omitted from the contour map? Yes X No ___. Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

Monitoring Wells: MW-479C, MW-391-S3, MW-321C, MW-453C1, MW-302C, MW-452C, MW-173C, and MW-276C were not included in the calculation for the contours because the groundwater measurements were anomalous compared to surrounding wells.

Monitoring Wells: MW-20W Port 3, MW-19W, CH-17 Port 1, MW-458C1, MW-458C2, MW-9IN, MW-13N, MW-4N, MW-14N, MW-10N, MW-15N, MW-16N, PW-37 Port 3, and PW-37 Port 4 were not accessible.

- 4 Are there any monitoring wells containing separate phase product during this measuring event? Yes ___ No X. Were any of the monitor wells with separate phase product included in the groundwater contour map? Yes ___ No X. If yes, show the formula used to correct the water table elevation.
- 5 Has the groundwater flow direction changed more than 45 degrees from the previous groundwater contour map? Yes ___ No X. If yes, discuss the reasons for the change.
- 6 Has groundwater mounding and/or depressions been identified in the groundwater contour map? Yes ___ No X. Unless the ground water mounds and/or depressions are caused by the groundwater remediation system, discuss the reasons for this occurrence.
- 7 Are all the wells used in the contour map screened in the same water-bearing zone? Yes X No ___. If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of

these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the first occurrence of groundwater.

- 8 Were the groundwater contours computer generated ____, computer aided ____, or hand-drawn X ? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
Site-Wide Gauging Event - Zone D1
September 28, 2016

- 1 Did any surveyed well casing elevations change from the previous sampling event? Yes No X. If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

All wells on-Site have been surveyed. The elevation data and surveyor Form Bs for all Roche-owned wells are included (if available at this time) in Appendix C of this report.

- 2 Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes ___ No ___. If yes, identify these wells. N/A
- 3 Are there any monitoring wells present at the Site but omitted from the contour map? Yes X No ___. Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

Monitoring Wells: DW-16A, DW-15A, DW-12A, DW-54A, DW-25-D1, DW-49A, DW-7A, DW-8A, DW-56A, DW-57A, DW-39A, DW-5B, and DW-37A were not included in the calculation for the contours because the groundwater measurements were anomalous compared to surrounding wells.

Monitoring Wells: MW-20W Port 4, MW-20W Port 5, CH-17 Port 2, CH-17 Port 3, PW-37 Port 6, and PW-37 Port 7 were not accessible.

- 4 Are there any monitoring wells containing separate phase product during this measuring event? Yes ___ No X. Were any of the monitor wells with separate phase product included in the groundwater contour map? Yes ___ No X. If yes, show the formula used to correct the water table elevation.
- 5 Has the groundwater flow direction changed more than 45 degrees from the previous groundwater contour map? Yes ___ No X. If yes, discuss the reasons for the change.
- 6 Has groundwater mounding and/or depressions been identified in the groundwater contour map? Yes ___ No X. Unless the groundwater mounds and/or depressions are caused by the groundwater remediation system, discuss the reasons for this occurrence.
- 7 Are all the wells used in the contour map screened in the same water-bearing zone? Yes X No ___. If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of

these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the first occurrence of groundwater.

- 8 Were the groundwater contours computer generated ____, computer aided ____, or hand-drawn X? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
Site-Wide Gauging Event - Zone D2
September 28, 2016

1. Did any surveyed well casing elevations change from the previous sampling event? Yes No X. If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

All wells on-Site have been surveyed. The elevation data and surveyor Form Bs for all Roche-owned wells are included (if available at this time) in Appendix C of this report.

2. Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes ___ No ___. If yes, identify these wells. N/A
3. Are there any monitoring wells present at the Site but omitted from the contour map? Yes X No ___. Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

Monitoring Wells: DW-32B, and DW-31B were not included in the calculation for the contours because the groundwater measurements were anomalous compared to surrounding wells.

