Bristol-Myers Squibb

6000 Thompson Road, East Syracuse, NY 13057
Tel 315 432-2000
www.bms.com

April 17, 2019

Joshua P. Cook, PE
Professional Engineer I
New York State Department of
Environmental Conservation
Division of Environmental Remediation
Region 7
615 Erie Boulevard West
Syracuse, NY 13204-2400

Re: Site ID No. C734138
Sediment Sampling Work Plan

Dear Mr. Cook:

Bristol-Myers Squibb Company (BMS) received the Department's April 2, 2019 letter regarding the referenced sampling work plan. BMS accepts the modifications set forth in the Department's letter.

To facilitate the work, it is necessary to supplement the Field Sampling and Analysis Plan (FSP) and the Quality Assurance Project Plan (QAPP) to account for the performance of surface water sampling, which was not contemplated in the Department-approved 2013 Remedial Investigation Work Plan. The following documents are attached and intended to provide the necessary supplements:

- Table 1 – QAPP Supplement – Summary of Analytical Methods, Sample Containers, and Laboratory Requirements for Surface Water Sampling

- Field Sampling and Analysis Plan Addendum – Remedial Investigation: This Addendum describes the procedures that will be used to collect surface water samples. It has been prepared as Section 9A to the FSAP to be inserted so there is no need to reissue the entire document.

Please call Anne Locke at (315) 432-2660 if you have questions. Thank you for your time and consideration.

Sincerely,

BRISTOL-MYERS SQUIBB COMPANY

Michael E. Furlong
General Manager, Syracuse

ec: Margaret Sheen (NYSDEC OGC)
Reginald Parker (NYSDEC)
Susan Edwards (NYSDEC)
Harry Warner (NYSDEC)
Rebecca Quail (NYSDEC)
Mary Jo Crance (NYSDEC)
Maureen Schuck (NYSDOH)
Sara Bogardus (NYSDOH)
Richard Mator (BMS)
William Pufko (BMS)
Hector Macias (BMS)
Anne Locke (BMS)
William McCune (Arcadis)
Robert Tyson (Bond)

FIELD SAMPLING AND ANALYSIS PLAN ADDENDUM
REMEDIAL INVESTIGATION
BMS SYRACUSE NORTH CAMPUS RESTORATION AREA

9A. Surface Water Sampling

Procedures for obtaining samples of surface water are described in this section.

9A.1 Surface Water Sampling Method

Samples will be collected using the following general methodologies.

- At each location, water depth will be measured and recorded.
- In-situ water quality parameters (e.g., pH, temperature, turbidity, conductivity, dissolved oxygen) will be measured and recorded using a hand-held Horiba or equivalent multi-meter with pre-calibrated probe sensors from the middle of the water column.
- Collection of surface water samples will be performed using a peristaltic pump. The pump will be affixed with an appropriate length of medical-grade silicone tubing in the head to allow conveyance to sample containers and a length of Teflon® tubing attached to intake side of pump tubing to allow collection of the sample from the surface water body. The Teflon® tubing will be affixed to a stadia or surveyor's rod at the specified water depth (mid-water column) to allow collection.
- Prior to sample collection, the peristaltic pump will be purged of air and allowed to run 1 liter or more volume of surface water to equilibrate with site conditions.
- Based on sample analytical requirements, collect enough sample volume to allow collection of VOCs, SVOCs, PAHs, and metals. Fill sample containers according to analyte specifications and following lab instructions on preservation and sample fraction (e.g., total or filtered [dissolved]).
- For dissolved metals analysis, perform in-field filtering using a 0.45-micron filter (e.g., Geotech or similar) and pump into appropriate sample containers.
- Sampler will record collection times, label sample containers, and record water quality parameters and any QA/QC samples collected at each location in a field notebook or field tablet.

