



2020 Annual Monitoring Report

**Olin Niagara Falls Plant
AOC Index No. R9-4171-94-08
NYSDEC Site No. 932051B
Niagara Falls, New York**

Prepared for:



**Olin Corporation
Environmental Remediation
3855 N. Ocoee Road, Suite 200
Cleveland, Tennessee 37312**

Prepared by:

**Wood Environment & Infrastructure Solutions, Inc.
1075 Big Shanty Road NW, Suite 100
Kennesaw, Georgia 30144
Project Number 6107-21-0002**

April 1, 2021

Table of Contents

1.0 Introduction.....	1-1
2.0 Site Activity.....	2-1
2.1 March 2020 Well Condition Survey.....	2-1
2.2 April 2020 Groundwater Monitoring	2-1
2.3 May 2020 Well Maintenance.....	2-1
2.4 October 2020 Groundwater Monitoring.....	2-1
3.0 Hydraulic Analysis	3-1
3.1 A-Zone	3-1
3.2 B-Zone	3-1
3.3 C-Zone.....	3-1
3.4 CD-Zone.....	3-1
4.0 Groundwater Quality	4-1
4.1 1,2,4-Trichlorobenzene.....	4-1
4.2 Gamma-BHC.....	4-1
4.3 Mercury.....	4-1
5.0 Conclusions	5-1
6.0 References.....	6-1

Tables

Figures

Appendices

List of Tables

- 3.1 April 20, 2020 Water Elevations
- 3.2 October 12, 2020 Water Elevations
- 4.1 April 2020 Quarterly Groundwater Analytical Results
- 4.2 October 2020 Annual Groundwater Analytical Results

List of Figures

- 3.1a A-Zone Potentiometric Contours – Site Wide – April 20, 2020
- 3.1b A-Zone Potentiometric Contours – Site Wide – October 12, 2020
- 3.2a B-Zone Potentiometric Contours – Site Wide – April 20, 2020
- 3.2b B-Zone Potentiometric Contours – Site Wide – October 12, 2020
- 3.3a C-Zone Potentiometric Contours – Site Wide – May 20, 2020
- 3.3b C-Zone Potentiometric Contours – Site Wide – October 12, 2020
- 3.4a CD-Zone Potentiometric Contours – Site Wide – May 20, 2020
- 3.4b CD-Zone Potentiometric Contours – Site Wide – October 12, 2020
- 4.1a A-Zone 1,2,4-Trichlorobenzene Concentrations – April 2020
- 4.1b A-Zone 1,2,4-Trichlorobenzene Concentrations – October 2020
- 4.2a B-Zone 1,2,4-Trichlorobenzene Concentrations – April 2020
- 4.2b B-Zone 1,2,4-Trichlorobenzene Concentrations – October 2020
- 4.3a A-Zone gamma-BHC Concentrations – April 2020
- 4.3b A-Zone gamma-BHC Concentrations – October 2020
- 4.4a B-Zone gamma-BHC Concentrations – April 2020
- 4.4b B-Zone gamma-BHC Concentrations – October 2020
- 4.5a A-Zone Total Mercury Concentrations – April 2020
- 4.5b A-Zone Total Mercury Concentrations – October 2020
- 4.6a B-Zone Total Mercury Concentrations – April 2020
- 4.6b B-Zone Total Mercury Concentrations – October 2020

List of Appendices

- A Constituent Concentration Trends

List of Abbreviations

Abbreviation	Definition
ARGC	Alundum Road Gill Creek
ft bgs	feet below ground surface
BHC	benzene hexachloride
GWTS	Groundwater Treatment System
Hg	mercury
NTU	nephelometric turbidity units
NYSDEC	New York State Department of Environmental Conservation
Olin	Olin Corporation
Order	Administrative Order on Consent
Plan	Optimized Monitoring Plan
PR	Passive Relief
PW	Pumping Well
RW	Recovery Well
Solvent	Solvent Chemical Corporation
VOC	volatile organic compounds

1.0 Introduction

Olin Corporation (Olin) is implementing a Remedial Plan (CRA, 1996) to address groundwater contamination at Plant 2, in Niagara Falls, New York (Site) as required by the Administrative Order on Consent (Order) #R9-4171-94-08 between the New York State Department of Environmental Conservation (NYSDEC) and Olin. The goals of the Remedial Plan are to reduce the concentration of constituents (aromatic compounds, benzene hexachlorides (BHCs), and mercury) in Site groundwater and to control migration of these constituents within the Alundum Road Gill Creek (ARGC) Area. Site groundwater is currently controlled by pumping wells located on Olin property that are operated by the Solvent Chemical Company (Solvent). These wells pump groundwater to a groundwater treatment system (GWTS) located on an adjacent property that is owned and operated by Solvent. Site groundwater is monitored semi-annually in accordance with the NYSDEC-approved June 29, 2018 Optimized Monitoring Plan (Wood, 2018).

This annual report describes 2020 Site activities and summarizes and evaluates the monitoring data collected during 2020 for compliance with the Order and Remedial Plan. The 2020 monitoring data shows continued effective hydraulic capture of A-zone groundwater [~8-10 feet below ground surface (ft bgs)] by passive relief wells (PRs) and B-zone groundwater (~16-21 ft bgs) by pumping wells PW-3B and PW-4B. Site constituent concentrations and distribution are consistent with historical monitoring data. Groundwater elevations indicate hydraulic control of groundwater in the ARGC Area is being maintained. Operation of Olin's process water production well continues to capture C-Zone groundwater (~25-35 ft bgs) west of Gill Creek and CD-Zone groundwater (~45-50 ft bgs) west of monitoring well OBA-6C.

2.0 Site Activity

Site activities in 2020 were well maintenance and groundwater monitoring events in April and October 2020. Groundwater monitoring events were conducted in accordance with the Optimized Monitoring Plan (Wood, 2018).

2.1 March 2020 Well Condition Survey

Olin conducted a well condition survey in March 2020. With the exception of OBA-6A, no major damages were noted in the surveyed wells. OBA-6A protective cover was observed to be damaged. The damage was likely the result of heavy trucks and/or snowplows driving over the protective cover. OBA-6A damage was repaired in May 2020 as detailed below.

2.2 April 2020 Groundwater Monitoring

Groundwater quality samples were collected April 21-24 and 27-30, 2020 from thirty-nine monitoring locations. Samples were collected using low flow groundwater sampling techniques and submitted to Pace Analytical Services in Melville, NY for volatile organic compounds (VOCs), pesticides, and mercury analysis. Groundwater level measurements were collected on April 20, 2020 for A-Zone and B-Zone wells. OBA-2A and OBA-16A were dry and therefore not sampled. Additionally, groundwater level measurements were not collected from wells OW-5A, PN-2A and PN-10A which were also dry, and PN-1A which was obstructed.

2.3 May 2020 Well Maintenance

Groundwater level measurements were collected on May 20, 2020 for C-Zone and CD-Zone wells.

Repairs to the OBA-6A protective cover were made on May 22, 2020. The well box was completely removed from well OBA-6A and a new well box and manhole cover were installed. Additionally, the obstruction in PN-1A was found to be a broken piece of pipe. The pipe was removed, and no damage to the well casing was observed.

2.4 October 2020 Groundwater Monitoring

Groundwater quality samples were collected October 13-14 and 20, 2020 from thirteen of fifteen quarterly monitoring locations. OBA-4A and OBA-26A went dry during purging and samples were not collected. Samples were collected using the same techniques as described above. Groundwater level measurements were collected on October 12, 2020. Six A-Zone wells were dry (OBA-2A, OBA-23A, PN-2A, PN-10A, PN-16A, and PN-19A), and water level measurements were not collected at those locations.

3.0 Hydraulic Analysis

Groundwater level measurements were collected during two semi-annual events in April/May and October 2020. Tables 3.1 and 3.2 present the groundwater elevations for the zones monitored at the site. These include wells screened in the A-Zone, B-Zone, C-Zone and CD-Zone. The water elevations were used to interpret the potentiometric surfaces within these groundwater zones.

3.1 A-Zone

Figures 3.1a through 3.1b show the interpreted A-Zone potentiometric surface for April and October 2020. These figures show A-Zone groundwater capture in the ARGC area by passive relief wells (i.e., groundwater flow is toward the passive relief wells which drain the A-Zone groundwater to the B-Zone). In addition, since potentiometric heads in the B-Zone are below Gill Creek, the passive relief wells continued to effectively prevent groundwater discharge to Gill Creek.

Tables 3.1 and 3.2 shows which wells had water level elevations that were below the physical bottom of the A-Zone. In cases where the A-Zone was dewatered, the physical bottom of the fracture system was used as a surrogate for the interpreted potentiometric surface.

3.2 B-Zone

Figures 3.2a through 3.2b present B-Zone potentiometric surface maps for April and October 2020 which show effective capture of B-Zone groundwater by Solvent pumping wells PW-3B and PW-4B located on Olin property. Additionally, groundwater elevations at offsite well PN-24B consistently show a higher groundwater elevation than onsite well PN-20B indicating an inward gradient from Buffalo Avenue towards the Site as required by the Order and Remedial Plan.

3.3 C-Zone

Figures 3.3a through 3.3b show C-Zone potentiometric surface maps for May and October 2020. The May and October C-Zone potentiometric surface maps are generally consistent with previous C-Zone potentiometric surface maps and show a groundwater divide around OBA-15B and OBA-4C. Groundwater east of OBA-15B and OBA-4C generally flows east toward a low elevation at OBA-14C. Groundwater west of OBA-15B and OBA-4C generally flows west toward the Olin Production Wells in Plant 1.

3.4 CD-Zone

Figures 3.4a through 3.4b show CD-Zone potentiometric surface maps for May and October 2020. The CD-Zone potentiometric surface maps show a groundwater divide in the area of OBA-5C/OBA-6C which is consistent with historical potentiometric surfaces. Groundwater east of OBA-6C generally flows east toward a low elevation at OBA-3C. The May potentiometric surface map shows groundwater flowing radially east-northeast from OBA-6C.

4.0 Groundwater Quality

Tables 4.1 through 4.2 summarize the analytical results for each event. Figures 4.1 through 4.6 show the constituent distributions for the following indicator parameters in the A and B-Zones for the April and October 2020 sampling events:

- 1,2,4-Trichlorobenzene – aromatic indicator
- Gamma-BHC – pesticide indicator
- Total Mercury

Appendix A provides time series graphs depicting historical indicator parameter results for the wells sampled in 2020. These tables, figures, and time trends show that current constituent concentrations and distribution are generally consistent with historical Site monitoring data.

4.1 1,2,4-Trichlorobenzene

1,2,4-trichlorobenzene concentrations generally remained within historical ranges. The concentration at OBA-16B was 4,800 µg/L in April 2020; the detected concentration is the highest concentration detected at this location. However, this detected value is less than half the concentrations consistently observed at wells PN-17B and PN-15B located south-southwest of OBA-16B. Further, OBA-16B is located within the hydraulic containment area. The OBA-16B April 2020 1,2,4-trichlorobenzene concentration likely resulted from constituent migration toward the pumping wells east-northeast of OBA-16B.

4.2 Gamma-BHC

Gamma-BHC concentrations also generally remained within historical ranges. OBA-26A and OBA-25B showed increases above historical ranges, but the observed concentrations are generally low compared to concentrations observed at other site wells. PN-11B had shown a gamma-BHC increase above its historical range in 2019 but decreased in 2020 to a value consistent with the previous ten-year period.

4.3 Mercury

Mercury concentrations are below 2 µg/L in most of the A and B-Zone monitoring locations. Similar to the 1,2,4-trichlorobenzene and gamma-BHC concentrations, mercury concentration fluctuations were observed in the various wells. OBA-1B showed an increase from concentrations consistently less than 100 µg/L to a concentration of 1,670 µg/L in 2020 which is above the historical ranges observed in the current monitoring network. This concentration appears to be anomalous based on existing monitoring data and potential source information. Sample turbidity was noted as being 20.9 nephelometric turbidity units (NTUs) and may be the cause of the elevated concentration. OBA-1B is sampled annually and will be sampled next in April 2021. Sampling efforts will seek to reduce turbidity prior to OBA-1B sample collection.

Regardless of the observed concentration fluctuations, both the A-Zone and B-Zone groundwater is hydraulically contained by the current downgradient extraction well network and changes in concentration do not affect the overall spatial contaminant distribution or the extent.

5.0 Conclusions

The 2020 monitoring data shows effective hydraulic capture of A-zone groundwater in the ARGC area by PR wells and B-zone groundwater by Solvent pumping wells PW-3B and PW-4B. Additionally, C and CD-Zone groundwater is effectively captured by the Olin Production well. Site constituent concentrations and distribution are generally consistent with historical monitoring data. Concentration fluctuations are observed in individual wells, but A and B-Zone groundwater is hydraulically contained by the downgradient extraction well network. A potentially anomalous mercury concentration increase was observed in OBA-1B, and this concentration will be further evaluated using the data to be collected in 2021. Olin continues to review the ongoing monitoring procedures to identify potential opportunities for further optimization of the monitoring program. Requested changes to the monitoring program, if and as needed, would be provided to NYSDEC in a separate request at an appropriate time.

6.0 References

Amec Foster Wheeler, 2015. Demonstration Program Work Plan. Kennesaw, GA. Amec Foster Wheeler Environment & Infrastructure, Inc. November 6, 2015

CRA, 1996. Remedial Plan – Olin Chemicals Corp. – Niagara Falls, New York. Conestoga-Rovers & Associates February 1996

Wood, 2018. Optimized Monitoring Plan. Kennesaw, GA. Wood Environment & Infrastructure Solutions, Inc. June 29, 2018

Woodward-Clyde, 1994. RCRA Facility Investigation Report for the Olin Buffalo Avenue Plant. Woodward-Clyde Consultants, Inc. August 1994.

Tables

Table 3.1: April 20, 2020 Water Elevations

Well	A-Zone Bottom Elevation (feet)	Reference Point Elevation (feet)	Depth to Water (feet btoc)	Water Elevation ¹ (feet)
A-Zone - Olin				
OBA-1A	562.33	570.67	8.01	562.66
OBA-2A	561.32	572.54	DRY	561.32
OBA-3A	552.36	572.07	15.70	556.37
OBA-4A	558.34	572.42	11.55	560.87
OBA-5A	557.72	571.72	7.59	564.13
OBA-6A	561.01	570.17	5.01	565.16
OBA-7A	562.71	573.39	7.50	565.89
OBA-8A	559.59	572.49	10.73	561.76
OBA-9A	558.01	569.24	6.50	562.74
OBA-9AR	557.28	570.22	7.65	562.57
OBA-10A	552.15	568.39	5.91	562.48
OBA-11A	558.76	572.83	13.03	559.80
OBA-14A	552.44	570.67	13.90	556.77
OBA-15A	551.06	572.59	16.03	556.56
OBA-16A	560.42	573.26	10.90	562.36
OBA-18A	559.18	573.47	13.25	560.22
OBA-19A	558.08	573.86	12.20	561.66
OBA-23A	560.94	570.19	8.59	561.60
OBA-24A	557.76	568.95	5.85	563.10
OBA-25A	558.07	569.02	5.75	563.27
OBA-26A	557.28	569.55	6.28	563.27
PN-1A	560.21	570.51	OBSTRUCTED	OBSTRUCTED
PN-2A	561.41	570.64	DRY	561.41
PN-3A	560.12	571.80	9.32	562.48
PN-4A	558.94	568.35	7.11	561.24
PN-5A	558.95	568.55	7.08	561.47
PN-6A	559.06	568.43	7.01	561.42
PN-7A	558.52	568.23	6.71	561.52
PN-8A	557.53	568.28	4.30	563.98
PN-9A	558.97	570.74	10.45	560.29
PN-10A	561.35	570.11	DRY	561.35
PN-11A	557.78	567.49	4.71	562.78
PN-12A	558.85	570.07	5.05	565.02

Table 3.1: April 20, 2020 Water Elevations

Well	A-Zone Bottom Elevation (feet)	Reference Point Elevation (feet)	Depth to Water (feet btoc)	Water Elevation ¹ (feet)
A-Zone - Olin Continued				
PN-13A	559.98	573.25	8.40	564.85
PN-14A	560.62	573.30	8.19	565.11
PN-15A	559.44	570.69	7.00	563.69
PN-16A	560.17	570.44	8.25	562.19
PN-17A	560.32	570.55	5.26	565.29
PN-18A	561.55	570.23	8.02	562.21
PN-19A	562.00	570.74	INACCESSIBLE	INACCESSIBLE
PN-20A	558.35	570.07	7.98	562.09
PN-21A	558.77	569.48	7.95	561.53
Gill Creek Stilling Well	NA	571.48	8.60	562.88
A-Zone - Solvent⁴				
OW-5A	NA	573.05	DRY	DRY
OW-6A	NA	572.10	9.70	562.40
OW-20A	NA	572.62	11.95	560.67
OW-21A	NA	569.33	5.51	563.82
OW-22A	NA	570.68	6.41	564.27
A/B-Zone - Olin^{2,3}				
PR-1	561.70	572.29	8.75	563.54
PR-1-PZ	561.70	571.15	8.60	562.55
PR-2	561.17	572.21	14.55	557.66
PR-2-PZ	561.17	572.17	14.88	557.29
PR-3	557.65	572.39	15.25	557.14
PR-3-PZ	557.65	571.69	14.93	556.76
PR-4	556.58	569.66	11.50	558.16
PR-4-PZ	556.58	569.65	12.75	556.90
PR-5	558.47	570.18	12.85	557.33
PR-5-PZ	558.47	569.23	11.91	557.32
PR-6	559.35	568.28	10.69	557.59
PR-7	558.56	568.57	8.34	560.23
PR-8	558.91	567.97	9.57	558.40
PR-9	556.16	568.39	7.22	561.17
PR-10	558.38	568.16	6.82	561.34
PR-11	558.31	567.53	3.98	563.55