Monitoring Wells: MW-26W, MW-27W, MW-29W, MW-28W, MW-20W Port 7, MW-20W Port 6, CH-17 Port 4, CH-17 Port 5, CH-17 Port 6, CH-17 Port 7, CH-17 Port 8, CH-17 Port 9, PW-37 Port 8, PW-37 Port 9, PW-37 Port 10, and PW-37 Port 11 were not accessible.

4. Are there any monitoring wells containing separate phase product during this measuring event? Yes ___ No X. Were any of the monitor wells with separate phase product included in the groundwater contour map? Yes ___ No X. If yes, show the formula used to correct the water table elevation.
5. Has the groundwater flow direction changed more than 45 degrees from the previous groundwater contour map? Yes ___ No X. If yes, discuss the reasons for the change.
6. Has groundwater mounding and/or depressions been identified in the groundwater contour map? Yes ___ No X. Unless the groundwater mounds and/or depressions are caused by the groundwater remediation system, discuss the reasons for this occurrence.
7. Are all the wells used in the contour map screened in the same water-bearing zone? Yes X No ___. If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of

these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the first occurrence of groundwater.

8. Were the groundwater contours computer generated ____, computer aided ____, or hand-drawn X? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
Site-Wide Gauging Event - Zone D3
September 28, 2016

- 1 Did any surveyed well casing elevations change from the previous sampling event? Yes No X. If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

All wells on-Site have been surveyed. The elevation data and surveyor Form Bs for all Roche-owned wells are included (if available at this time) in Appendix C of this report.

- 2 Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes ___ No ___. If yes, identify these wells. N/A
- 3 Are there any monitoring wells present at the Site but omitted from the contour map? Yes X No ___. Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

Monitoring Wells: DW-16C, DW-33C, DW-44C, DW-40C, DW-31C, DW-39C, and DW-38C were not included in the calculation for the contours because the groundwater measurements were anomalous compared to surrounding wells.

Monitoring Wells: CH-17 Port 10, CH-17 Port 11, and CH-17 Port 12 were inaccessible.

- 4 Are there any monitoring wells containing separate phase product during this measuring event? Yes ___ No X. Were any of the monitor wells with separate phase product included in the groundwater contour map? Yes ___ No X. If yes, show the formula used to correct the water table elevation.
- 5 Has the groundwater flow direction changed more than 45 degrees from the previous groundwater contour map? Yes ___ No X. If yes, discuss the reasons for the change.
- 6 Has groundwater mounding and/or depressions been identified in the groundwater contour map? Yes ___ No X. Unless the groundwater mounds and/or depressions are caused by the groundwater remediation system, discuss the reasons for this occurrence.
- 7 Are all the wells used in the contour map screened in the same water-bearing zone? Yes X No ___. If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-

20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the first occurrence of groundwater.

- 8 Were the groundwater contours computer generated ____, computer aided ____, or hand-drawn X? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX B

NJDEP Well Contour Reporting Forms - January 2017

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
IA-10 / Windsor Place - Zone S1
January 23, 2017

1. Did any surveyed well casing elevations change from the previous sampling event? Yes No X. If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

All Site wells have been surveyed. The elevation data and surveyor Form Bs for all Roche-owned wells are included (if available at this time) in Appendix B of this report.

2. Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes X No _____. If yes, identify these wells.

MW-27, MW-28, MW-43, MW-446A, MW-45, MW-472A, MW-473A, MW-474A, MW-475A, MW-476A, MW-477A, MW-480A, MW-485A, MW-486A, MW-487A, MW-488A, MW-489A, MW-496A.

3. Are there any monitoring wells present at the Site but omitted from the contour map? Yes X No _____. Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

The groundwater elevation at MW-487A was excluded from the Zone S1 groundwater contour map since it appears to be anomalous when compared to data from surrounding wells. Please note that this monitoring well gauging event was conducted on selected wells located in IA-10 (on-Site) and Windsor Place (off-Site). Other Site wells are excluded from this targeted field program.