Table 1
QAPP Supplement - Summary of Analytical Methods, Sample Containers, and Laboratory Requirements for Surface Water Sampling

Sediment Sampling Module Addendum
Site #C734138: BMS Syracuse North Campus Restoration Area
East Syracuse, New York

Parameter and Method	Sample Containers and Volumes	Preservation[1]	Holding Times	Number of Samples[2,3]	QA/QC Sample Frequency[4]				Total Number of Samples[4]
					Field Duplicate	Trip Blank	MS/MSD and/or MS/Lab Duplicate	Field Blank	
Volatile Organic Compounds (VOC) by USEPA Methods 8260B/8260C	3 - 40-mL glass vials with Teflon® lined septum caps	6°C; HCL to pH ≤ 2; sealed and headspace free	Analysis within 14 days from collection for preserved samples; analysis within 7 days from collection for samples not acid preserved	12	One per 20 samples or one per matrix (for less than 20 samples)	1 each in cooler with VOC samples	One per 20 samples or one per matrix (for less than 20 samples)	One per 20 samples or one per sampling event as required for each matrix	16
Semivolatile Organic Compounds by USEPA Methods 8270C/8270D[5]	1 - one liter amber glass container with Teflon® lined screw caps	6°C	7 days from collection to extraction; 40 days from extraction to analysis	12	One per 20 samples or one per matrix (for less than 20 samples)	NA	One per 20 samples or one per matrix (for less than 20 samples)	One per 20 samples or one per sampling event as required for each matrix	15
Polycyclic Aromatic Hydrocarbons (PAH) by USEPA Method 8270D SIM	1 - one liter amber glass container with Teflon® lined screw caps	6°C	7 days from collection to extraction; 40 days from extraction to analysis	12	One per 20 samples or one per matrix (for less than 20 samples)	NA	One per 20 samples or one per matrix (for less than 20 samples)	One per 20 samples or one per sampling event as required for each matrix	15
Target Analyte List (TAL) Metals by USEPA Methods 6010C +/or 6020/6020A	1 - 1000 ML polyethylene or fluorocarbon (TFE or PFA) container; 100 mL sample volume required	6°C; HNO3 to pH < 2	180 days from collection to analysis	24	One per 20 samples or one per matrix (for less than 20 samples)	NA	One per 20 samples or one per matrix (for less than 20 samples)	One per 20 samples or one per sampling event as required for each matrix	27 (dissolved + total)
Mercury by USEPA Method 7470A	1 - 250 mL polyethylene or fluorocarbon (TFE or PFA) container; 200 mL sample volume required	6°C; HNO3 to pH < 2	28 days from collection to analysis	12	One per 20 samples or one per matrix (for less than 20 samples)	NA	One per 20 samples or one per matrix (for less than 20 samples)	One per 20 samples or one per sampling event as required for each matrix	27 (dissolved + total)
Total Cyanide by USEPA Method 9012	1-1000 mL polyethylene or fluorocarbon (TFE or PFA) container; 500 mL sample volume required	6°C; NaOH to pH ≥ 12;	14 days from collection to analysis	12	One per 20 samples or one per matrix (for less than 20 samples)	NA	One per 20 samples or one per matrix (for less than 20 samples)	One per 20 samples or one per sampling event as required for each matrix	15
Hardness, Total by USEPA Method 130.1	1 - 1000 mL polyethylene or fluorocarbon (TFE or PFA) container; 500 mL sample volume required	6°C; HNO3 to pH < 2	180 days from collection to analysis	12	One per 20 samples or one per matrix (for less than 20 samples)	NA	One per 20 samples or one per matrix (for less than 20 samples)	NA	14
pH by Standard Method 4500H+B	1 - 100 mL plastic bottle; 50 mL sample volume required	6°C	48 hours from collection to analysis	12	One per 20 samples or one per matrix (for less than 20 samples)	NA	One per 20 samples or one per matrix (for less than 20 samples)	NA	14