Table 3.1: April 20, 2020 Water Elevations

Well	A-Zone Bottom Elevation (feet)	Reference Point Elevation (feet)	Depth to Water (feet btoc)	Water Elevation ¹ (feet)
A/B-Zone - Olin Continued^{2,3}				
PR-12	558.37	569.28	6.31	562.97
PR-13	559.15	568.69	11.22	557.47
PR-14	558.59	568.60	6.83	561.77
RW-1	560.93	573.22	15.06	558.16
RW-1-PZ	560.93	572.33	14.09	558.24
RW-2	559.03	572.01	15.45	556.56
RW-2-PZ	559.03	571.76	15.15	556.61
RW-3	556.69	569.40	12.50	556.90
RW-3-PZ	556.69	569.37	12.55	556.82
RW-4	557.05	569.27	12.70	556.57
RW-4-PZ	557.05	569.33	12.72	556.61
RW-5	556.81	569.28	10.71	558.57
RW-5-PZ	556.81	569.24	10.65	558.59
B-Zone - Olin³				
OBA-1B	NA	570.35	11.59	558.76
OBA-2B	NA	572.63	15.71	556.92
OBA-4B	NA	573.03	14.70	558.33
OBA-5B	NA	572.29	11.90	560.39
OBA-6B	NA	570.31	5.20	565.11
OBA-7B	NA	573.97	10.10	563.87
OBA-8B	NA	572.64	14.32	558.32
OBA-11B	NA	572.87	15.65	557.22
OBA-14B	NA	570.76	14.40	556.36
OBA-16B	NA	572.99	15.72	557.27
OBA-23B	NA	570.04	11.87	558.17
OBA-24B	NA	568.76	11.50	557.26
OBA-25B	NA	568.93	11.59	557.34
OBA-26B	NA	569.65	12.30	557.35
PN-1B	NA	570.32	12.25	558.07
PN-2B	NA	570.44	13.79	556.65
PN-3B	NA	571.73	14.28	557.45
PN-4B	NA	568.46	11.20	557.26
PN-5B	NA	568.58	11.95	556.63

Table 3.1: April 20, 2020 Water Elevations

Well	A-Zone Bottom Elevation (feet)	Reference Point Elevation (feet)	Depth to Water (feet btoc)	Water Elevation ¹ (feet)
B-Zone - Olin Continued³				
PN-6B	NA	568.56	11.98	556.58
PN-7B	NA	568.45	10.89	557.56
PN-8B	NA	567.85	11.27	556.58
PN-9B	NA	570.68	13.46	557.22
PN-10B	NA	571.15	13.18	557.97
PN-11B	NA	567.78	10.25	557.53
PN-12B	NA	570.00	12.25	557.75
PN-13B	NA	573.24	15.61	557.63
PN-14B	NA	573.30	9.65	563.65
PN-15B	NA	570.70	13.45	557.25
PN-16B	NA	570.36	9.99	560.37
PN-17B	NA	570.54	12.20	558.34
PN-18B	NA	570.50	11.85	558.65
PN-19B	NA	570.64	10.11	560.53
PN-20B	NA	569.70	13.05	556.65
PN-21B	NA	569.39	10.88	558.51
PN-24B	NA	570.87	13.76	557.11
B-Zone - Solvent⁴				
PW-3B	NA	571.21	14.40	556.81
PW-4B	NA	569.72	14.61	555.11
OW-4B	NA	570.55	13.65	556.90
OW-14B	NA	570.87	13.98	556.89
OW-15B	NA	569.78	12.89	556.89
OW-22B	NA	570.90	14.22	556.68
OW-23B	NA	569.67	13.06	556.61
OW-24B	NA	570.36	13.65	556.71
OW-25B	NA	570.90	14.05	556.85
OW-31B	NA	570.14	12.68	557.46
OW-32B	NA	569.99	13.01	556.98
OW-33B	NA	569.55	12.75	556.80
C-Zone - Olin				
OBA-1C	NA	570.41	14.67	555.74
OBA-4C	NA	573.05	16.61	556.44

Table 3.1: April 20, 2020 Water Elevations

Well	A-Zone Bottom Elevation (feet)	Reference Point Elevation (feet)	Depth to Water (feet btoc)	Water Elevation ¹ (feet)
C-Zone - Olin Continued				
OBA-7C	NA	574.30	19.16	555.14
OBA-14C	NA	570.15	15.97	554.18
OBA-15B	NA	573.13	16.66	556.47
CD-Zone - Olin				
OBA-2C	NA	572.43	18.91	553.52
OBA-3C	NA	572.67	18.85	553.82
OBA-5C	NA	572.01	17.35	554.66
OBA-6C	NA	570.35	14.77	555.58
OBA-8C	NA	573.14	20.69	552.45
OBA-11C	NA	572.94	16.76	556.18
PN-25C/CD	NA	571.26	18.99	552.27
Olin Production Well ⁵		NA	609	NA

Notes:

1. The orange highlighted water elevations are at or below the bottom of the A-Zone. A-Zone bottom elevations were used for these wells on the A-Zone potentiometric surface map.
2. Water elevations from the A/B-Zone wells with **red text** were used for the A-Zone potentiometric surface map. Pumping well piezometers (**green text**) were used for both A-Zone and B-Zone potentiometric surface maps.
3. The blue highlighted B-Zone elevations were not used when preparing the B-Zone potentiometric surface map. These elevations are anomalous or the wells may be poorly or not connected to the B-Zone indicated by elevations which are significantly higher than the average B-Zone elevation (~558.25).
4. Water levels from A-Zone & B-Zone Solvent wells located on Olin property between Gill Creek and Dupont Road were measured and used for the A-Zone and B-Zone potentiometric surface maps.
5. The Olin Production Well water elevation is calculated based on the production well flow rate using an empirical formula presented in the 1994 Remedial Facility Investigation. The flow rate in gallons per minute is shown in place of the depth to water.

Prepared by: EIWP 9/9/2020

Checked by: AWE 9/21/2020

Table 3.2: October 12, 2020 Water Elevations

Well	A-Zone Bottom Elevation (feet)	Reference Point Elevation (feet)	Depth to Water (feet btoc)	Water Elevation ¹ (feet)
A-Zone - Olin				
OBA-1A	562.33	570.67	4.95	565.72
OBA-2A	561.32	572.54	DRY	561.32
OBA-3A	552.36	572.07	14.96	557.11
OBA-4A	558.34	572.42	DRY	558.34
OBA-5A	557.72	571.72	7.78	563.94
OBA-6A	561.01	570.17	6.50	563.67
OBA-7A	562.71	573.39	9.09	564.30
OBA-8A	559.59	572.49	11.94	560.55
OBA-9A	558.01	569.24	6.68	562.56
OBA-9AR	557.28	570.22	8.41	561.81
OBA-10A	552.15	568.39	6.58	561.81
OBA-11A	558.76	572.83	13.00	559.83
OBA-14A	552.44	570.67	13.70	556.97
OBA-15A	551.06	572.59	16.01	556.58
OBA-16A	560.42	573.26	10.85	562.41
OBA-18A	559.18	573.47	13.19	560.28
OBA-19A	558.08	573.86	13.49	560.37
OBA-23A	560.94	570.19	DRY	560.94
OBA-24A	557.76	568.95	6.55	562.40
OBA-25A	558.07	569.02	5.92	563.10
OBA-26A	557.28	569.55	8.10	561.45
PN-1A	560.21	570.51	7.70	562.81
PN-2A	561.41	570.64	DRY	561.41
PN-3A	560.12	571.80	9.92	561.88
PN-4A	558.94	568.35	7.75	560.60
PN-5A	558.95	568.55	7.35	561.20
PN-6A	559.06	568.43	7.31	561.12
PN-7A	558.52	568.23	6.68	561.55
PN-8A	557.53	568.28	4.60	563.68
PN-9A	558.97	570.74	10.26	560.48
PN-10A	561.35	570.11	DRY	561.35
PN-11A	557.78	567.49	4.77	562.72
PN-12A	558.85	570.07	5.42	564.65

Table 3.2: October 12, 2020 Water Elevations

Well	A-Zone Bottom Elevation (feet)	Reference Point Elevation (feet)	Depth to Water (feet btoc)	Water Elevation ¹ (feet)
A-Zone - Olin Continued				
PN-13A	559.98	573.25	9.16	564.09
PN-14A	560.62	573.30	9.13	564.17
PN-15A	559.44	570.69	7.43	563.26
PN-16A	560.17	570.44	DRY	560.17
PN-17A	560.32	570.55	5.95	564.60
PN-18A	561.55	570.23	NM	NM
PN-19A	562.00	570.74	DRY	562.00
PN-20A	558.35	570.07	8.98	561.09
PN-21A	558.77	569.48	5.20	564.28
Gill Creek Stilling Well	NA	571.48	8.60	562.88
A-Zone - Solvent⁴				
OW-5A	NA	573.05	dry	dry
OW-6A	NA	572.10	10.99	561.11
OW-20A	NA	572.62	dry	dry
OW-21A	NA	569.33	dry	dry
OW-22A	NA	570.68	dry	dry
A/B-Zone - Olin^{2,3}				
PR-1	561.70	572.29	9.64	562.65
PR-1-PZ	561.70	571.15	8.40	562.75
PR-2	561.17	572.21	14.82	557.39
PR-2-PZ	561.17	572.17	15.19	556.98
PR-3	557.65	572.39	15.71	556.68
PR-3-PZ	557.65	571.69	15.08	556.61
PR-4	556.58	569.66	13.06	556.60
PR-4-PZ	556.58	569.65	13.05	556.60
PR-5	558.47	570.18	13.25	556.93
PR-5-PZ	558.47	569.23	12.25	556.98
PR-6	559.35	568.28	10.90	557.38
PR-7	558.56	568.57	8.79	559.78
PR-8	558.91	567.97	10.30	557.67
PR-9	556.16	568.39	8.00	560.39
PR-10	558.38	568.16	7.63	560.53
PR-11	558.31	567.53	5.96	561.57

Table 3.2: October 12, 2020 Water Elevations

Well	A-Zone Bottom Elevation (feet)	Reference Point Elevation (feet)	Depth to Water (feet btoc)	Water Elevation ¹ (feet)
A/B-Zone - Olin Continued^{2,3}				
PR-12	558.37	569.28	6.70	562.58
PR-13	559.15	568.69	11.80	556.89
PR-14	558.59	568.60	7.48	561.12
RW-1	560.93	573.22	NM	NM
RW-1-PZ	560.93	572.33	NM	NM
RW-2	559.03	572.01	15.42	556.59
RW-2-PZ	559.03	571.76	15.15	556.61
RW-3	556.69	569.40	12.81	556.59
RW-3-PZ	556.69	569.37	12.83	556.54
RW-4	557.05	569.27	12.70	556.57
RW-4-PZ	557.05	569.33	12.69	556.64
RW-5	556.81	569.28	11.60	557.68
RW-5-PZ	556.81	569.24	11.51	557.73
B-Zone - Olin³				
OBA-1B	NA	570.35	12.90	557.45
OBA-2B	NA	572.63	16.05	556.58
OBA-4B	NA	573.03	15.97	557.06
OBA-5B	NA	572.29	12.10	560.19
OBA-6B	NA	570.31	6.53	563.78
OBA-7B	NA	573.97	11.11	562.86
OBA-8B	NA	572.64	15.11	557.53
OBA-11B	NA	572.87	16.69	556.18
OBA-14B	NA	570.76	14.29	556.47
OBA-16B	NA	572.99	16.00	556.99
OBA-23B	NA	570.04	12.35	557.69
OBA-24B	NA	568.76	11.82	556.94
OBA-25B	NA	568.93	12.02	556.91
OBA-26B	NA	569.65	12.55	557.10
PN-1B	NA	570.32	12.18	558.14
PN-2B	NA	570.44	13.81	556.63
PN-3B	NA	571.73	14.27	557.46
PN-4B	NA	568.46	11.80	556.66
PN-5B	NA	568.58	11.47	557.11

Table 3.2: October 12, 2020 Water Elevations

Well	A-Zone Bottom Elevation (feet)	Reference Point Elevation (feet)	Depth to Water (feet btoc)	Water Elevation ¹ (feet)
B-Zone - Olin Continued³				
PN-6B	NA	568.56	11.97	556.59
PN-7B	NA	568.45	11.09	557.36
PN-8B	NA	567.85	11.26	556.59
PN-9B	NA	570.68	14.00	556.68
PN-10B	NA	571.15	13.33	557.82
PN-11B	NA	567.78	10.24	557.54
PN-12B	NA	570.00	12.45	557.55
PN-13B	NA	573.24	16.05	557.19
PN-14B	NA	573.30	10.21	563.09
PN-15B	NA	570.70	13.80	556.90
PN-16B	NA	570.36	11.15	559.21
PN-17B	NA	570.54	13.01	557.53
PN-18B	NA	570.50	NM	NM
PN-19B	NA	570.64	10.01	560.63
PN-20B	NA	569.70	13.14	556.56
PN-21B	NA	569.39	11.11	558.28
PN-24B	NA	570.87	14.04	556.83
B-Zone - Solvent⁴				
PW-3B	NA	571.21	19.01	552.20
PW-4B	NA	569.72	13.20	556.52
OW-4B	NA	570.55	13.52	557.03
OW-14B	NA	570.87	14.12	556.75
OW-15B	NA	569.78	12.80	556.98
OW-22B	NA	570.90	14.10	556.80
OW-23B	NA	569.67	12.96	556.71
OW-24B	NA	570.36	13.55	556.81
OW-25B	NA	570.90	13.96	556.94
OW-31B	NA	570.14	13.01	557.13
OW-32B	NA	569.99	13.02	556.97
OW-33B	NA	569.55	12.69	556.86
C-Zone - Olin				
OBA-1C	NA	570.41	15.09	555.32
OBA-4C	NA	573.05	16.55	556.50

Table 3.2: October 12, 2020 Water Elevations

Well	A-Zone Bottom Elevation (feet)	Reference Point Elevation (feet)	Depth to Water (feet btoc)	Water Elevation ¹ (feet)
C-Zone - Olin Continued				
OBA-7C	NA	574.30	18.80	555.50
OBA-14C	NA	570.15	15.69	554.46
OBA-15B	NA	573.13	16.55	556.58
CD-Zone - Olin				
OBA-2C	NA	572.43	17.31	555.12
OBA-3C	NA	572.67	18.51	554.16
OBA-5C	NA	572.01	16.65	555.36
OBA-6C	NA	570.35	15.51	554.84
OBA-8C	NA	573.14	20.20	552.94
OBA-11C	NA	572.94	17.85	555.09
PN-25C/CD	NA	571.26	18.41	552.85
Olin Production Well ⁵		NA	#N/A	557.84

Notes:

1. The orange highlighted water elevations are at or below the bottom of the A-Zone. A-Zone bottom elevations were used for these wells on the A-Zone potentiometric surface map.
2. Water elevations from the A/B-Zone wells with red text were used for the A-Zone potentiometric surface map. Pumping well piezometers (green text) were used for both A-Zone and B-Zone potentiometric surface maps.
3. The blue highlighted B-Zone elevations were not used when preparing the B-Zone potentiometric surface map. These elevations are anomalous or the wells may be poorly or not connected to the B-Zone indicated by elevations which are significantly higher than the average B-Zone elevation (~558.25).
4. Water levels from A-Zone & B-Zone Solvent wells located on Olin property between Gill Creek and Dupont Road were measured and used for the A-Zone and B-Zone potentiometric surface maps.
5. The Olin Production Well water elevation is calculated based on the production well flow rate using an empirical formula presented in the 1994 Remedial Facility Investigation. The flow rate in gallons per minute is shown in place of the depth to water.