4. Are there any monitoring wells containing separate phase product during this measuring event? Yes ____ No X. Were any of the monitor wells with separate phase product included in the groundwater contour map? Yes ____ No X. If yes, show the formula used to correct the water table elevation.
5. Has the groundwater flow direction changed more than 45 degrees from the previous groundwater contour map? Yes ____ No X. If yes, discuss the reasons for the change.
6. Has groundwater mounding and/or depressions been identified in the groundwater contour map? Yes X No _____. Unless the groundwater mounds and/or depressions are caused by the groundwater remediation system, discuss the reasons for this occurrence.

A groundwater depression can be observed in Zone S1 around a portion of the Nutley Municipal Sewer traversing Windsor Place, suggesting a portion of the sewer is acting as a drain (see Figure 5).

7. Are all the wells used in the contour map screened in the same water-bearing zone? Yes X
No _____. If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the first occurrence of groundwater.

8. Were the groundwater contours computer generated ____, computer aided ____, or hand-drawn X? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
IA-10 / Windsor Place - Zone S2
January 23, 2017

- 1 Did any surveyed well casing elevations change from the previous sampling event? Yes X No _____. If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

All Site wells have been surveyed, including recently-installed off-Site wells MW-474B, MW-487B, MW-488B (Windsor Place) and on-Site well MW-501B (IA-10). The elevation data and surveyor Form Bs for all Roche-owned wells are included (if available at this time) in Appendix B of this report.

- 2 Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes ____ No _____. If yes, identify these wells. N/A
- 3 Are there any monitoring wells present at the Site but omitted from the contour map? Yes ____ No X. Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

Please note that this monitoring well gauging event was conducted on selected wells located in IA-10 (on-Site) and Windsor Place (off-Site). Other Site wells are excluded from this targeted field program.

- 4 Are there any monitoring wells containing separate phase product during this measuring event? Yes ____ No X. Were any of the monitor wells with separate phase product included in the groundwater contour map? Yes ____ No X. If yes, show the formula used to correct the water table elevation.
- 5 Has the groundwater flow direction changed more than 45 degrees from the previous groundwater contour map? Yes ____ No X. If yes, discuss the reasons for the change.
- 6 Has groundwater mounding and/or depressions been identified in the groundwater contour map? Yes ____ No X. Unless the groundwater mounds and/or depressions are caused by the groundwater remediation system, discuss the reasons for this occurrence.
- 7 Are all the wells used in the contour map screened in the same water-bearing zone? Yes X No _____. If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-

20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the first occurrence of groundwater.

- 8 Were the groundwater contours computer generated ____, computer aided ____, or hand-drawn X? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
IA-10 / Windsor Place - Zone S3
January 23, 2017

- 1 Did any surveyed well casing elevations change from the previous sampling event? Yes No X. If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

All Site wells have been surveyed. The elevation data and surveyor Form Bs for all Roche owned wells are included (if available at this time) in Appendix B of this report.

- 2 Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes ___ No ___. If yes, identify these wells. N/A
- 3 Are there any monitoring wells present at the Site but omitted from the contour map? Yes ___ No X. Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

Please note that this monitoring well gauging event was conducted on selected wells located in IA-10 (on-Site) and Windsor Place (off-Site). Other Site wells are excluded from this targeted field program.

- 4 Are there any monitoring wells containing separate phase product during this measuring event? Yes ___ No X. Were any of the monitor wells with separate phase product included in the groundwater contour map? Yes ___ No ___. If yes, show the formula used to correct the water table elevation.
- 5 Has the groundwater flow direction changed more than 45 degrees from the previous groundwater contour map? Yes ___ No X. If yes, discuss the reasons for the change.
- 6 Has groundwater mounding and/or depressions been identified in the groundwater contour map? Yes ___ No X. Unless the ground water mounds and/or depressions are caused by the groundwater remediation system, discuss the reasons for this occurrence.
- 7 Are all the wells used in the contour map screened in the same water-bearing zone? Yes X No ___. If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the

first occurrence of groundwater.