Footnotes:
1. HCL indicates hydrochloric acid, HN03 indicates nitric acid, and NaOH indicates sodium hydroxide.
2. Number of samples is listed per sample event.
3. Surface water sampling is to be conducted during a low-flow period.
   Quality assurance and quality control (QA/QC) samples, including matrix spikes and matrix spike duplicates (MS/MSD), will be collected using the frequencies detailed for the surface water sampling program. All QA/QC and parent surface water samples
4. will be processed, preserved, logged onto chain-of-custody forms, and be submitted to and analyzed by Eurofins Lancaster Laboratories located in Lancaster, Pennsylvania.
5. The following site-specific constituents were added to the standard list of semivolatile compounds analyzed by Method SW-846 8270D: Dicyclohexylamine, N-Nitrosodiphenylamine and Triethylamine.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Region 7
615 Erie Boulevard West, Syracuse, NY 13204-2400
P: (315) 426-7519, (315) 426-7551 | F: (315) 426-2653
www.dec.ny.gov

April 2, 2019

Michael Furlong
General Manager, Syracuse
Bristol-Myers Squibb Company
PO Box 4755
Syracuse, NY 13221

Re: Bristol-Myers Squibb Restoration Area, Site ID No. C734138
Village of East Syracuse, Town of DeWitt, Onondaga County
Sediment Sampling Work Plan – March 2019

Dear Mr. Furlong:

The New York State Department of Environmental Conservation (Department) and the New York State Department of Health have reviewed the sediment sampling work plan (work plan) for the Bristol-Myers Squibb Restoration Area (site), dated March 2019, which was prepared by Arcadis of New York, Inc. (Arcadis) on behalf of the Bristol-Myers Squibb Company (BMS).

The work plan proposes additional sampling in the South Branch of Ley Creek (Ley Creek), but not Headson's Brook. This is acceptable; however, it is noted that during the previous sampling round location SED-HB-6/6A was a backwater area of Ley Creek, with Headson's Brook being dry for a stretch upstream of that location. Future evaluation of the data will need to recognize that sediment in the area around HB-6 is influenced by Ley Creek.

The work plan must be modified as set forth below.

1. Surface water sampling must be conducted at the following locations: each current sediment sampling station, OF-009, OF-007, and at sample location ULC-1 for VOCs, SVOCs, PAHs, and metals.

2. It is recommended LC-12 be moved further downstream. Given its close proximity to LC-05, it seems unlikely the proposed location will provide adequate downstream delineation of impacts. If LC-12 shows site-related contamination, additional sampling will be necessary to delineate the full extent of contamination.

3. Section 2.1, 2nd Bullet, Final Sentence – LC-07 and LC-10 must be located in an area where it appears sediment is being deposited, and LC-08 and LC-11 must be collected from a location within the main channel, where the water depth is greater and where

it is more likely sediment is being scoured. LC-08 and LC-11 may be located either northeast or southwest of LC-07 and LC-10 depending on the relative location of the depositional and scoured areas at each station.

4. Section 4 – The sampling must be conducted no later than October 31, 2019. A remedial investigation report for the sediment and surface water sampling and an updated Fish and Wildlife Resources Impact Analysis must be submitted no later than 180 days after completion of field work.

Please respond within 15 days as to whether the work plan will be modified as required, and the revised work plan must be submitted to the Department and NYSDOH within 30 days of the date of this letter. Alternatively, BMS could respond within 15 days accepting the modifications. If the modifications are accepted, this letter and BMS's acceptance letter must be attached to the front of all copies of the work plan. If you have any questions, please do not hesitate to contact me at 315-426-7411 or joshua.cook@dec.ny.gov.

Sincerely,

Joshua P. Cook, P.E.
Professional Engineer 1

ec: Margaret Sheen (NYSDEC OGC)
Reginald Parker (NYSDEC)
Susan Edwards (NYSDEC)
Harry Warner (NYSDEC)
Joshua Cook (NYSDEC)
Rebecca Quail (NYSDEC)
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William Pufko (BMS)
Hector Macias (BMS)
Anne Locke (BMS)
Robert Tyson (Bond Schoeneck & King)
William McCune (Arcadis)
Mark Gravelding (Arcadis)