Prepared by: NJM 2/8/2021

Checked by: EIWP 3/3/2021

Table 4.1: April 2020 Groundwater Analytical Results

Well ID: Sample Date:	Sample OBA-1A 4/28/2020	Sample OBA-3A 4/27/2020	Sample OBA-4A 4/24/2020	Sample OBA-5A 4/24/2020	Duplicate OBA-5A 4/24/2020	Sample OBA-8A 4/30/2020
Volatile Organic Compound Concentrations - SW846 8260C ug/L						
Aliphatic Compounds						
1,1,1-Trichloroethane	1.0 U	20 U	1.0 U	25 U	25 U	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	143	1.0 U	25 U	25 U	1.0 U
1,1,2-Trichloroethane	1.0 U	20 U	1.0 U	25 U	25 U	1.0 U
1,1-Dichloroethene	1.0 U	20 U	1.0 U	25 U	25 U	1.0 U
Carbon tetrachloride	1.0 U	20 U	1.0 U	25 U	25 U	1.0 U
Chloromethane (Methyl chloride)	1.0 U	20 U	1.0 UJ	25 UJ	25 UJ	1.0 U
cis-1,2-Dichloroethene	1.0 U	1360	1.0 U	130	130	1.0 U
Methylene chloride (Dichloromethane)	1.0 U	20 U	1.0 U	25 U	25 U	1.0 U
Tetrachloroethene (PCE)	1.0 U	861	3.2	393	427	1.5
trans-1,2-Dichloroethene	1.0 U	51.1	1.0 U	25 U	25 U	1.0 U
Trichloroethene (TCE)	1.0 U	1980	1.8	204	206	1.2
Vinyl chloride	1.0 U	135	1.0 UJ	25 UJ	25 UJ	1.0 U
Aromatic Compounds						
1,2,4-Trichlorobenzene	1.0 U	35.8	1.0 U	3300	3500	2.3
1,2-Dichlorobenzene	1.0 U	58.3	1.0 U	233	239	1.0 U
1,3-Dichlorobenzene	1.0 U	42.9	1.0 U	412	415	1.0 U
1,4-Dichlorobenzene	1.0 U	61	1.0 U	317	331	1.0 U
Benzene	1.0 U	13 J	1.0 U	196	194	1.0 U
Chlorobenzene	1.0 U	58.9	1.0 U	402	406	1.0 U
Pesticide Concentrations - SW846 8081B ug/L						
alpha-BHC	0.054	1.3	0.19	109	123	0.02 J
beta-BHC	4.5	0.23	0.072	39.0	37.5	0.11 J
delta-BHC	0.05 U	0.35	0.05 U	1.4	1.5	0.05 UJ
gamma-BHC (Lindane)	0.05 U	0.057	0.15	54.6	65.5	0.05 UJ
Total Metal Concentrations - SW846 7470A ug/L						
Mercury	0.12 J	0.2 U	2.0	0.52	0.46	0.85

Notes:

ug/L - micrograms per liter

Prepared by: RJB 6/8/2020

Checked By: EIWP 6/12/2020

Data Qualifier Definitions:

J - Estimated concentration based on QC criteria

U - Constituent not detected above the Reporting Limit shown

UJ - Constituent not detected, estimated due to QC criteria

Table 4.1: April 2020 Groundwater Analytical Results

Well ID: Sample Date:	Sample OBA-10A 4/28/2020	Sample OBA-14A 4/27/2020	Sample OBA-15A 4/27/2020	Duplicate OBA-15A 4/27/2020	Sample OBA-24A 4/27/2020	Sample OBA-25A 4/24/2020
Volatile Organic Compound Concentrations - SW846 8260C ug/L						
Aliphatic Compounds						
1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	21.4	20.9	1.0 U	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ
cis-1,2-Dichloroethene	1.0 U	1.0 U	111	113	2.8	2.7
Methylene chloride (Dichloromethane)	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (PCE)	1.0 U	1.0 U	4.8	4.8	4.9	3.3
trans-1,2-Dichloroethene	1.0 U	1.0 U	13.5	13.5	1.0 U	1.0 U
Trichloroethene (TCE)	1.0 U	1.0 U	19.4	19.2	19.7	11.5
Vinyl chloride	1.0 U	1.0 U	35	35.9	1.0 U	1.0 UJ
Aromatic Compounds						
1,2,4-Trichlorobenzene	1.0 U	1.0 U	12.5	12.9	1.0 U	1.2
1,2-Dichlorobenzene	1.0 U	1.3	197	200	1.0 U	1.0 U
1,3-Dichlorobenzene	1.0	1.0 U	82.1	83.6	1.0 U	1.0 U
1,4-Dichlorobenzene	1.6	1.0 U	176	176	1.0 U	1.0 U
Benzene	1.0 U	1.0 U	1.9	1.9	1.0 U	1.0 U
Chlorobenzene	1.9	1.0 U	93.2	91.3	1.0 U	1.0 U
Pesticide Concentrations - SW846 8081B ug/L						
alpha-BHC	1.8	0.05 U	0.043 J	0.041 J	0.016 J	0.66
beta-BHC	3.7	0.05 U	0.26	0.26	0.039 J	0.16
delta-BHC	0.38	0.05 U	0.11	0.11	0.05 U	0.045 J
gamma-BHC (Lindane)	1.5	0.05 U	0.05 U	0.05 U	0.05 U	0.59
Total Metal Concentrations - SW846 7470A ug/L						
Mercury	8.8	0.2 U	0.2 U	0.2 U	0.14 J	41.8

Notes:

ug/L - micrograms per liter

Prepared by: RJB 6/8/2020

Checked By: EIWP 6/12/2020

Data Qualifier Definitions:

J - Estimated concentration based on QC criteria

U - Constituent not detected above the Reporting Limit shown

UJ - Constituent not detected, estimated due to QC criteria

Table 4.1: April 2020 Groundwater Analytical Results

Well ID: Sample Date:	Sample OBA-26A 4/24/2020	Sample PN-3A 4/22/2020	Sample PN-5A 4/28/2020	Sample PN-7A 4/28/2020	Sample PN-11A 4/23/2020	Sample PN-14A 4/22/2020
Volatile Organic Compound Concentrations - SW846 8260C ug/L						
Aliphatic Compounds						
1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 UJ	1.0 UJ
cis-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	2.0	1.1
Methylene chloride (Dichloromethane)	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.3
Tetrachloroethene (PCE)	1.0 U	1.0 U	1.0 U	9.5	1.0 U	31.6
trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (TCE)	1.0 U	1.2	1.0 U	8.1	2.5	14.4
Vinyl chloride	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.4	1.0 U
Aromatic Compounds						
1,2,4-Trichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	2.0 J	347
1,2-Dichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.4	46.2
1,3-Dichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	21.5	32.2
1,4-Dichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	12.9	3.5
Benzene	1.0 U	1.0 U	1.0 U	1.0 U	0.98 J	2.6
Chlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	4.5	2.1
Pesticide Concentrations - SW846 8081B ug/L						
alpha-BHC	0.31	0.25 U	0.13	0.086	0.48	2.1
beta-BHC	0.079	2.5	0.17	7.1	0.32	7.2
delta-BHC	0.05 U	0.25 U	0.062	0.071	0.08	0.5 U
gamma-BHC (Lindane)	0.26	0.25 U	0.25	0.096	0.5	0.53
Total Metal Concentrations - SW846 7470A ug/L						
Mercury	0.46	23.9	0.2 U	0.57	2.6	4.1

Notes:

ug/L - micrograms per liter

Prepared by: RJB 6/8/2020

Checked By: EIWP 6/12/2020

Data Qualifier Definitions:

J - Estimated concentration based on QC criteria

U - Constituent not detected above the Reporting Limit shown

UJ - Constituent not detected, estimated due to QC criteria

Table 4.1: April 2020 Groundwater Analytical Results

Well ID: Sample Date:	Sample PN-17A 4/21/2020	Duplicate PN-17A 4/21/2020	Sample PN-20A 4/22/2020	Sample OBA-1B 4/28/2020	Sample OBA-2B 4/21/2020	Sample OBA-4B 4/24/2020
Volatile Organic Compound Concentrations - SW846 8260C ug/L						
Aliphatic Compounds						
1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U
Chloromethane (Methyl chloride)	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	10 UJ	1.0 UJ
cis-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	5.6	10 U	12.2
Methylene chloride (Dichloromethane)	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U
Tetrachloroethene (PCE)	1.0 U	1.0 U	8.2	7.5	10 U	1.0 U
trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U
Trichloroethene (TCE)	1.0 U	1.0 U	1.7	7.8	13.7	1.3
Vinyl chloride	1.0 U	1.0 UJ	1.0 U	2.6	10 U	4.2 J
Aromatic Compounds						
1,2,4-Trichlorobenzene	1.0 U	1.0 U	2.0	1.0 U	1740	1.0 U
1,2-Dichlorobenzene	1.2	1.1	1.0 U	1.0 U	19.5	0.85 J
1,3-Dichlorobenzene	13.5	12.8	1.0 U	1.0 U	43.5	1.5
1,4-Dichlorobenzene	7.5	7.1	1.0 U	1.0 U	13.7	2.4
Benzene	5.6	5.4	1.0 U	1.0 U	10 U	0.71 J
Chlorobenzene	18.5	17.6	1.0 U	1.0 U	10 U	10.4
Pesticide Concentrations - SW846 8081B ug/L						
alpha-BHC	0.05 UJ	0.15 J	0.11	0.043 J	2.2	0.015 J
beta-BHC	0.02 J	0.033 J	0.11	0.093	0.47	0.067
delta-BHC	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
gamma-BHC (Lindane)	0.05 U	0.05 U	0.067	0.048 J	0.16	0.05 U
Total Metal Concentrations - SW846 7470A ug/L						
Mercury	5.8 J	4.3 J	0.2 U	1670	4.1	0.2 U

Notes:

ug/L - micrograms per liter

Prepared by: RJB 6/8/2020

Checked By: EIWP 6/12/2020

Data Qualifier Definitions:

J - Estimated concentration based on QC criteria

U - Constituent not detected above the Reporting Limit shown

UJ - Constituent not detected, estimated due to QC criteria

Table 4.1: April 2020 Groundwater Analytical Results

Well ID: Sample Date:	Sample OBA-5B 4/24/2020	Sample OBA-6B 4/23/2020	Sample OBA-8B 4/30/2020	Sample OBA-11B 4/30/2020	Sample OBA-14B 4/27/2020	Sample OBA-16B 4/21/2020
Volatile Organic Compound Concentrations - SW846 8260C ug/L						
Aliphatic Compounds						
1,1,1-Trichloroethane	100	U	1.0	U	50	U
1,1,2,2-Tetrachloroethane	100	U	1.0	U	50	U
1,1,2-Trichloroethane	100	U	1.0	U	50	U
1,1-Dichloroethene	100	U	1.0	U	50	U
Carbon tetrachloride	100	U	1.0	U	50	U
Chloromethane (Methyl chloride)	100	UJ	1.0	UJ	50	U
cis-1,2-Dichloroethene	5210		1.0	U	50	U
Methylene chloride (Dichloromethane)	100	U	1.0	U	50	U
Tetrachloroethene (PCE)	1260		1.0	U	50	U
trans-1,2-Dichloroethene	130		1.0	U	50	U
Trichloroethene (TCE)	6620		1.0	U	50	U
Vinyl chloride	100	UJ	1.0	U	50	U
Aromatic Compounds						
1,2,4-Trichlorobenzene	575		1.0	U	4050	
1,2-Dichlorobenzene	100	U	1.0	U	103	
1,3-Dichlorobenzene	100	U	1.0	U	372	
1,4-Dichlorobenzene	100	U	1.0	U	117	
Benzene	269		1.0	U	50	U
Chlorobenzene	168		1.0	U	50	U
Pesticide Concentrations - SW846 8081B ug/L						
alpha-BHC	11.1		0.67		0.86	
beta-BHC	10		0.2		1.4	
delta-BHC	3.1		0.059		0.05	UJ
gamma-BHC (Lindane)	6.8		0.13		0.034	J
Total Metal Concentrations - SW846 7470A ug/L						
Mercury	0.74		1.2		0.2	UJ
					0.2	U
					25.4	

Notes:

ug/L - micrograms per liter

Prepared by: RJB 6/8/2020

Checked By: EIWP 6/12/2020

Data Qualifier Definitions:

J - Estimated concentration based on QC criteria

U - Constituent not detected above the Reporting Limit shown

UJ - Constituent not detected, estimated due to QC criteria

Table 4.1: April 2020 Groundwater Analytical Results

Well ID: Sample Date:	Sample OBA-23B 4/22/2020	Sample OBA-24B 4/27/2020	Duplicate OBA-24B 4/27/2020	Sample OBA-25B 4/24/2020	Sample OBA-26B 4/24/2020	Sample PN-5B 4/28/2020
Volatile Organic Compound Concentrations - SW846 8260C ug/L						
Aliphatic Compounds						
1,1,1-Trichloroethane	10 U	200 U	200 U	5.0 U	50 U	50 U
1,1,2,2-Tetrachloroethane	10 U	303	290	5.0 U	50 U	199
1,1,2-Trichloroethane	10 U	200 U	200 U	5.0 U	50 U	50 U
1,1-Dichloroethene	10 U	200 U	200 U	5.0 U	50 U	50 U
Carbon tetrachloride	10 U	200 U	200 U	5.0 U	50 U	50 U
Chloromethane (Methyl chloride)	10 UJ	200 U	200 U	5.0 UJ	50 UJ	50 U
cis-1,2-Dichloroethene	10 U	4470	4230	5.0 U	50 U	101
Methylene chloride (Dichloromethane)	10 U	200 U	200 U	5.0 U	50 U	50 U
Tetrachloroethene (PCE)	10 U	22000	21800	5.0 U	50 U	1510
trans-1,2-Dichloroethene	10 U	200 U	200 U	5.0 U	50 U	50 U
Trichloroethene (TCE)	10 U	25800	25300	5.0 U	50 U	819
Vinyl chloride	10 U	512	457	7.0 J	50 UJ	50 U
Aromatic Compounds						
1,2,4-Trichlorobenzene	768	1140	939	5.0 U	50 U	6210
1,2-Dichlorobenzene	26.9	1120	1120	43.8	160	435
1,3-Dichlorobenzene	731	200 U	205	37.2	168	409
1,4-Dichlorobenzene	591	886	876	113	407	222
Benzene	10 U	2970	2900	14.4	29.9 J	334
Chlorobenzene	69.9	961	915	347	1020	372
Pesticide Concentrations - SW846 8081B ug/L						
alpha-BHC	1.6	50.7	64.5	0.018 J	0.05 U	394
beta-BHC	0.29	8.3	12.9	0.032 J	0.05 U	30.5
delta-BHC	0.05 U	15.7	20.4	0.027 J	0.05 U	255
gamma-BHC (Lindane)	0.3	59.3	79	0.05 U	0.05 U	876
Total Metal Concentrations - SW846 7470A ug/L						
Mercury	2.0	0.21	0.22	0.2 U	0.2 U	0.13 J

Notes:

ug/L - micrograms per liter

Prepared by: RJB 6/8/2020

Checked By: EIWP 6/12/2020

Data Qualifier Definitions:

J - Estimated concentration based on QC criteria

U - Constituent not detected above the Reporting Limit shown

UJ - Constituent not detected, estimated due to QC criteria

Table 4.1: April 2020 Groundwater Analytical Results

Well ID: Sample Date:	Sample PN-7B 4/28/2020	Sample PN-11B 4/23/2020	Duplicate PN-11B 4/23/2020	Sample PN-12B 4/22/2020	Sample PN-15B 4/21/2020	Sample PN-17B 4/21/2020
Volatile Organic Compound Concentrations - SW846 8260C ug/L						
Aliphatic Compounds						
1,1,1-Trichloroethane	5.0	U	100	U	100	U
1,1,2,2-Tetrachloroethane	5.0	U	100	U	100	U
1,1,2-Trichloroethane	5.0	U	100	U	100	U
1,1-Dichloroethene	5.0	U	100	U	100	U
Carbon tetrachloride	5.0	U	100	U	100	U
Chloromethane (Methyl chloride)	5.0	U	100	UJ	100	UJ
cis-1,2-Dichloroethene	21.5		233		181	
Methylene chloride (Dichloromethane)	5.0	U	100	U	100	U
Tetrachloroethene (PCE)	30.6		2200		1830	
trans-1,2-Dichloroethene	5.0	U	100	U	100	U
Trichloroethene (TCE)	97		3810		3240	
Vinyl chloride	5.0	U	100	U	100	U
Aromatic Compounds						
1,2,4-Trichlorobenzene	916		6760		5980	
1,2-Dichlorobenzene	32.6		4660		4260	
1,3-Dichlorobenzene	34.8		730		658	
1,4-Dichlorobenzene	20.7		4220		3780	
Benzene	10.5		195		170	
Chlorobenzene	15.4		298		278	
Pesticide Concentrations - SW846 8081B ug/L						
alpha-BHC	68.7		253		263	
beta-BHC	6.4		28.2		29.3	
delta-BHC	2.6		6.2		6.5	
gamma-BHC (Lindane)	72.2		182		189	
Total Metal Concentrations - SW846 7470A ug/L						
Mercury	1.2		2.8		2.4	
					34.3	
					36.6	
					3.5	

Notes:

ug/L - micrograms per liter

Prepared by: RJB 6/8/2020

Checked By: EIWP 6/12/2020

Data Qualifier Definitions:

J - Estimated concentration based on QC criteria

U - Constituent not detected above the Reporting Limit shown

UJ - Constituent not detected, estimated due to QC criteria

Table 4.1: April 2020 Groundwater Analytical Results

	Well ID: Sample Date:	Sample PN-20B 4/22/2020	Sample PN-24B 4/28/2020
Volatile Organic Compound Concentrations - SW846 8260C ug/L			
Aliphatic Compounds			
1,1,1-Trichloroethane	100	U	1.0
1,1,2,2-Tetrachloroethane	498		1.0
1,1,2-Trichloroethane	100	U	1.0
1,1-Dichloroethene	100	U	1.0
Carbon tetrachloride	100	U	1.0
Chloromethane (Methyl chloride)	100	UJ	1.0
cis-1,2-Dichloroethene	527		3.8
Methylene chloride (Dichloromethane)	100	U	1.0
Tetrachloroethene (PCE)	15400		3.3
trans-1,2-Dichloroethene	100	U	1.0
Trichloroethene (TCE)	7830		1.9
Vinyl chloride	100	U	1.7
Aromatic Compounds			
1,2,4-Trichlorobenzene	294		1.0
1,2-Dichlorobenzene	211		1.0
1,3-Dichlorobenzene	100	U	2.6
1,4-Dichlorobenzene	141		4.4
Benzene	100	U	1.0
Chlorobenzene	100	U	2.1
Pesticide Concentrations - SW846 8081B ug/L			
alpha-BHC	0.27		0.32
beta-BHC	0.11		0.13
delta-BHC	0.054		0.1
gamma-BHC (Lindane)	0.13		0.27
Total Metal Concentrations - SW846 7470A ug/L			
Mercury	0.2	U	3.7