- 8 Were the groundwater contours computer generated ____, computer aided ____, or hand-drawn X? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX B

NJDEP Well Contour Reporting Forms - February 2017

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
Site-Wide Gauging Event - Zone S1
February 28, 2017

1. Did any surveyed well casing elevations change from the previous sampling event? Yes X No _____. If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

All wells on-Site have been surveyed, including recently repaired and modified wells 179RI-MW1, 186RI-MW1, 186RI-MW2, 53RI-MW2, 53RI-MW3, 66RI-MW8, MW-35, MW-229A, 131RI-MW1, MW-266A, MW-35W, MW-229A, and 131RI-MW1 as a result of site remedial action and/or development activities. The elevation data and surveyor Form Bs for all Roche-owned wells are included (if available at this time) in Appendix C of this report.

2. Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes X No _____. If yes, identify these wells.

66RI-MW2, 66RI-MW3, 66RI-MW4, 66RI-MW8, ART-MW-5BR, DW-1B, MW-1, MW-105A, MW-106A, MW-108A, MW-112, MW-114A, MW-131, MW-137, MW-138, MW-141, MW-142, MW-143, MW-144A, MW-150, MW-16, MW-162, MW-171A, MW-174, MW-175, MW-178, MW-179, MW-18, MW-180, MW-182, MW-183AR, MW-184, MW-185AR, MW-188, MW-197, MW-2, MW-200, MW-201, MW-209A, MW-20AR, MW-213B, MW-225A, MW-227A, MW-232B, MW-235, MW-237A, MW-24, MW-243A, MW-249A, MW-253A, MW-254B, MW-255B, MW-256B, MW-257A, MW-259A, MW-266A, MW-267A, MW-27, MW-271A, MW-272A, MW-274A, MW-276A, MW-28, MW-280A, MW-284A, MW-288A, MW-289A, MW-290A, MW-291A, MW-292A, MW-293A, MW-294A, MW-2G, MW-304A, MW-33B, MW-353A, MW-354A, MW-355A, MW-356A, MW-357A, MW-358A, MW-359A, MW-360A, MW-361A, MW-362A, MW-363A, MW-364A, MW-365A, MW-368A, MW-370A, MW-371A, MW-372A, MW-375A, MW-387A, MW-388A, MW-389A, MW-390A, MW-39-1, MW-391A, MW-392A, MW-393A, MW-399A, MW-39A, MW-400A, MW-401A, MW-402A, MW-403A, MW-404A, MW-405A, MW-406A, MW-407A, MW-408A, MW-409A, MW-410A, MW-416A, MW-417A, MW-426A, MW-427A, MW-428A, MW-43, MW-435A, MW-436A, MW-437A, MW-438A, MW-439A, MW-440A, MW-446A, MW-45, MW-472A, MW-473A, MW-474A, MW-475A, MW-476A, MW-477A, MW-480A, MW-485A, MW-486A, MW-487A, MW-488A, MW-489A, MW-490A, MW-491A, MW-492A, MW-494A, MW-496A, MW-5, MW-52, MW-58, MW-60A, MW-60C, MW-60J, MW-60K, MW-60L, MW-62, MW-64, MW-65, MW-68, MW-69, MW-6A, MW-72, MW-80A, MW-99, and MW-9A.

3. Are there any monitoring wells present at the Site but omitted from the contour map? Yes X No _____. Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

Monitoring Wells: MW-487A, MW-355A, MW-2, MW-266A, MW-317A, MW-404A, MW-39-1, MW-365A, MW-12, MW-38, and MW-255B were not included in the calculation for the contours because the groundwater measurements were anomalous compared to surrounding wells.

Monitoring Wells: MW-386A, MW-15W, MW-17AW, MW-22W, MW-23W, MW-30, MW-35W, MW-36W, MW-4G, MW-2W, MW-3W, MW-4W, MW-5AW, MW-6W, MW-8W, MW-10W, MW-11W, MW-12W, MW-13W, MW-14W, MW-18W, MW-20W Port 1, MW-21W, MW-24W, MW-25W, MW-31W, MW-37W, MW-38W, and MW-104A were not accessible.