ARCADIS Design & Consultancy for natural and built assets

Bristol-Myers Squibb Company

C734138 PHASE 1A REMEDIAL INVESTIGATION WORK PLAN – SEDIMENT SAMPLING MODULE ADDENDUM

BMS Syracuse North Campus Restoration Area
East Syracuse, New York

March 2019

C734138 PHASE 1A REMEDIAL INVESTIGATION WORK PLAN-SEDIMENT SAMPLING MODULE ADDENDUM

Mark Gravelding
New York State P.E. License No. 069985

I, *Mark Gravelding, certify that I am currently a New York State registered Professional Engineer and that this Phase 1A Remedial Investigation Work Plan-Sediment Sampling Module Addendum was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).*

BMS Syracuse North Campus
Restoration Area
East Syracuse, New York

Prepared for:

Bristol-Myers Squibb Company

Prepared by:

Arcadis of New York, Inc.
One Lincoln Center
110 West Fayette Street
Suite 300
Syracuse
New York 13202
Tel 315 446 9120
Fax 315 449 0017

Our Ref.:

B0087363

Date:

March 2019

CONTENTS

FIGURES

ACRONYMS AND ABBREVIATIONS

BCA	Brownfield Cleanup Agreement
BDA	Brownfield Development Area
BMS	Bristol-Myers Squibb Company
CSX	CSX Transportation, Inc.
COC	constituent(s) of concern
DER-10	Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OBG	O'Brien & Gere Engineers
PAH	Polycyclic aromatic hydrocarbon(s)
Phase 1A WP	Phase 1A Work Plan
QA/QC	Quality assurance/quality control
RIWP	Remedial Investigation Work Plan
SSM	Sediment Sampling Module
SVOC	Semi-volatile organic compound(s)
TAL	Target Analyte List
TIC	Tentatively Identified Compound(s)
TOC	Total organic carbon
VOC	Volatile organic compound(s)

1 INTRODUCTION

This Sediment Sampling Module Addendum (SSM Addendum) is an addendum to the Sediment Sampling Module (SSM) of the Phase 1A Remedial Investigation Work Plan (Phase 1A RIWP) for the Bristol-Myers Squibb Company (BMS) Syracuse North Campus Restoration Area (Site No. C734138; Brownfield Development Area [BDA]) located at 6000 Thompson Road in East Syracuse, New York. Arcadis prepared this SSM Addendum on behalf of BMS in response to New York State Department of Environmental Conservation (NYSDEC 2017, 2018a; 2018b; 2019) comments.

The activities described in this SSM Addendum will be performed in accordance with the requirements of the NYSDEC Brownfield Cleanup Program. The Brownfield Cleanup Agreement (BCA) between BMS and NYSDEC was executed on October 18, 2011.

This SSM Addendum has been prepared in accordance with the requirements of the Remedial Investigation Work Plan (RIWP; O'Brien & Gere Engineers [OBG] 2013a), which was conditionally approved by NYSDEC/New York State Department of Health (NYSDOH) on April 3, 2013 and the Sediment Sampling Module of the Phase 1A RIWP submitted in April 2015 and approved by NYSDEC/NYSDOH on May 28, 2015.

2 SUPPLEMENTAL SEDIMENT SAMPLING PLAN

The purpose of the supplemental sediment sampling is to further assess the potential presence of site-related constituents near storm water conveyance outfalls from the BDA in sediment of the South Branch of Ley Creek. As requested by NYSDEC, additional sediment samples will be collected to further characterize sediment adjacent to the BMS facility. Additional sediment samples will also be collected from upstream (reference) locations.

2.1 Additional Sediment Sampling Locations and Methodology

Supplemental sediment samples will be collected from nine locations in South Branch of Ley Creek as described below, and as shown on Figures 1 and 2:

- Two locations upstream of the BDA to characterize reference/background conditions of the original stream bed (prior to relocation between 1966 and 1978). (See Figure 1)
- Three locations between storm water Outfalls 009 and 007 and three locations between storm water Outfall 007 and 2015 sample location BCP-SED-LC-5A were selected to further define the nature and extent of conditions downstream of the storm water outfalls. The sample locations will roughly divide each segment in thirds. In order to compare the main channel to the western sediment zone, at the more downstream area in each segment, two samples will be collected perpendicular to the flow path. (See Figure 2)
- One location downstream of 2015 sample location BCP-SED-LC-5A, preferably upstream of the confluence with Headson's Brook and the CSX overpass, was selected to determine the potential extent of constituents detected in the 2015 sampling. (See Figure 2)

The general sampling locations were selected during a walkthrough with NYSDEC on March 25, 2019. The exact sampling locations will be selected in the field after considering water depth, depositional patterns (i.e., sediment thickness), and accessibility (in terms of safety and access to private property). Actual sediment sample locations will be surveyed after sampling is completed using conventional survey methods to horizontal and vertical accuracies of 0.1 foot.