Notes:

ug/L - micrograms per liter

Prepared by: RJB 6/8/2020

Checked By: EIWP 6/12/2020

Data Qualifier Definitions:

J - Estimated concentration based on QC criteria

U - Constituent not detected above the Reporting Limit shown

UJ - Constituent not detected, estimated due to QC criteria

Table 4.2 : October 2020 Groundwater Analytical Results

Well ID: Sample Date:	Sample OBA-2B 10/14/2020	Sample OBA-4B 10/13/2020	Sample OBA-5B 10/13/2020	Sample OBA-6B 10/14/2020	Sample OBA-24A 10/13/2020	Sample OBA-24B 10/13/2020	Sample OBA-25A 10/13/2020	Sample OBA-25B 10/13/2020	Sample OBA-26B 10/13/2020
Volatile Organic Compound Concentrations - SW846 8260C µg/L									
Aliphatic Compounds									
1,1,1-Trichloroethane	1.0 U	1.0 U	6.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	21.2	1.0 U	53	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	17.8	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	43.8	1.0 U	1.0 U	4.9	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U				
Chloromethane (Methyl chloride)	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U				
cis-1,2-Dichloroethene	79.1	21.9	5580	1.0 U	2.0	2480	6.9	1.2	156
Methylene chloride (Dichloromethane)	1.0 U	1.0 U	1.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (PCE)	145	1.0 U	1390	1.0 U	3.6	167	4.0	1.0 U	1.0 U
trans-1,2-Dichloroethene	1.8	1.0 U	120	1.0 U	1.0 U	27	1.0 U	1.0 U	3.1
Trichloroethene (TCE)	266	2.4	4160	1.4	12.3	62	17.7	1.0 U	1.0 U
Vinyl chloride	1.5	8.8	812	1.0 U	1.0 U	882	1.0 U	1.9	226
Aromatic Compounds									
1,2,4-Trichlorobenzene	710	1.0 U	3490	1.0 U	1.0 U	621	1.0 U	8.9	1.9
1,2-Dichlorobenzene	9.9	1.0 U	465	1.0 U	1.5	975	1.0 U	65.8	419
1,3-Dichlorobenzene	19.5	1.3	991	1.0 U	12.4	221	1.0 U	37.2	551
1,4-Dichlorobenzene	7.6	1.0 U	983	1.0 U	36	795	1.0 U	124	1300
Benzene	1.0 U	1.3	1410	1.0 U	1.0 U	2160	1.0 U	28.2	62
Chlorobenzene	1.7	9.7	2060	1.0 U	71.1	916	1.0 U	528	2360
Pesticide Concentrations - SW846 8081B ug/L									
alpha-BHC	1.6	0.05 U	92 JH	0.21	0.05 U	76.6	0.028 J	0.19	0.05 U
beta-BHC	0.61	0.024 J	13.9	0.093	0.024 J	26.9	0.05 U	0.064	0.05 U
delta-BHC	0.16	0.05 U	6.1	0.045 J	0.05 U	26.4	0.05 U	0.21	0.05 U
gamma-BHC (Lindane)	0.62	0.05 U	47.6	0.039 J	0.05 U	138	0.05 U	0.17	0.05 U
Total Metal Concentrations - SW846 7470A ug/L									
Mercury	5.4	0.2 U	3.0 JH	0.89	0.12 J	0.2 U	13.8	0.39	0.2 U

Notes:

µg/L - micrograms per liter

Data Qualifier Definitions:

J - Estimated concentration based on QC criteria

JH - Detected, possibly biased high based on QC criteria

U - Constituent not detected above the Reporting Limit shown

Prepared by: RJB 11/30/2020

Checked By: RMB 11/30/2020

Table 4.2 : October 2020 Groundwater Analytical Results

Well ID: Sample Date:	Sample PN-5B 10/14/2020	Duplicate PN-5B 10/14/2020	Sample PN-20A 10/14/2020	Sample PN-20B 10/14/2020	Duplicate PN-20B 10/14/2020	Sample PN-24B 10/14/2020
Volatile Organic Compound Concentrations - SW846 8260C µg/L						
Aliphatic Compounds						
1,1,1-Trichloroethane	3.2	3.2	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	3680	3600	1.0 U	1210	1220	1.0 U
1,1,2-Trichloroethane	13.4	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	44.2	44.7	1.0 U	9.3	9.4	1.0 U
Carbon tetrachloride	3.4	3.6	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	3190	3120	1.0 U	1870	1720	7.5
Methylene chloride (Dichloromethane)	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (PCE)	4960	4980	11.4	14600	13800	3.5
trans-1,2-Dichloroethene	68.9	70.2	1.0 U	28	20.7	1.0 U
Trichloroethene (TCE)	4790	4700	2.7	8550	8240	2.6
Vinyl chloride	28.2	28.4	1.0 U	76.8	79.4	5.5
Aromatic Compounds						
1,2,4-Trichlorobenzene	12900	12700	2.0	175	169	19.5 J
1,2-Dichlorobenzene	1190	1110	1.0 U	287	270	3.7
1,3-Dichlorobenzene	888	864	1.0 U	50.1	49.8	6.9
1,4-Dichlorobenzene	2910	2740	1.0 U	87	84.5	14.3
Benzene	2400	2360	1.0 U	5.0	4.7	1.0 U
Chlorobenzene	1420	1440	1.0 U	15.3	14.9	10.1
Pesticide Concentrations - SW846 8081B ug/L						
alpha-BHC	436	517	0.05 U	0.38	0.57	0.073
beta-BHC	70.9	78.6	0.081	0.1	0.14	0.05 J
delta-BHC	339	391	0.05 U	0.11	0.13	0.05 U
gamma-BHC (Lindane)	1270	1430	0.05 U	0.22	0.26	0.049 J
Total Metal Concentrations - SW846 7470A ug/L						
Mercury	0.5	0.43	0.2 U	0.2 U	0.2 U	0.14 J

Notes:

µg/L - micrograms per liter

Data Qualifier Definitions:

J - Estimated concentration based on QC criteria

JH - Detected, possibly biased high based on QC criteria

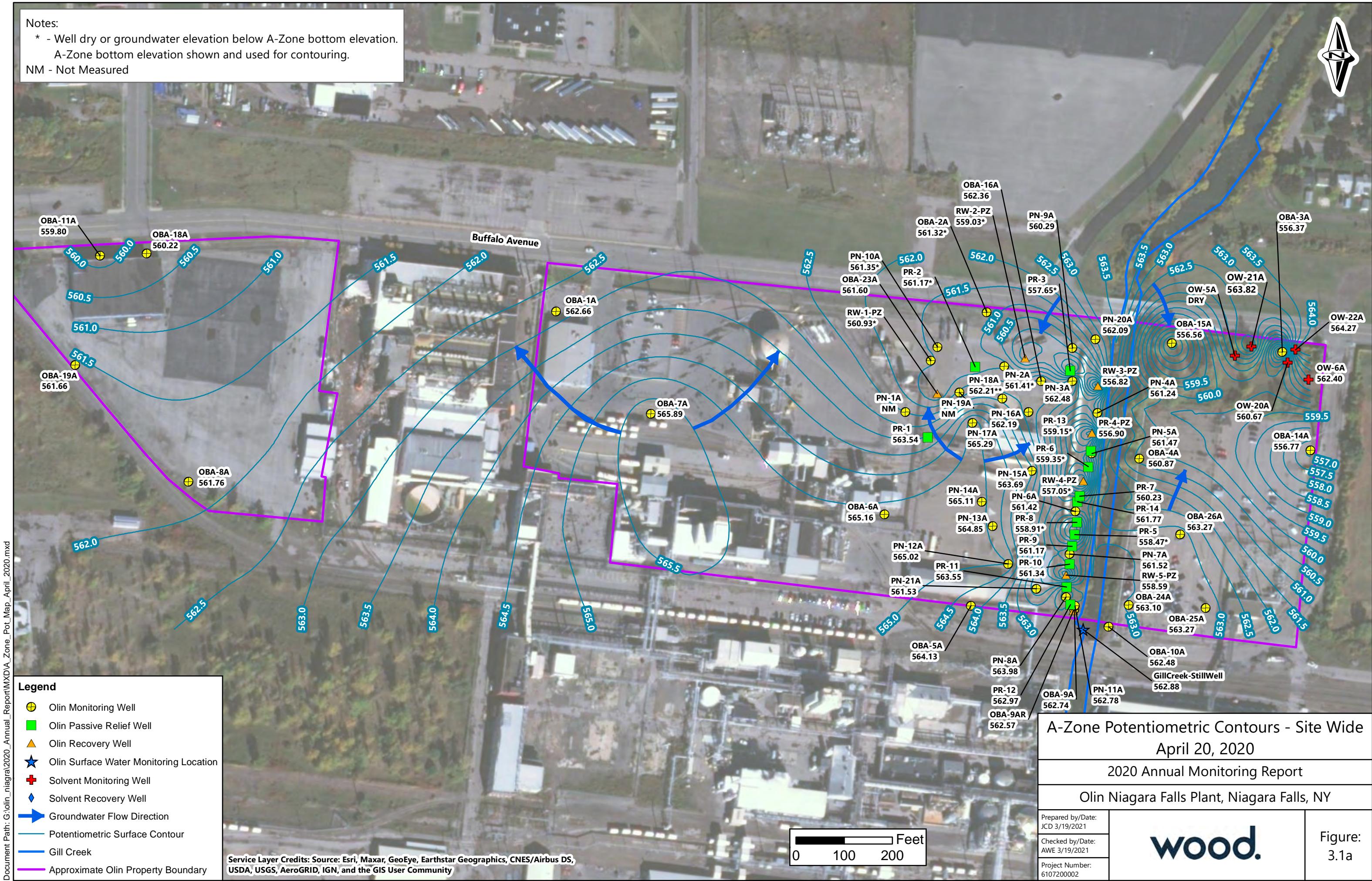
U - Constituent not detected above the Reporting Limit shown

Prepared by: RJB 11/30/2020

Checked By: RMB 11/30/2020

Figures

Notes:
 * - Well dry or groundwater elevation below A-Zone bottom elevation.
 A-Zone bottom elevation shown and used for contouring.
 NM - Not Measured



Notes:
 * - Well dry or groundwater elevation below A-Zone bottom elevation.
 A-Zone bottom elevation shown and used for contouring.
 NM - Not measured



Document Path: G:\olin_niagara\2020_Annual_Report\MXD\A_Zone_Pot_Map_Oct_2020.mxd

Legend

- Monitoring Well
- Passive Relief Well
- ▲ Recovery Well
- ★ Surface Water Monitoring Location
- + Solvent Monitoring Well
- ◆ Solvent Recovery Well
- Potentiometric Surface Contour
- Groundwater Flow Direction
- Gill Creek
- Approximate Olin Property Boundary

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

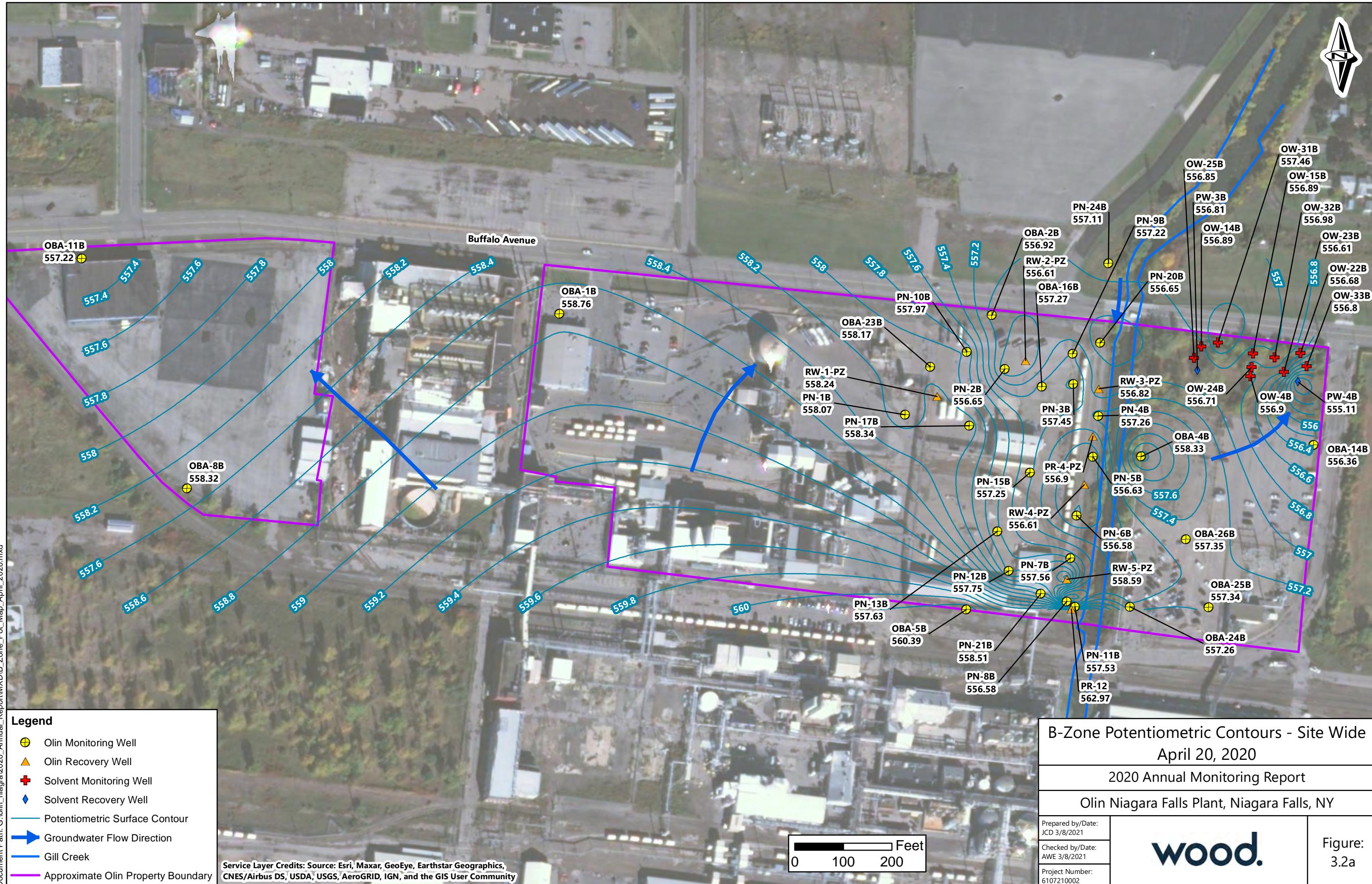
Feet
0 100 200

A-Zone Potentiometric Contours - Site Wide
October 12, 2020
2020 Annual Monitoring Report
Olin Niagara Falls Plant, Niagara Falls, NY

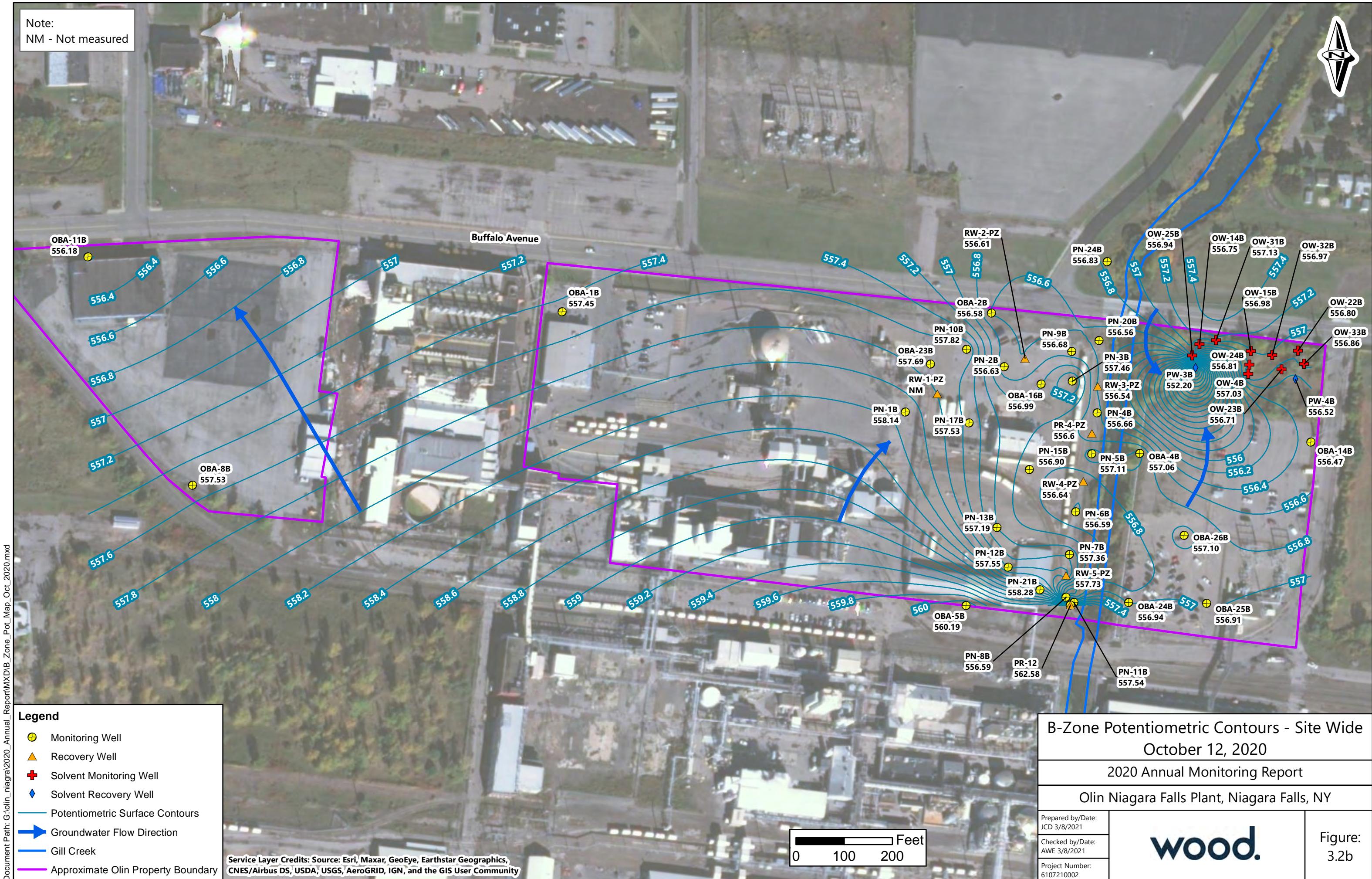
Prepared by/Date: JCD 3/7/2021
Checked by/Date: AWE 3/7/2021
Project Number: 6107200002