4. Are there any monitoring wells containing separate phase product during this measuring event? Yes ___ No X. Were any of the monitor wells with separate phase product included in the groundwater contour map? Yes ___ No X. If yes, show the formula used to correct the water table elevation.
5. Has the groundwater flow direction changed more than 45 degrees from the previous groundwater contour map? Yes ___ No X. If yes, discuss the reasons for the change.
6. Has groundwater mounding and/or depressions been identified in the groundwater contour map?
Yes X No _____. Unless the groundwater mounds and/or depressions are caused by the groundwater remediation system, discuss the reasons for this occurrence.

A shallow groundwater mounding was identified at an off-site location, northwest and upgradient of Nichols Park. The mounding is likely the result of ongoing groundwater discharge from potentially damaged sections of the Valley Drain or its trench and bedding material.

7. Are all the wells used in the contour map screened in the same water-bearing zone? Yes X No _____. If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the first occurrence of groundwater.

8. Were the groundwater contours computer generated ____, computer aided ____, or hand-drawn X? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
Site-Wide Gauging Event - Zone S2
February 28, 2017

- 1 Did any surveyed well casing elevations change from the previous sampling event? Yes X
No ____. If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

All wells on-Site have been surveyed, including recently repaired and modified wells MW-229B, MW-268B, and MW-223B as a result of site remedial action and/or development activities. The elevation data and surveyor Form Bs for all Roche-owned wells are included (if available at this time) in Appendix C of this report.

- 2 Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes ____ No _____. If yes, identify these wells. N/A
- 3 Are there any monitoring wells present at the Site but omitted from the contour map? Yes X
No ____. Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

Monitoring Wells: MW-3, MW-114, MW-438B, MW-232C, MW-365B, MW-361B, MW-60A-S2, MW-80-Z2R, MW-206B, and DW-65-60-S2 were not included in the calculation for the contours because the groundwater measurements were anomalous compared to surrounding wells.

Monitoring Wells: MW-122, PW-37 Port 1, PW-37 Port 2, MW-16AW, MW-32W, MW-7W, MW-9W, MW-20W Port 2, MW-30W, MW-1N, MW-2N, MW-3RN, MW-5N, MW-6RN, MW-7N, MW-8N, MW-9N, MW-12N, MW-17N, MW-18RN, MW-19N, and MW-20N were not accessible.

- 4 Are there any monitoring wells containing separate phase product during this measuring event? Yes ____ No X_. Were any of the monitor wells with separate phase product included in the groundwater contour map? Yes ____ No X_. If yes, show the formula used to correct the water table elevation.
- 5 Has the groundwater flow direction changed more than 45 degrees from the previous groundwater contour map? Yes ____ No X_. If yes, discuss the reasons for the change.
- 6 Has groundwater mounding and/or depressions been identified in the groundwater contour map? Yes ____ No X_. Unless the groundwater mounds and/or depressions are caused by the groundwater remediation system, discuss the reasons for this occurrence.
- 7 Are all the wells used in the contour map screened in the same water-bearing zone? Yes X

No _____. If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the first occurrence of groundwater.

- 8 Were the groundwater contours computer generated _____, computer aided _____, or hand-drawn X? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
Site-Wide Gauging Event - Zone S3
February 28, 2017

- 1 Did any surveyed well casing elevations change from the previous sampling event? Yes X
No ____. If yes, attach new "Well Certification - Form B – Location Certification" as found
in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and
identify the reason for the elevation change (damage to casing, installation of recovery
system in monitoring well, etc.).

All wells on-Site have been surveyed, including recently repaired and modified wells MW-
229C, MW-268C, and MW-223C as a result of site remedial action and/or development
activities. The elevation data and surveyor Form Bs for all Roche-owned wells are included
(if available at this time) in Appendix C of this report.

- 2 Are there any monitor wells in unconfined aquifers in which the water table elevation is higher
than the top of the well screen? Yes ____ No _____. If yes, identify these wells. N/A
- 3 Are there any monitoring wells present at the Site but omitted from the contour map? Yes X
No ____. Unless the omission of the well(s) has been previously approved by the Department,
justify the omissions.