Samples will be collected in accordance with the Sediment Sampling Module of the Phase 1A RIWP.

2.2 Sediment Sample Laboratory Analyses

The parameter list (and analytical method) for sediment samples is based on the previously analyzed constituents, and includes the following:

- Volatile Organic Compounds, plus top 10 tentatively identified compounds (TIC) (USEPA SW-846 Method 8260C)
- Semi-volatile Organic Compounds, plus top 20 TICs (USEPA SW-846 Method 8270D)
- Thirty-four Polycyclic Aromatic Hydrocarbons (PAH) (USEPA SW-846 Method 8270D SIM)
- Total Organic Carbon (TOC) (Modified Lloyd Kahn)
- Target Analyte List (TAL) Metals (USEPA SW-846 Method 6010C, 7471B, or 9012B)

Sediment samples will be submitted to and analyzed by Eurofins Lancaster Laboratories located in Lancaster, Pennsylvania.

3 REPORTING

Results of the supplemental sediment sampling will be combined with the sampling data collected in 2015 in accordance with the Sediment Sampling Module and presented to NYSDEC/NYSDOH in a revised FWRIA report. The report will summarize the sampling activities, present the laboratory analytical data, compare the concentrations to appropriate screening benchmarks and compare the near-site and background datasets. The validated sampling data will also be submitted with a monthly progress report.

4 SCHEDULE

BMS will provide a final schedule for supplemental sediment sampling following receipt of NYSDEC/NYSDOH approval of this SSM Addendum. Although the final schedule will be dependent on weather conditions and property access, BMS respectfully requests approval by May 3, 2019. This will allow BMS to conduct sampling after snow melt but before summer growth impedes access to the stream.

5 REFERENCES

Arcadis. 2015. *Sediment Sampling Module of the Phase 1A Remedial Investigation Work Plan.* Site #C734138. BMS Syracuse North Campus Restoration Area. April 2015

Arcadis. 2018. *Remedial Investigation Report*. Site #C734138. BMS Syracuse North Campus Restoration Area. September 2018.

New York State Department of Environmental Conservation (NYSDEC). 2017. Letter from J. Cook (NYSDEC) to M. Furlong (BMS) dated June 19, 2017.

NYSDEC. 2018a. Letter from J. Cook (NYSDEC) to M. Furlong (BMS) dated February 28, 2018.

NYSDEC. 2018b. Letter from J. Cook (NYSDEC) to M. Furlong (BMS) dated September 24, 2018.