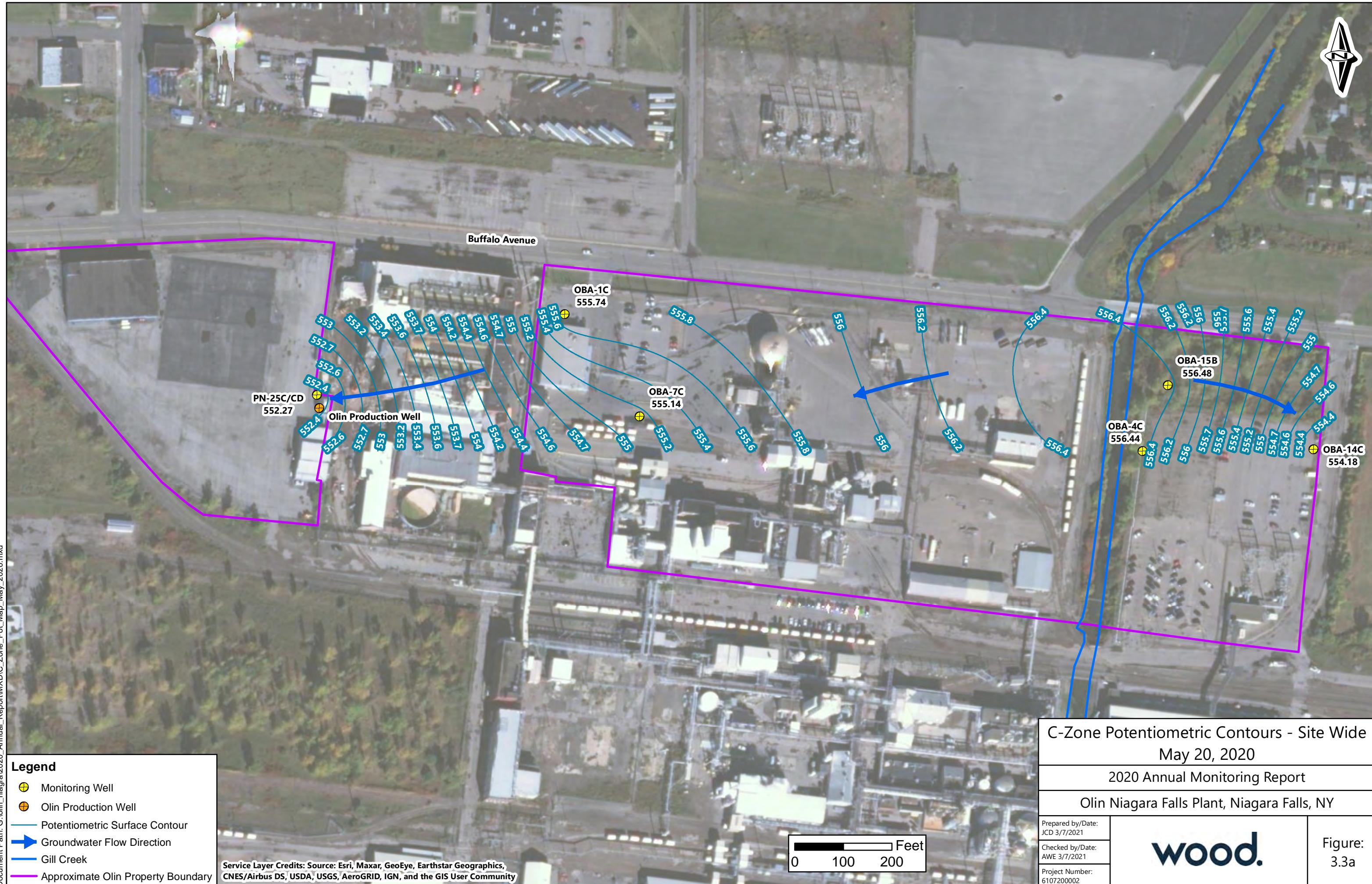
wood.