Monitoring Wells: MW-391-S3, DW-65-91-S3, DW-65-96-S3, DW-65-105-S3, DW-69-142-
S3, and MW-462C1 were not included in the calculation for the contours because the
groundwater measurements were anomalous compared to surrounding wells.

Monitoring Wells: PW-37 Port 3, PW-37 Port 4, MW-207C, CH-17 Port 1, MW-19W, MW-
20W Port 3, MW-4N, MW-9IN, MW-10N, MW-13N, MW-14N, MW-15N, and MW-16N
were not accessible.

- 4 Are there any monitoring wells containing separate phase product during this measuring event?
Yes ____ No X_. Were any of the monitor wells with separate phase product included in the
groundwater contour map? Yes No X_. If yes, show the formula used to correct the water
table elevation.
- 5 Has the groundwater flow direction changed more than 45 degrees from the previous
groundwater contour map? Yes ____ No X_. If yes, discuss the reasons for the change.
- 6 Has groundwater mounding and/or depressions been identified in the groundwater contour
map? Yes ____ No X_. Unless the ground water mounds and/or depressions are caused by
the groundwater remediation system, discuss the reasons for this occurrence.
- 7 Are all the wells used in the contour map screened in the same water-bearing zone?
Yes X No _____. If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the first occurrence of groundwater.

- 8 Were the groundwater contours computer generated ____, computer aided ____, or hand-drawn X? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
Site-Wide Gauging Event - Zone D1
February 28, 2017

- 1 Did any surveyed well casing elevations change from the previous sampling event? Yes No . If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

All wells on-Site have been surveyed, including recently repaired and modified DW- 35A as a result of site remedial action and/or development activities. All wells on-Site have been surveyed. The elevation data and surveyor Form Bs for all Roche-owned wells are included (if available at this time) in Appendix C of this report.

- 2 Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes No . If yes, identify these wells. N/A
- 3 Are there any monitoring wells present at the Site but omitted from the contour map? Yes No . Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

Monitoring Wells: DW-49A, DW-25-D1, DW-39A, DW-54A, DW-40A, DW-27A, DW-12A, DW-8A, DW-7A, DW-65-145-D1, DW-65-221-D1, DW-70-123-D1, DW-70-131-D1, DW-70-140-D1, DW-70-150-D1, DW-70-160-D1, DW-69-150-D1, DW-69-160-D1, DW-69-224-D1, DW-69-234-D1, DW-5B, and DW-21A were not included in the calculation for the contours because the groundwater measurements were anomalous compared to surrounding wells.

Monitoring Wells: MW-20W Port 4, MW-20W Port 5, CH-17 Port 2, CH-17 Port 3, PW-37 Port 5, PW-37 Port 6, and PW-37 Port 7 were not accessible.

- 4 Are there any monitoring wells containing separate phase product during this measuring event? Yes No . Were any of the monitor wells with separate phase product included in the groundwater contour map? Yes No . If yes, show the formula used to correct the water table elevation.
- 5 Has the groundwater flow direction changed more than 45 degrees from the previous groundwater contour map? Yes No . If yes, discuss the reasons for the change.
- 6 Has groundwater mounding and/or depressions been identified in the groundwater contour map? Yes No . Unless the groundwater mounds and/or depressions are caused by the groundwater remediation system, discuss the reasons for this occurrence.

- 7 Are all the wells used in the contour map screened in the same water-bearing zone? Yes X
No _____. If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the first occurrence of groundwater.

- 8 Were the groundwater contours computer generated _____, computer aided _____, or hand-drawn X ? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
Site-Wide Gauging Event - Zone D2
February 28, 2017

1. Did any surveyed well casing elevations change from the previous sampling event? Yes X
No _____. If yes, attach new "Well Certification - Form B – Location Certification" as found
in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and
identify the reason for the elevation change (damage to casing, installation of recovery
system in monitoring well, etc.).

All wells on-Site have been surveyed, including recently repaired and modified DW- 35B as
a result of site remedial action and/or development activities. The elevation data and surveyor
Form Bs for all Roche-owned wells are included (if available at this time) in Appendix C of
this report.