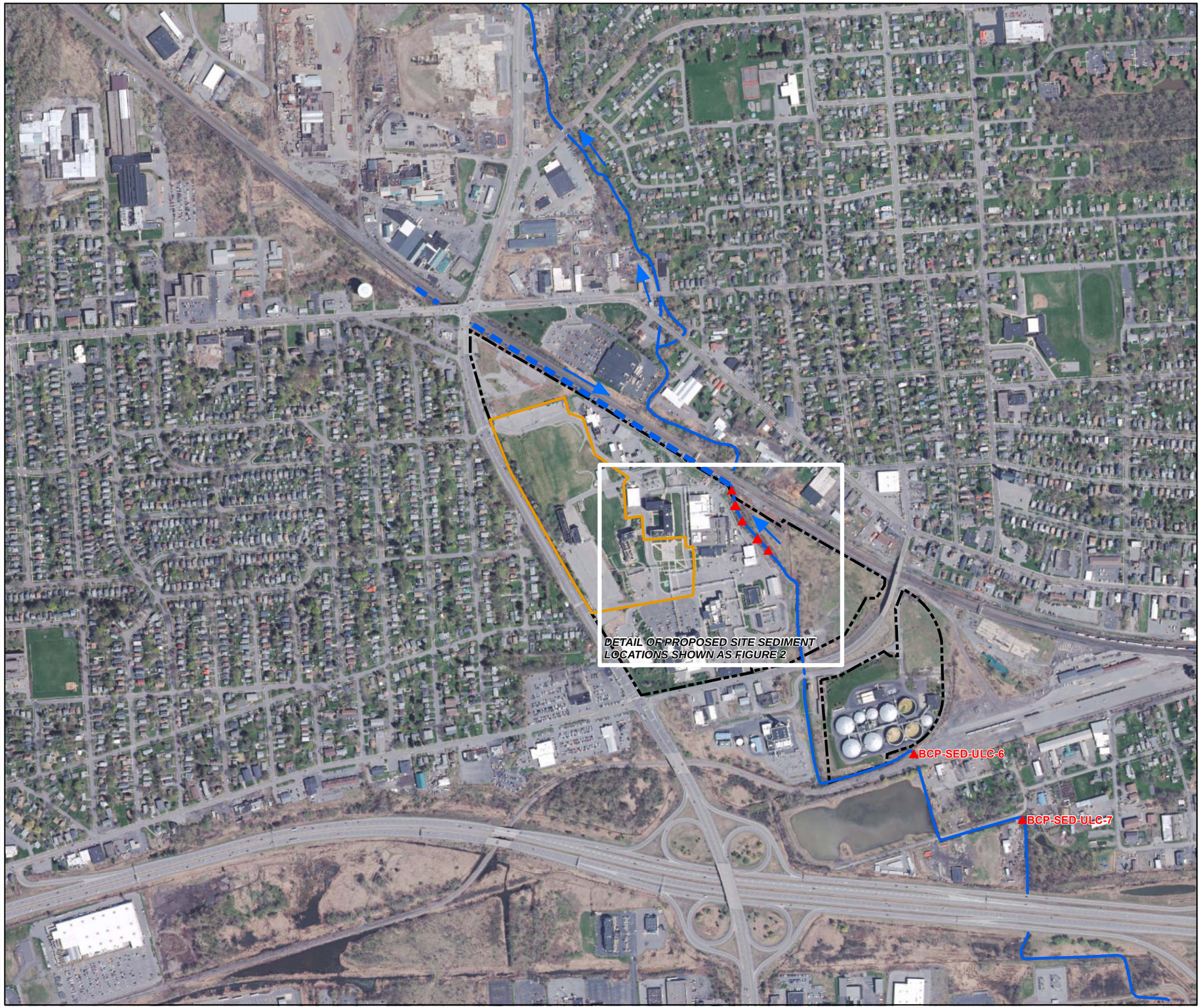
NYSDEC. 2019. Letter from J. Cook (NYSDEC) to M. Furlong (BMS) dated February 25, 2019.

O'Brien & Gere (OBG). 2013a. *Remedial Investigation Work Plan: BMS Syracuse North Campus Restoration Area Site No. C734138*. March 2013.

OBG. 2013b. *Quality Assurance Project Plan: BMS Syracuse North Campus Restoration Area Site No. C734138.*

OBG. 2013c. *Field Sampling and Analysis Plan: BMS Syracuse North Campus Restoration Area Site No. C734138.*

FIGURES



LEGEND:

- PROPOSED NEW SEDIMENT SAMPLING LOCATION
- DIRECTION OF FLOW
- LEY CREEK SOUTH BRANCH (HEADWATER STREAM)
- HEADSON'S BROOK (DRAINAGE DITCH)
- APPROXIMATE BROWNFIELD DEVELOPMENT AREA (BDA) BOUNDARY
- APPROXIMATE BRISTOL-MYERS SQUIBB PROPERTY LINE

0 700 1,400 Feet

GRAPHIC SCALE

NOTES:

1. 2015 IMAGERY OBTAINED FROM ESRI IMAGE SERVICE.