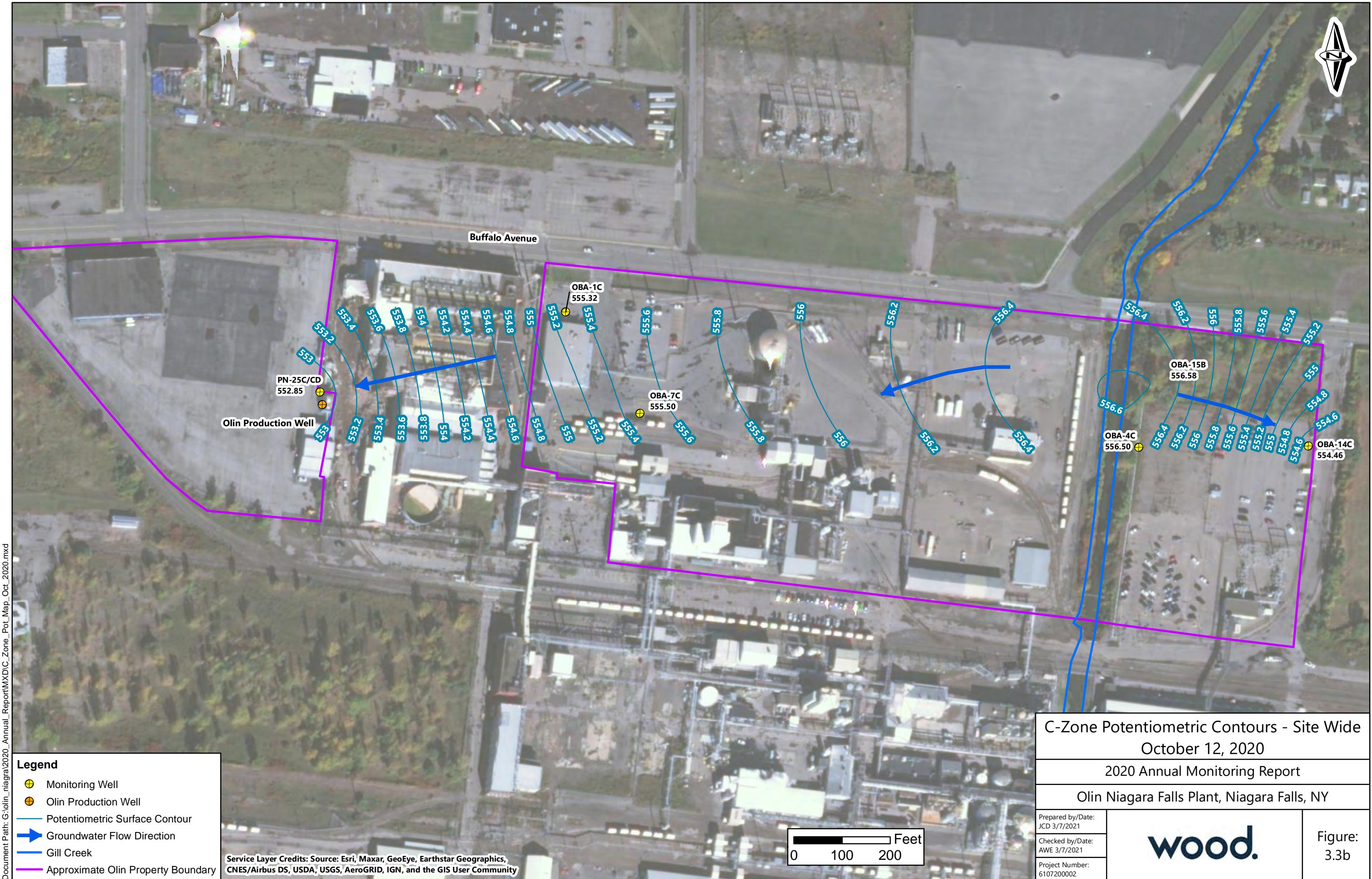
Figure:
3.1b

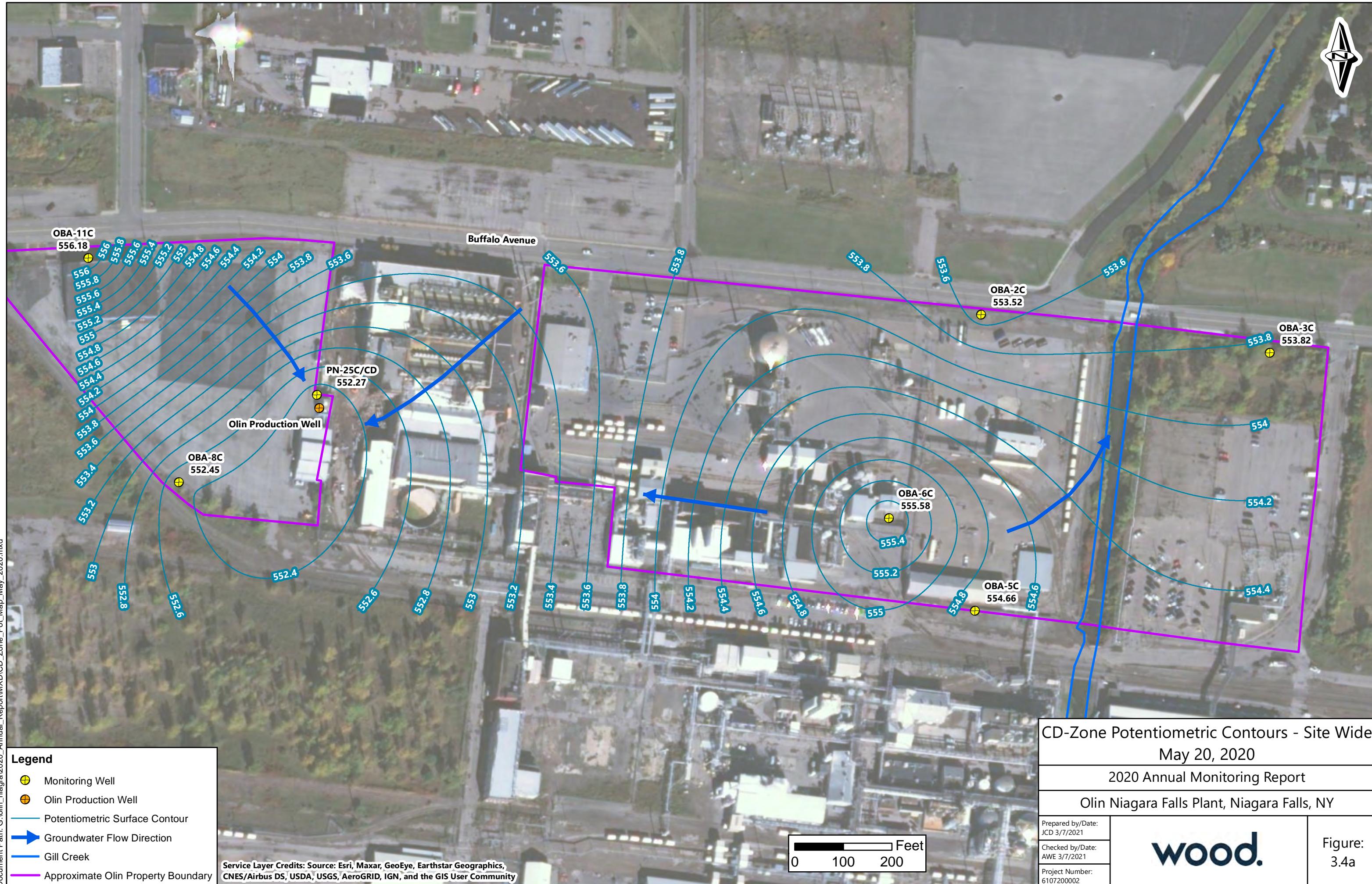


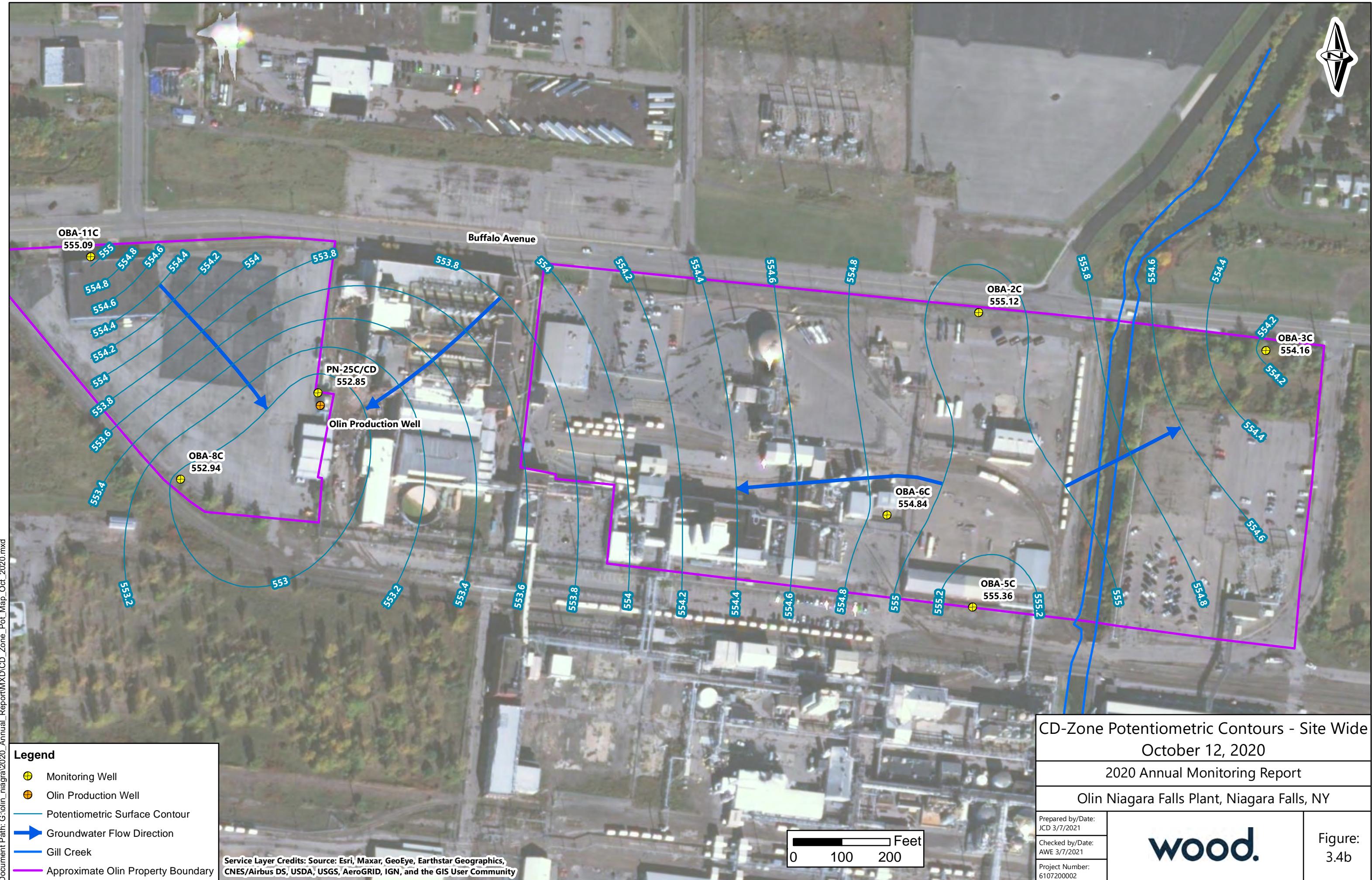
Note:
NM - Not measured

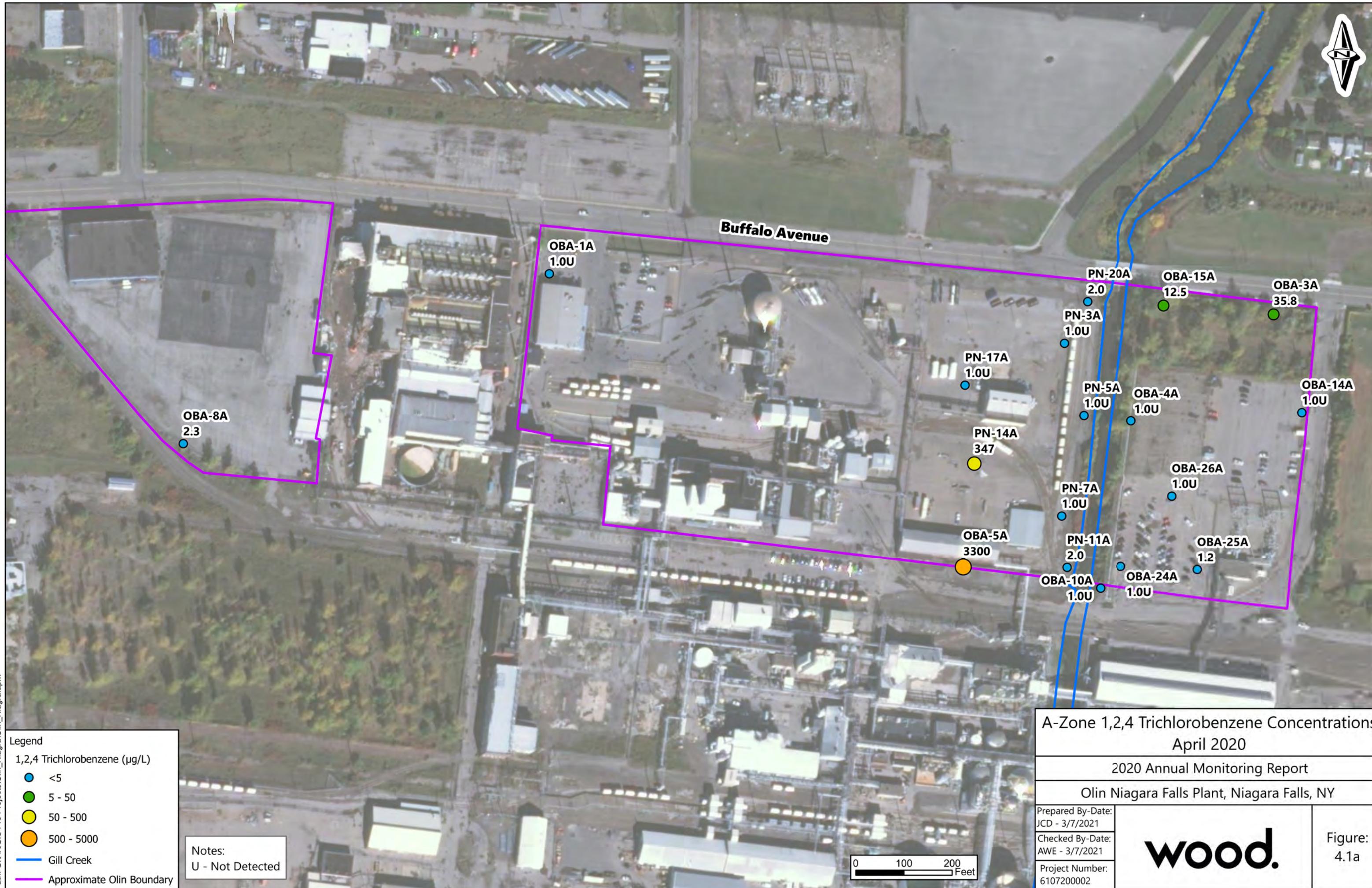


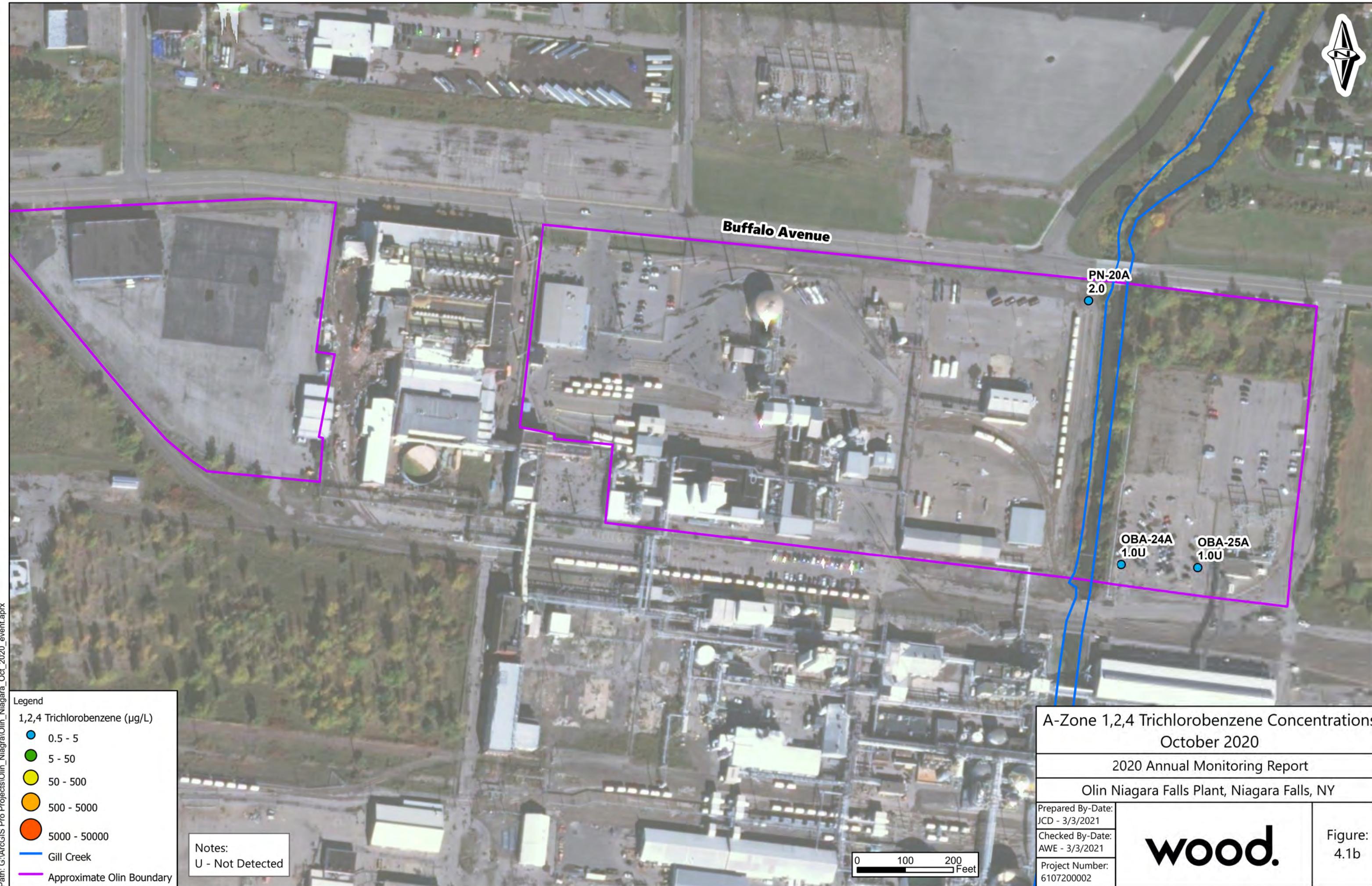