2. Are there any monitor wells in unconfined aquifers in which the water table elevation is higher
than the top of the well screen? Yes ___No _____. If yes, identify these wells. N/A
3. Are there any monitoring wells present at the Site but omitted from the contour map?
Yes X No _____. Unless the omission of the well(s) has been previously approved by the
Department, justify the omissions.

Monitoring Wells: DW-70-350-D2, DW-31B, DW-36B were not included in the calculation
for the contours because the groundwater measurements were anomalous compared to
surrounding wells.

Monitoring Wells: MW-29W, MW-27W, MW-28W, MW-20W Port 7, MW-26W, PW-37
Port 8, PW-37 Port 9, PW-37 Port 10, PW-37 Port 11, CH-17 Port 4, CH-17 Port 5, CH-17
Port 6, CH-17 Port 7, CH-17 Port 8, and CH-17 Port 9 were not accessible.

4. Are there any monitoring wells containing separate phase product during this measuring event?
Yes ___ No X_. Were any of the monitor wells with separate phase product included in the
groundwater contour map? Yes ___No _____. If yes, show the formula used to correct the water
table elevation.
5. Has the groundwater flow direction changed more than 45 degrees from the previous
groundwater contour map? Yes ___ No X_. If yes, discuss the reasons for the change.
6. Has groundwater mounding and/or depressions been identified in the groundwater contour
map? Yes ___ No X_. Unless the groundwater mounds and/or depressions are caused by
the groundwater remediation system, discuss the reasons for this occurrence.
7. Are all the wells used in the contour map screened in the same water-bearing zone? Yes X
No _____. If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the first occurrence of groundwater.

Were the groundwater contours computer generated _____, computer aided _____, or hand-drawn X ? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX B
NJDEP Contour Map Reporting Form
Groundwater Progress Report
Hoffmann-La Roche Inc. - Nutley, New Jersey
Site-Wide Gauging Event - Zone D3
February 28, 2017

- 1 Did any surveyed well casing elevations change from the previous sampling event? Yes No X. If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

All wells on-Site have been surveyed. The elevation data and surveyor Form Bs for all Roche-owned wells are included (if available at this time) in Appendix C of this report.

- 2 Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes ___ No . If yes, identify these wells. N/A
- 3 Are there any monitoring wells present at the Site but omitted from the contour map? Yes X No . Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

Monitoring Wells: DW-39C, DW-38C, DW-16C, DW-31C, DW-33C were not included in the calculation for the contours because the groundwater measurements were anomalous compared to surrounding wells.

Monitoring Wells: CH-17 Port 10, CH-17 Port 11, CH-17 Port 12 was inaccessible.

- 4 Are there any monitoring wells containing separate phase product during this measuring event? Yes ___ No X. Were any of the monitor wells with separate phase product included in the groundwater contour map? Yes ___ No X. If yes, show the formula used to correct the water table elevation.
- 5 Has the groundwater flow direction changed more than 45 degrees from the previous groundwater contour map? Yes ___ No X. If yes, discuss the reasons for the change.
- 6 Has groundwater mounding and/or depressions been identified in the groundwater contour map? Yes ___ No X. Unless the groundwater mounds and/or depressions are caused by the groundwater remediation system, discuss the reasons for this occurrence.
- 7 Are all the wells used in the contour map screened in the same water-bearing zone? Yes X No . If no, justify inclusion of those wells.

Groundwater is divided into 7 elevation zones. A contour map has been generated for each of these seven zones. All wells within each zone are comparable, except for Zone S2 monitoring wells at the former Nova facility (MW-12N, MW-17N, MW-18N, MW-19N, MW-1N, MW-

20N, MW-2N, MW-3N, MW-5N, MW-6N, MW-7N, MW-8N, and MW-9N). The Nova wells were compared with monitoring wells at Zone S1 at the Roche facility since they represent the first occurrence of groundwater.

- 8 Were the groundwater contours computer generated ____, computer aided ____, or hand-drawn X? If computer aided or generated, identify the interpolation method(s) used.