SITE #C734138: BMS SYRACUSE
NORTH CAMPUS RESTORATION AREA
EAST SYRACUSE, NY

SEDIMENT SAMPLING MODULE ADDENDUM

SITE VICINITY MAP – PROPOSED UPSTREAM SEDIMENT SAMPLING LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

City: SYR Div/Group:SWG Created By:.JRAPP Last Saved By: kives
Bristol Myers Squibb (B0087363.0006.00001)
Q:\BristolMyerSquibb\EastSyracuseNY\SedimentInvestigationWorkPlan\mxd\SiteVicinity.mxd 3/26/2019 4:17:14 PM

BCP-SED-HB-6
BCP-SED-HB-6A
BCP-SED-LC-12
BCS-SED-LC-5
BCP-SED-LC-5A
BCP-SED-LC-11
BCP-SED-LC-10
BCP-SED-LC-9
OUTFALL 007
BCP-SED-OF-7A
BCP-SED-OF-7
BCP-SED-LC-8
BCP-SED-LC-7
BCP-SED-LC-6
BCP-SED-OF-9A
OUTFALL 009
BCP-SED-OF-9
BCP-SED-ULC-1
LEY CREEK SOUTH BRANCH
TOWN OF DEWITT
PARKING
NE TANK FARM
(FORMERLY CLINTON ST)
(FORMERLY KANE ST)
(FORMERLY ROBERTS ST)
SHED
COOLING
AHU
TRANS.
CO2 TANK
N2O TANK
48
26
33
7
23A
23
23B
25N
25
32
32A
32B
32C
32D
44
49
69
63
64
65
61
67
73A
75
72
51
58
28
83

LEGEND:

- PROPOSED NEW SEDIMENT SAMPLING LOCATION
- SURVEYED SEDIMENT SAMPLING LOCATION (2015)
- OUTFALL
- APPROXIMATE BROWNFIELD DEVELOPMENT AREA (BDA) BOUNDARY
- APPROXIMATE BRISTOL-MYERS SQUIBB PROPERTY LINE
- APPROXIMATE EDGE OF CREEK
- EXISTING RAILROAD

NOTE:

1. BASEMAP BASED ON A MAP TITLED "BRISTOL–MYERS SQUIBB PART OF LOT 41 – TOWN OF DEWITT AND PART OF THE VILLAGE OF EAST SYRACUSE ONONDAGA COUNTY NEW YORK", DATED MARCH 25, 2010 PREPARED BY COTTRELL LAND SURVEYORS, P.C.. UPDATED BASED ON ARCADIS FIELD VISIT JULY 2014, SEPTEMBER 11, 2014 AND BING AERIAL IMAGERY ACQUIRED SEPTEMBER, 2014.

0 140' 280'
GRAPHIC SCALE

SITE #C734138: BMS SYRACUSE
NORTH CAMPUS RESTORATION AREA
EAST SYRACUSE, NY
SEDIMENT SAMPLING MODULE ADDENDUM

PROPOSED SITE SEDIMENT SAMPLING LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

CITY: SYRACUSE, NY DIV/GROUP: EBC-IM/DV DB/LD: L.POSENAUER, K.SARTORI PM/TM: LYR: ON=*;OFF=*REF_(FRZ)
C:\BIM\OneDrive - ARCADIS\BIM 360 Docs\BRISTOL-MYERS COMPANY\FMRIA\2019\B0087363.0028\01-DWG\SIWP_FIG 2_Proposed Site SSL.dwg
3:44 PM BY: OBERLANDER, ROSEANNE
XREFS:
SIWP_BDR-F-LB
FMRIA_BASEMAP
FMRIA_BASEMAP-EXT
ACADVER: 23.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: MONOCHROME.CTB PLOTTED: 3/26/2019
Site SSL.dwg LAYOUT: 2 SAVED: 3/26/2019 3:44 PM

Arcadis of New York, Inc.

One Lincoln Center

110 West Fayette Street

Suite 300

Syracuse, New York 13202

Tel 315 446 9120

Fax 315 449 0017

www.arcadis.com