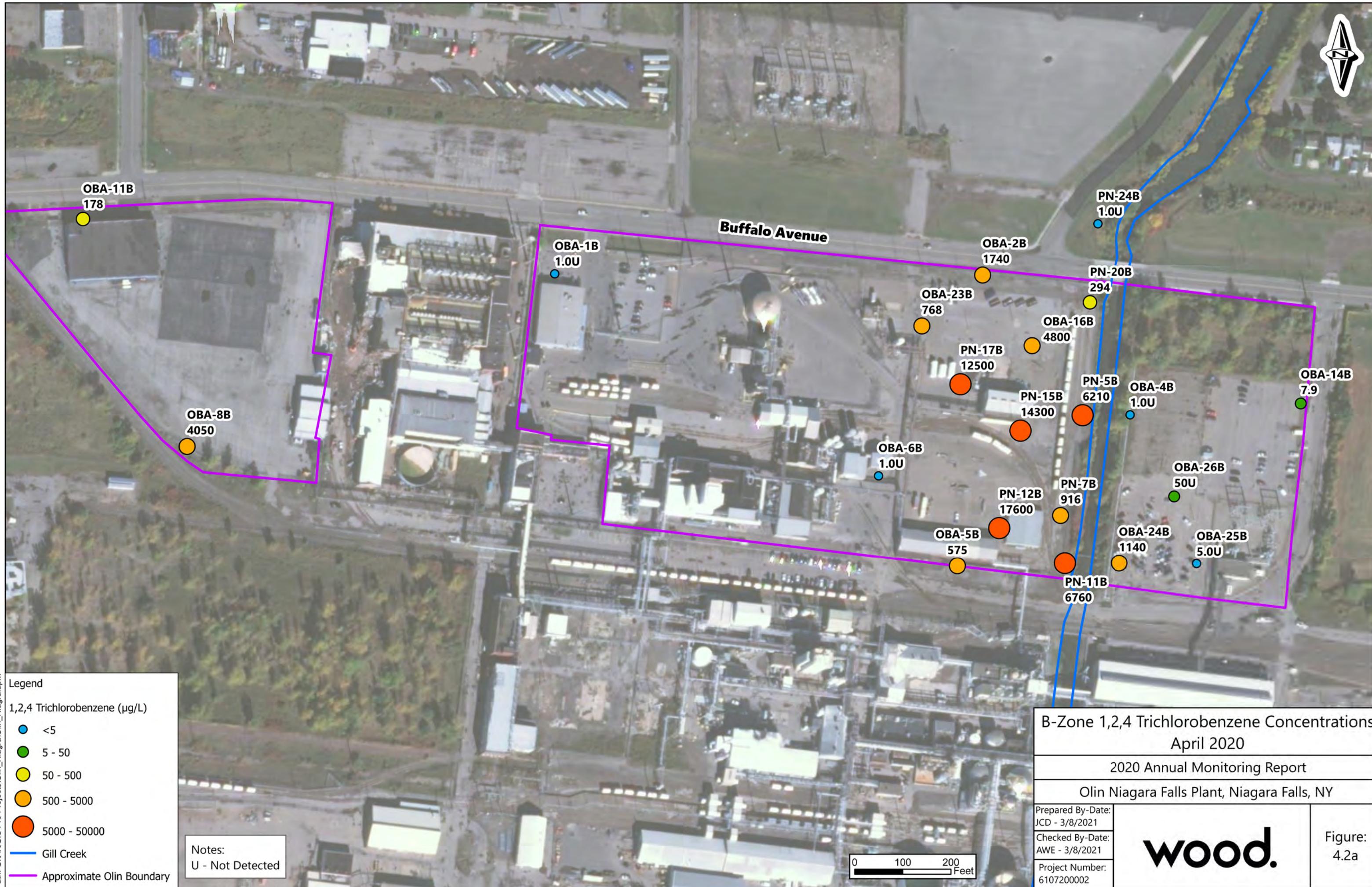


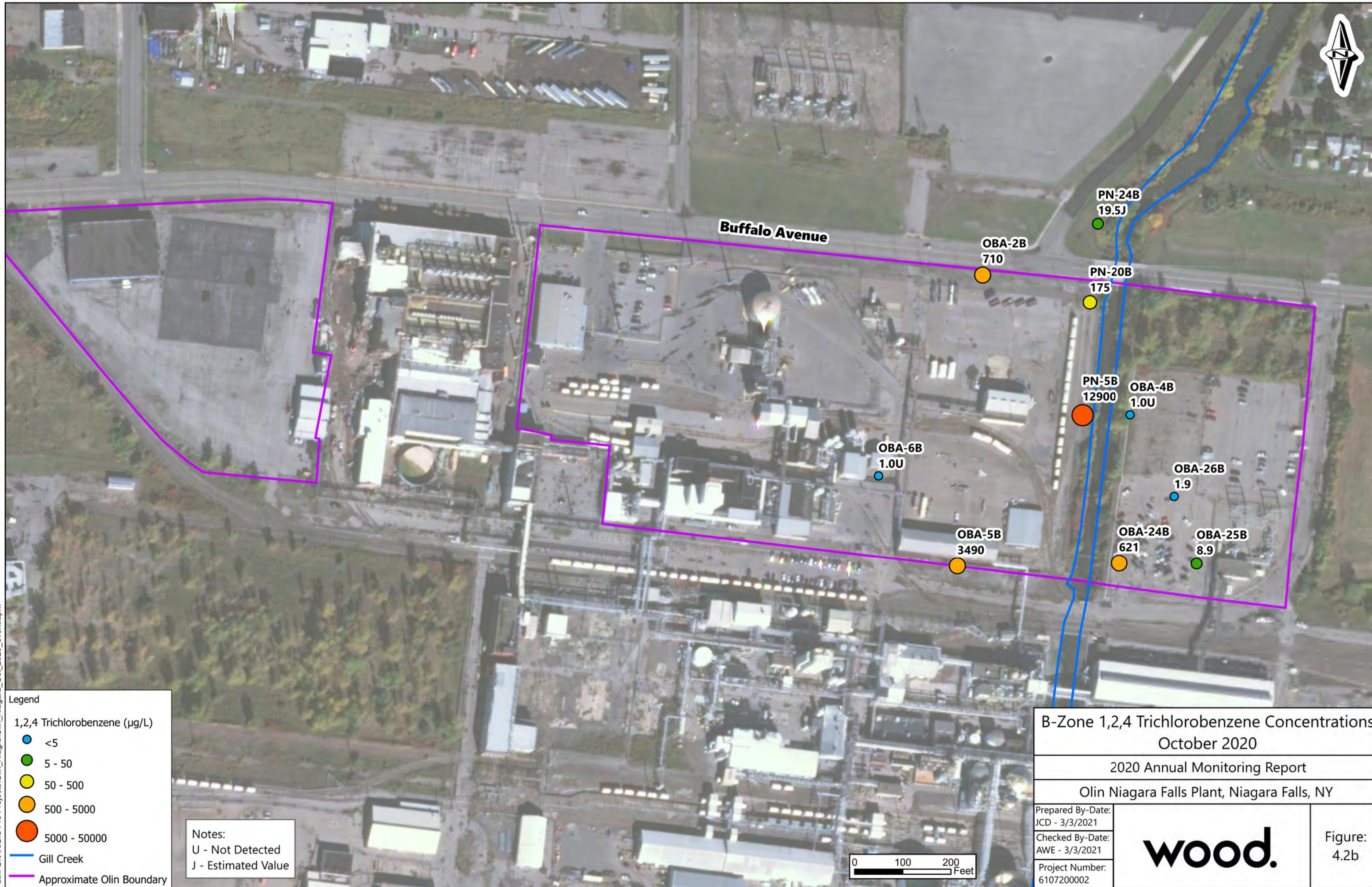


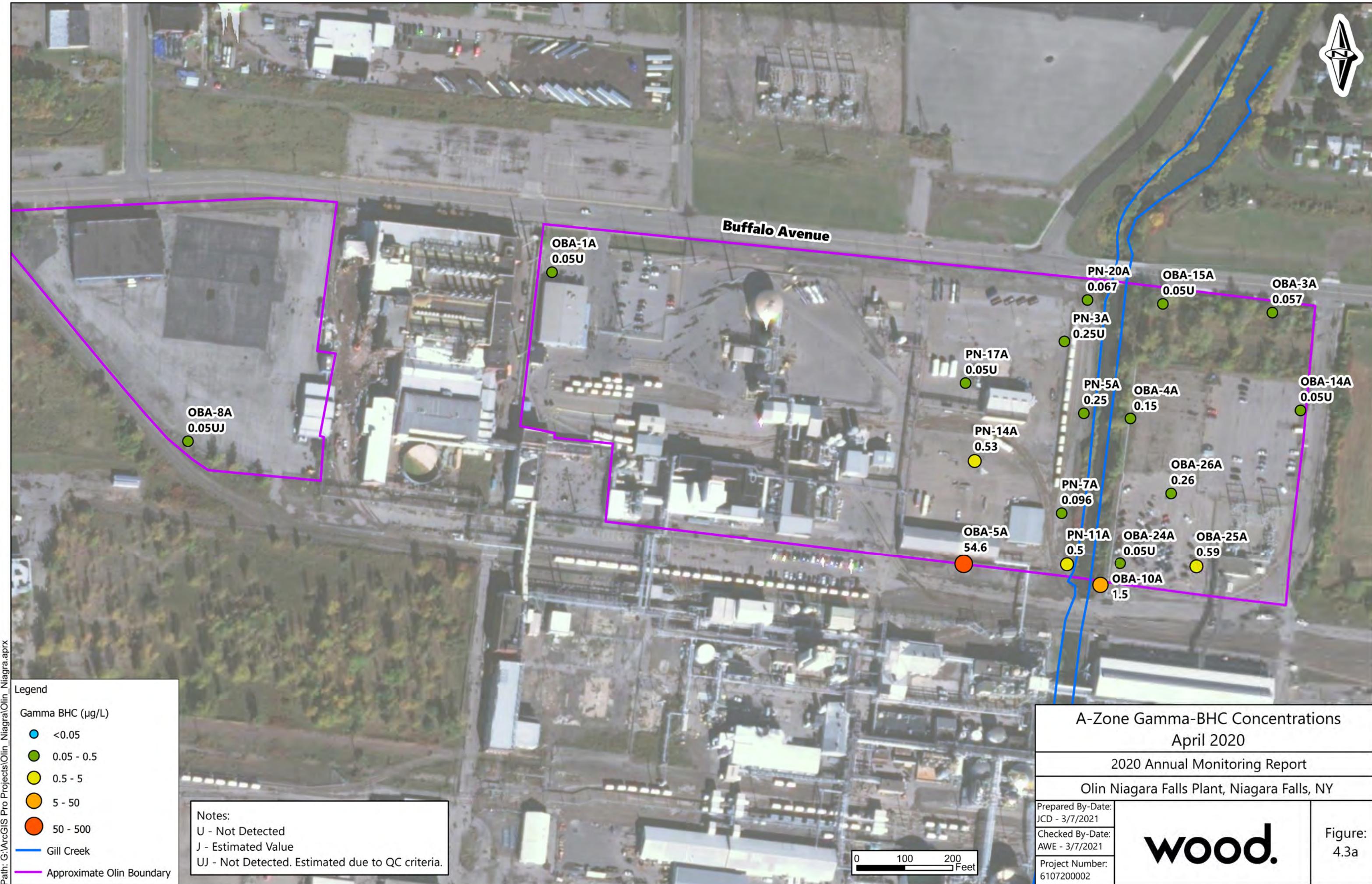


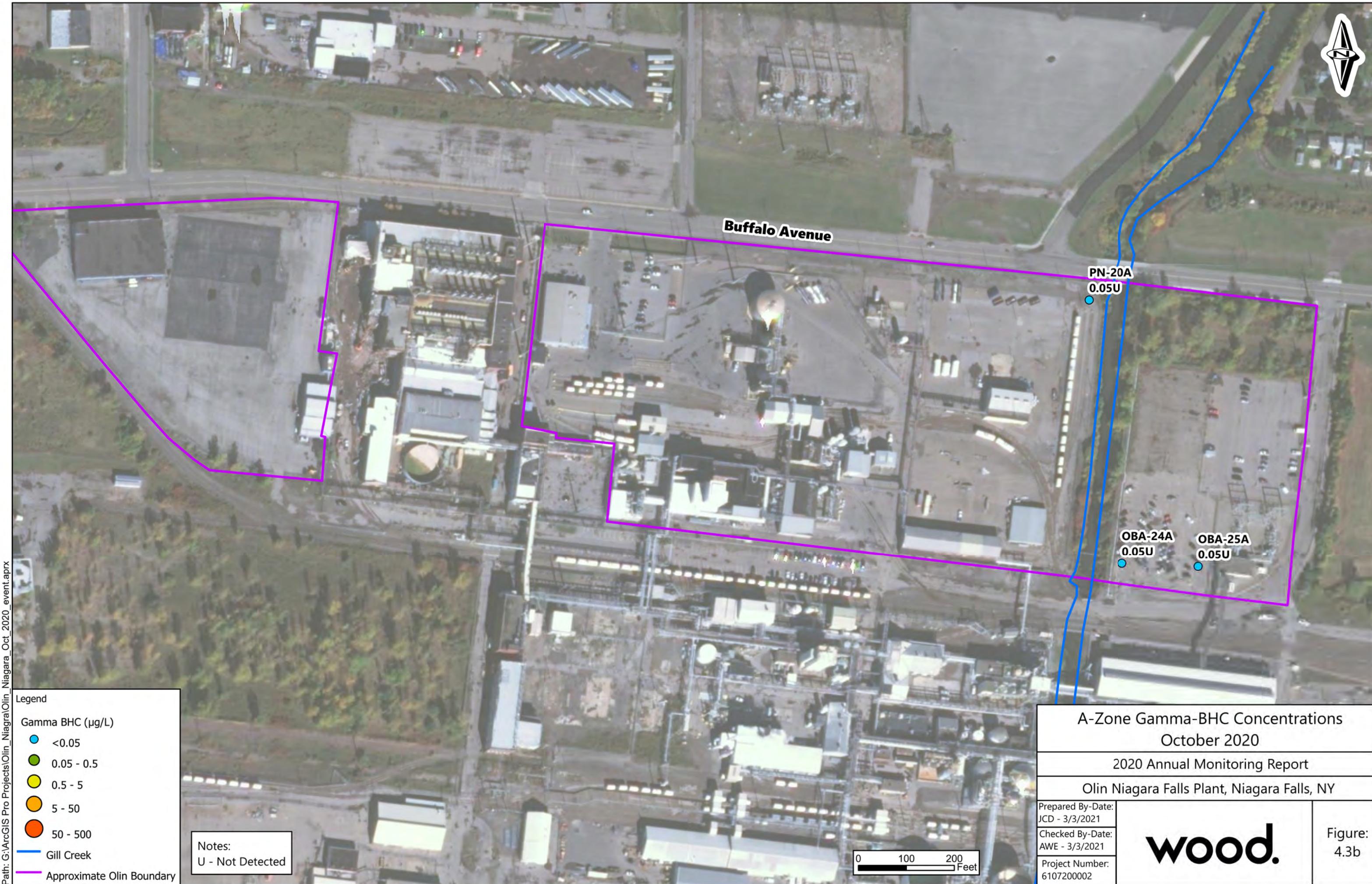


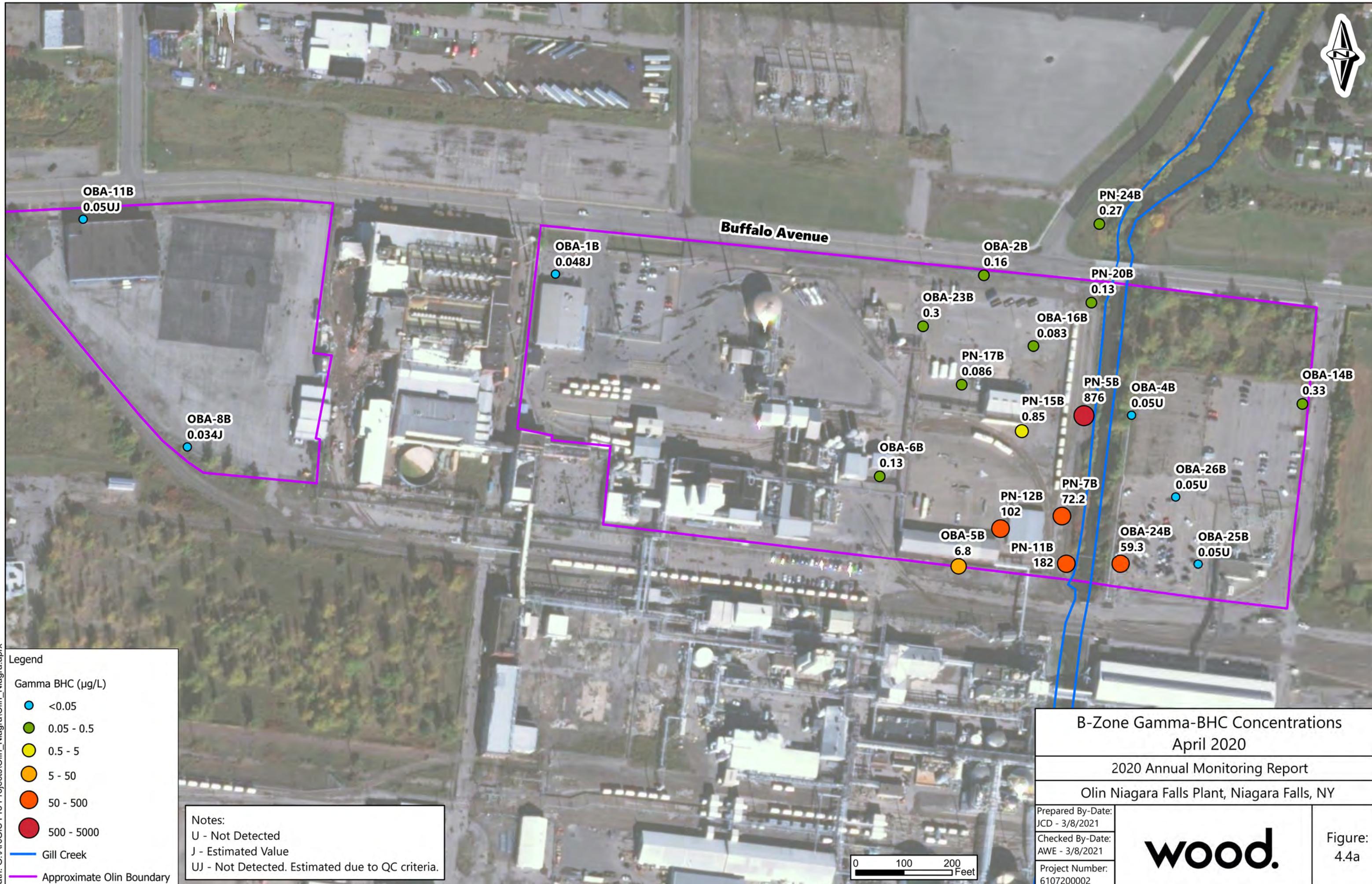


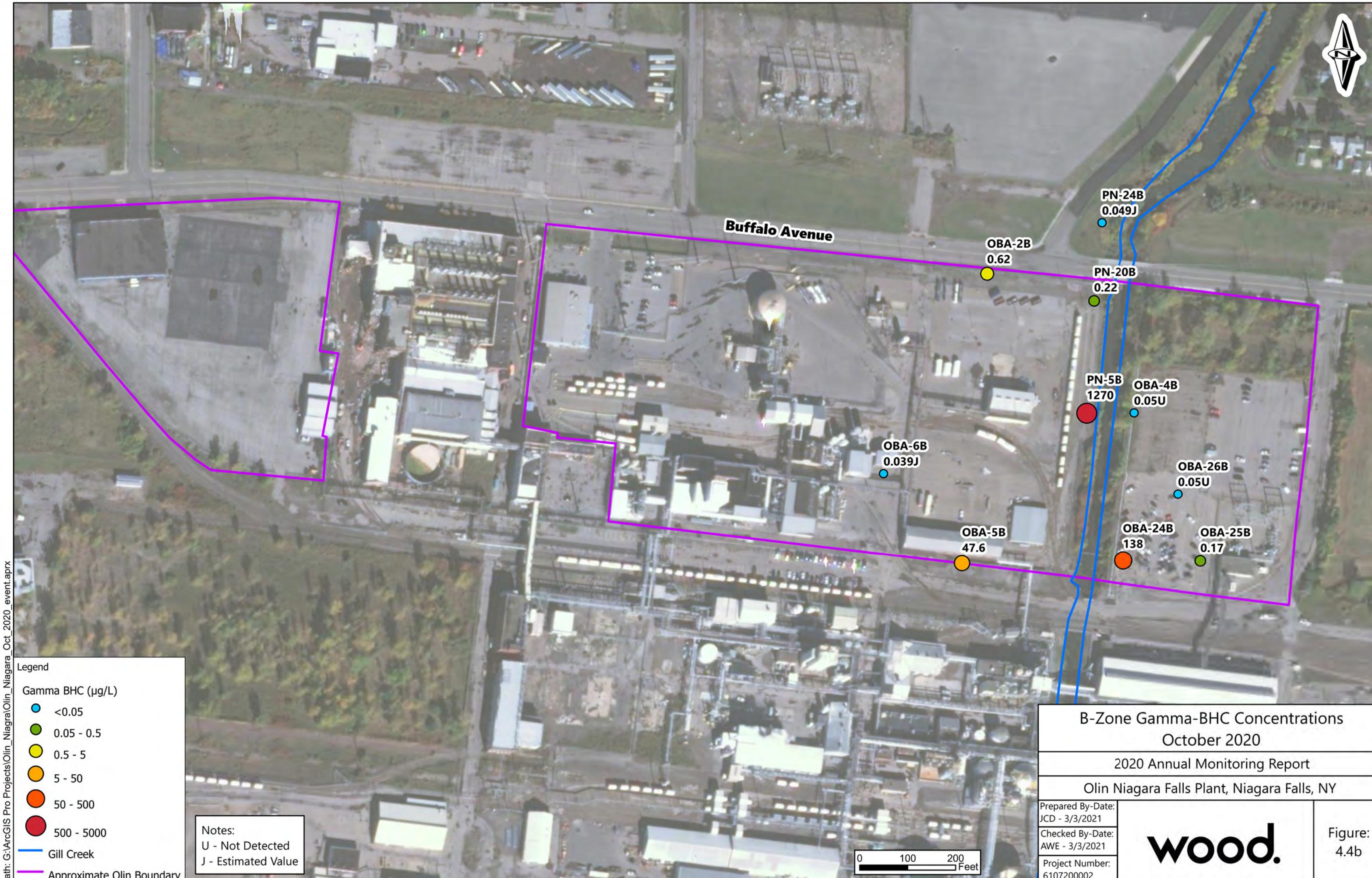


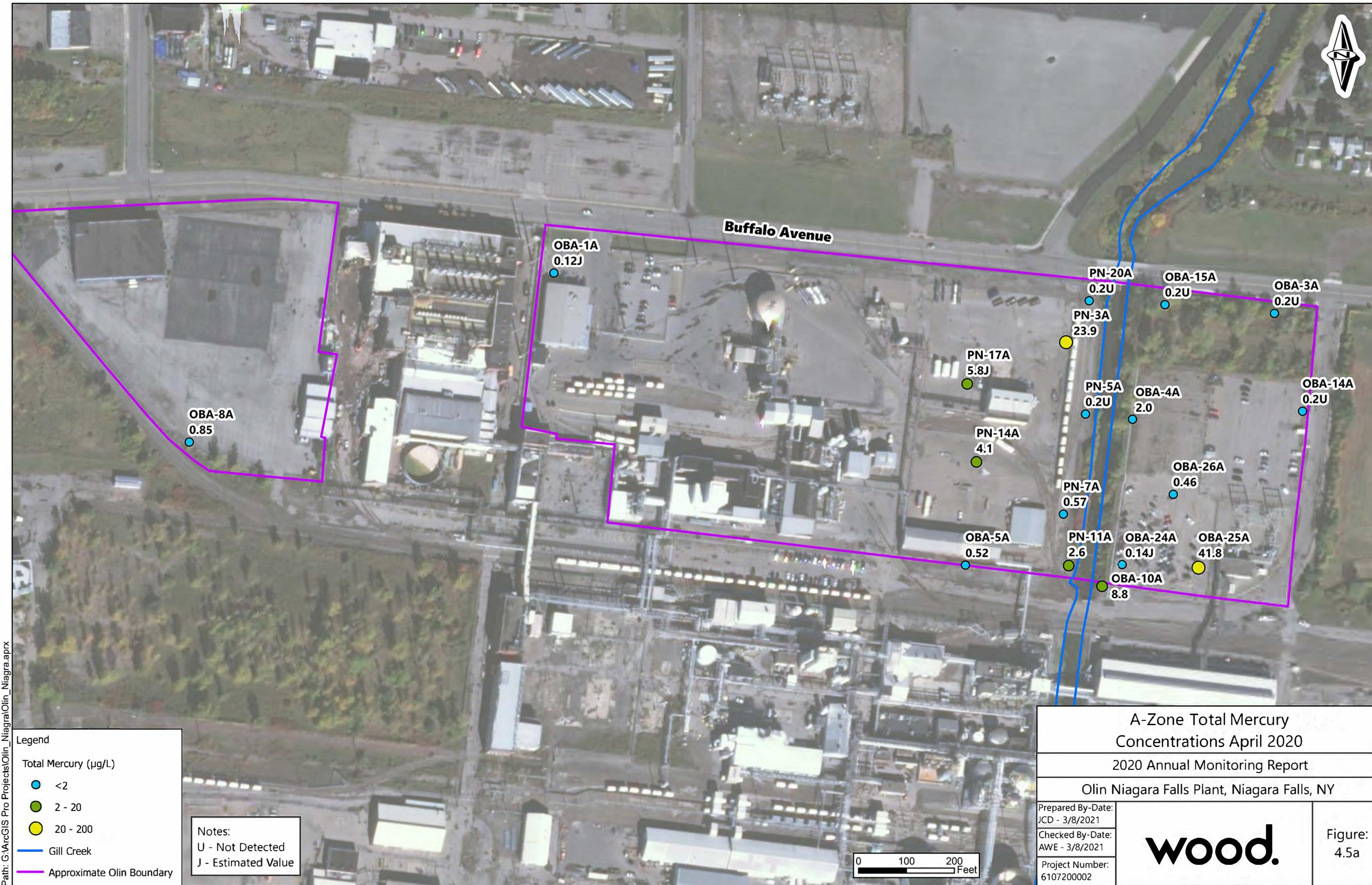


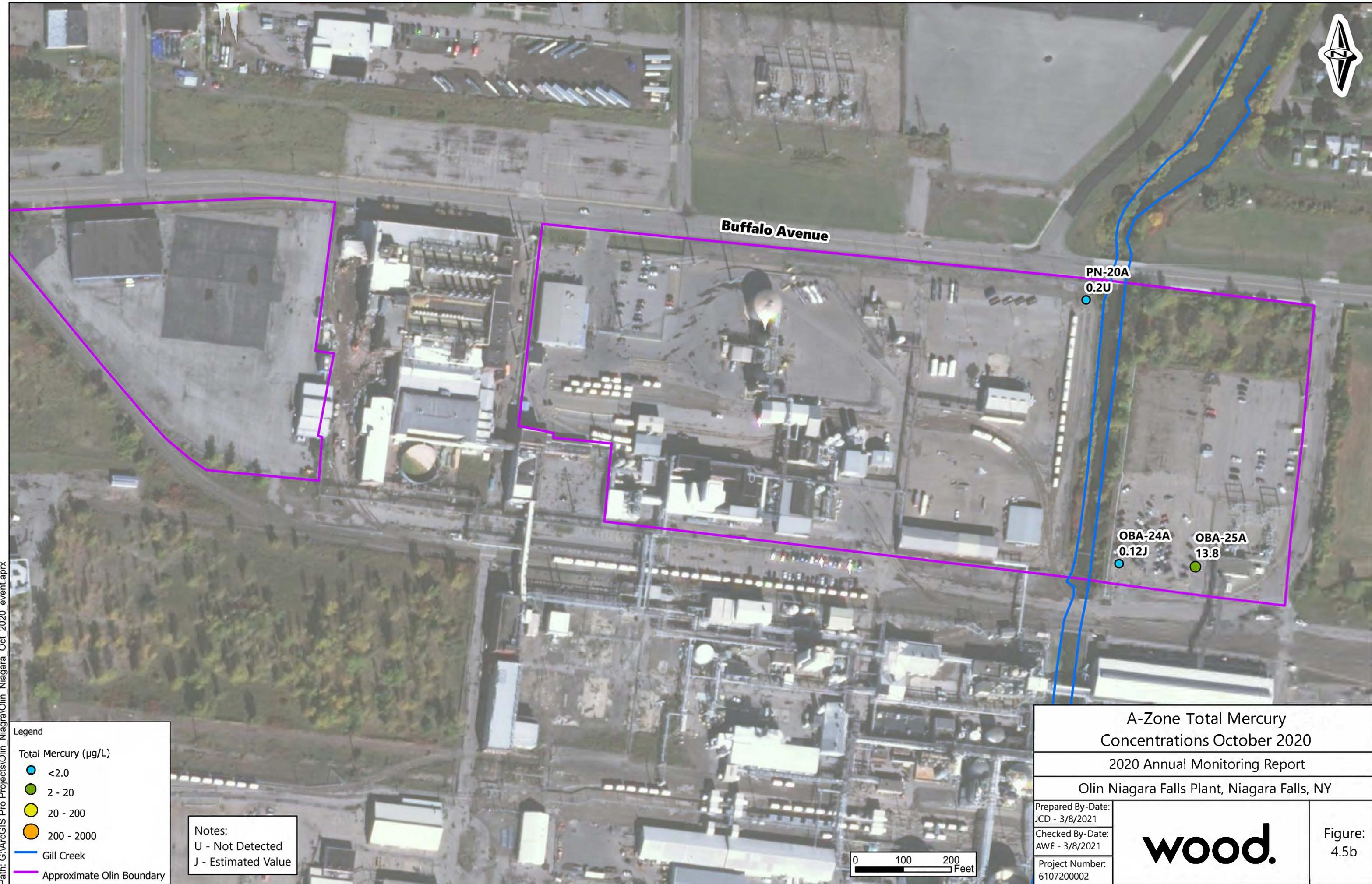


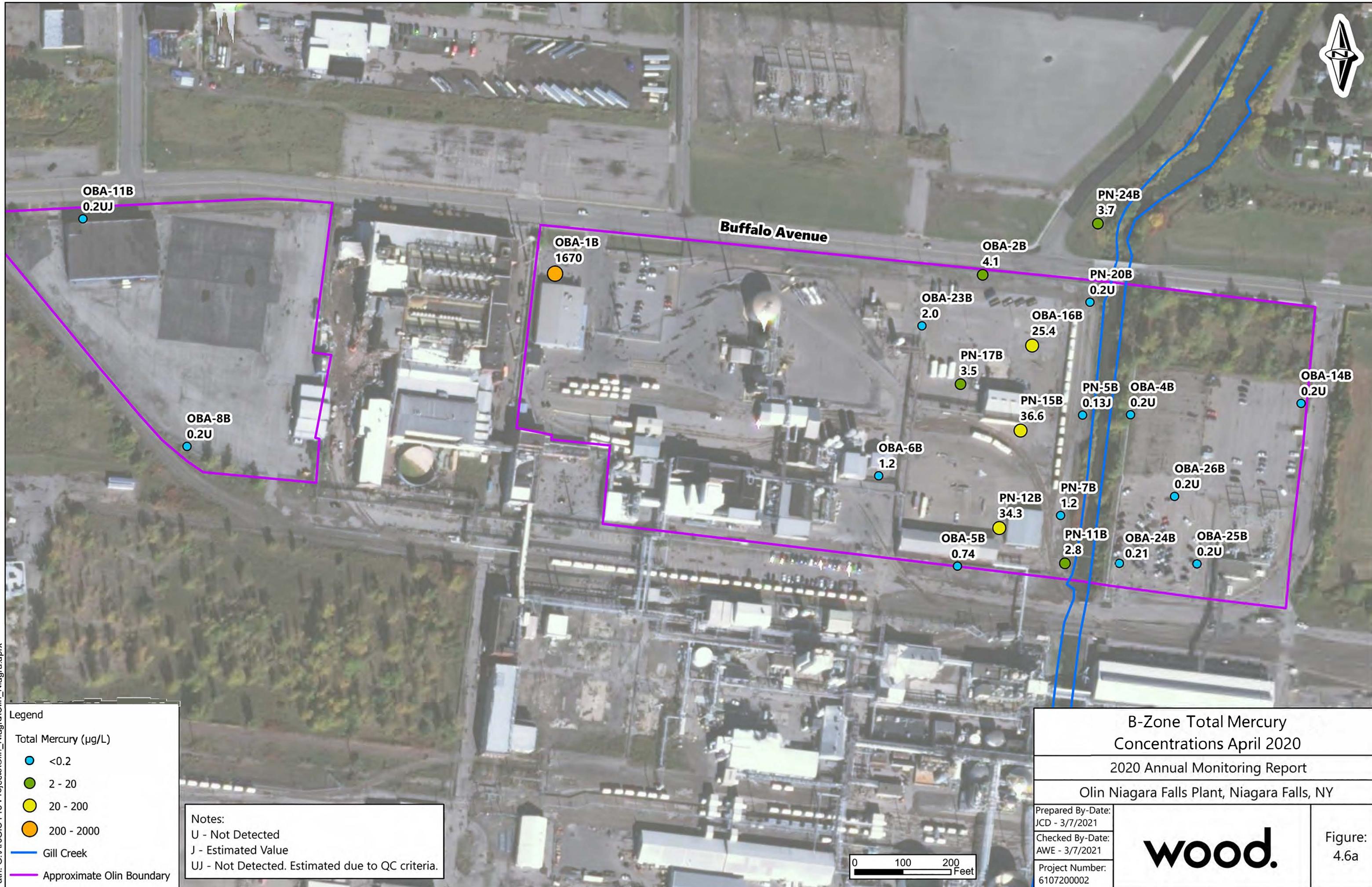


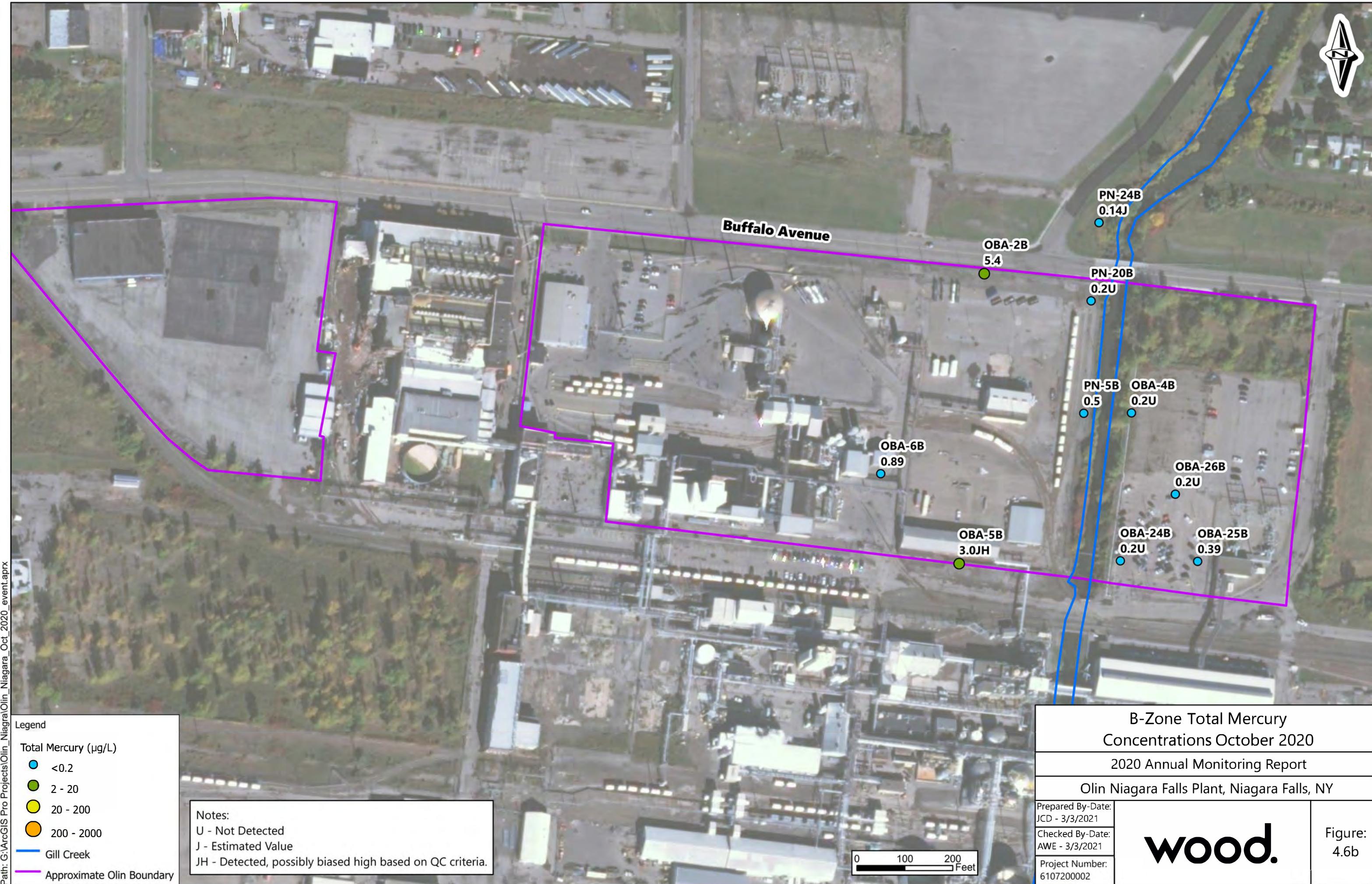




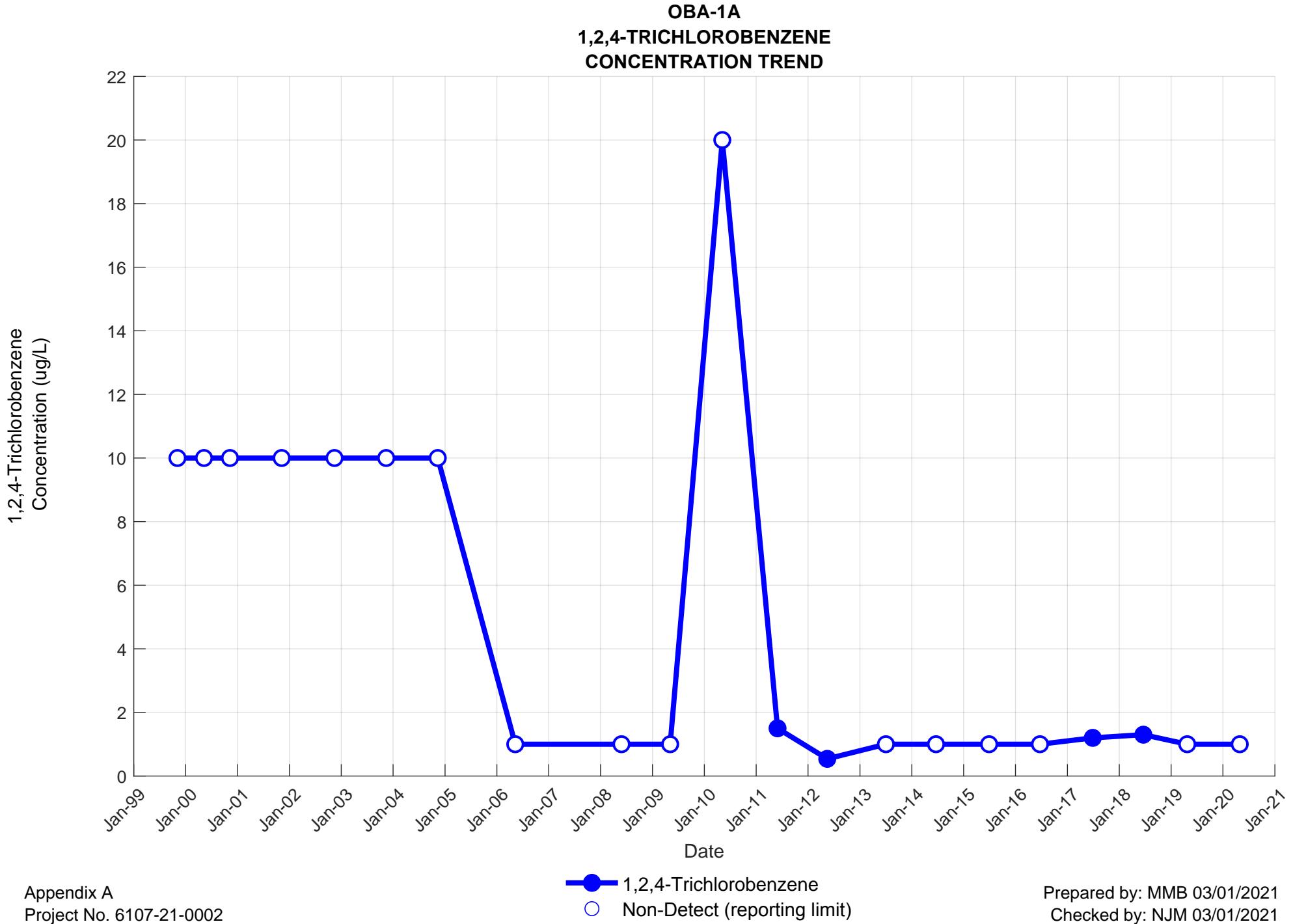




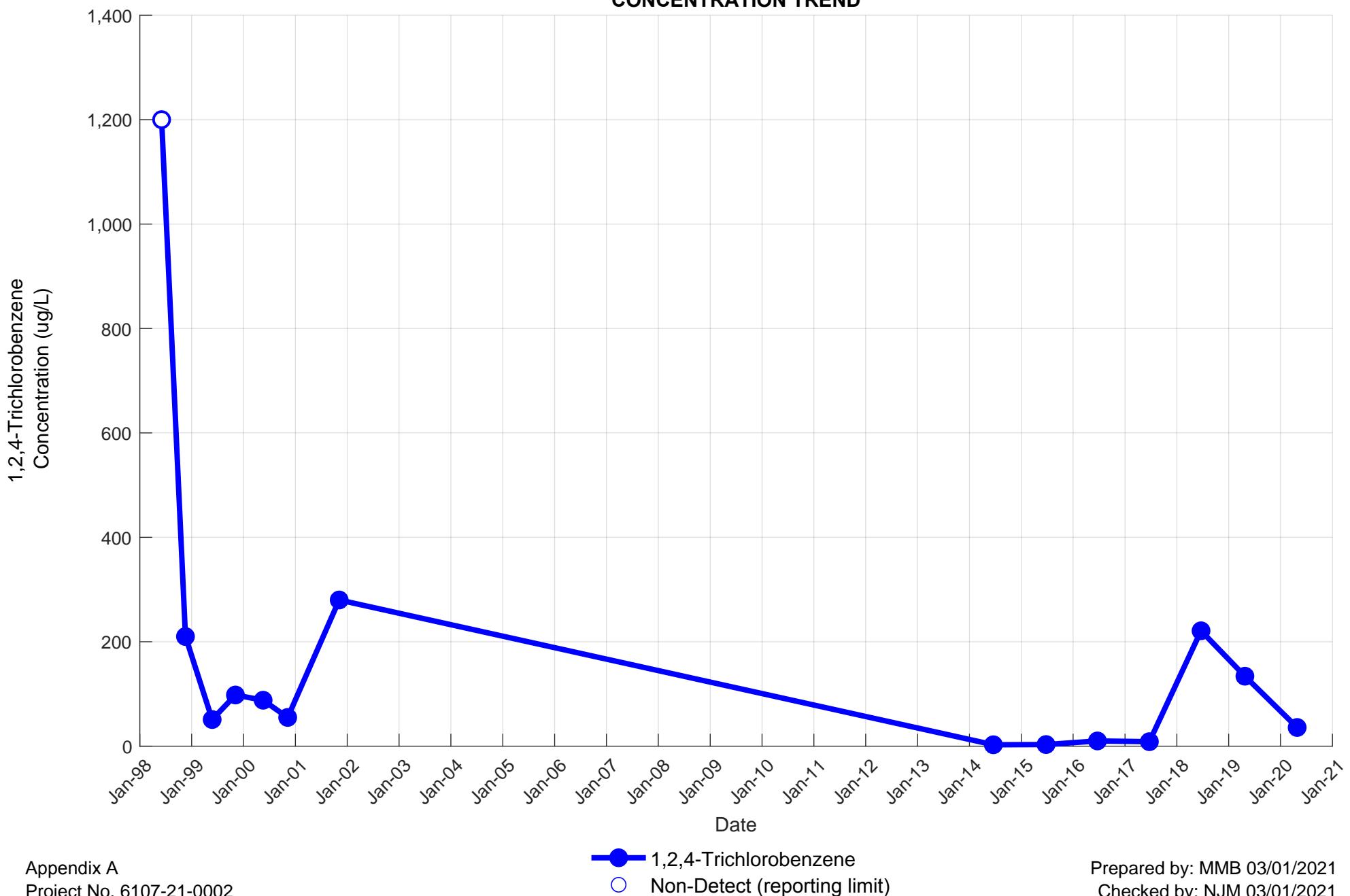


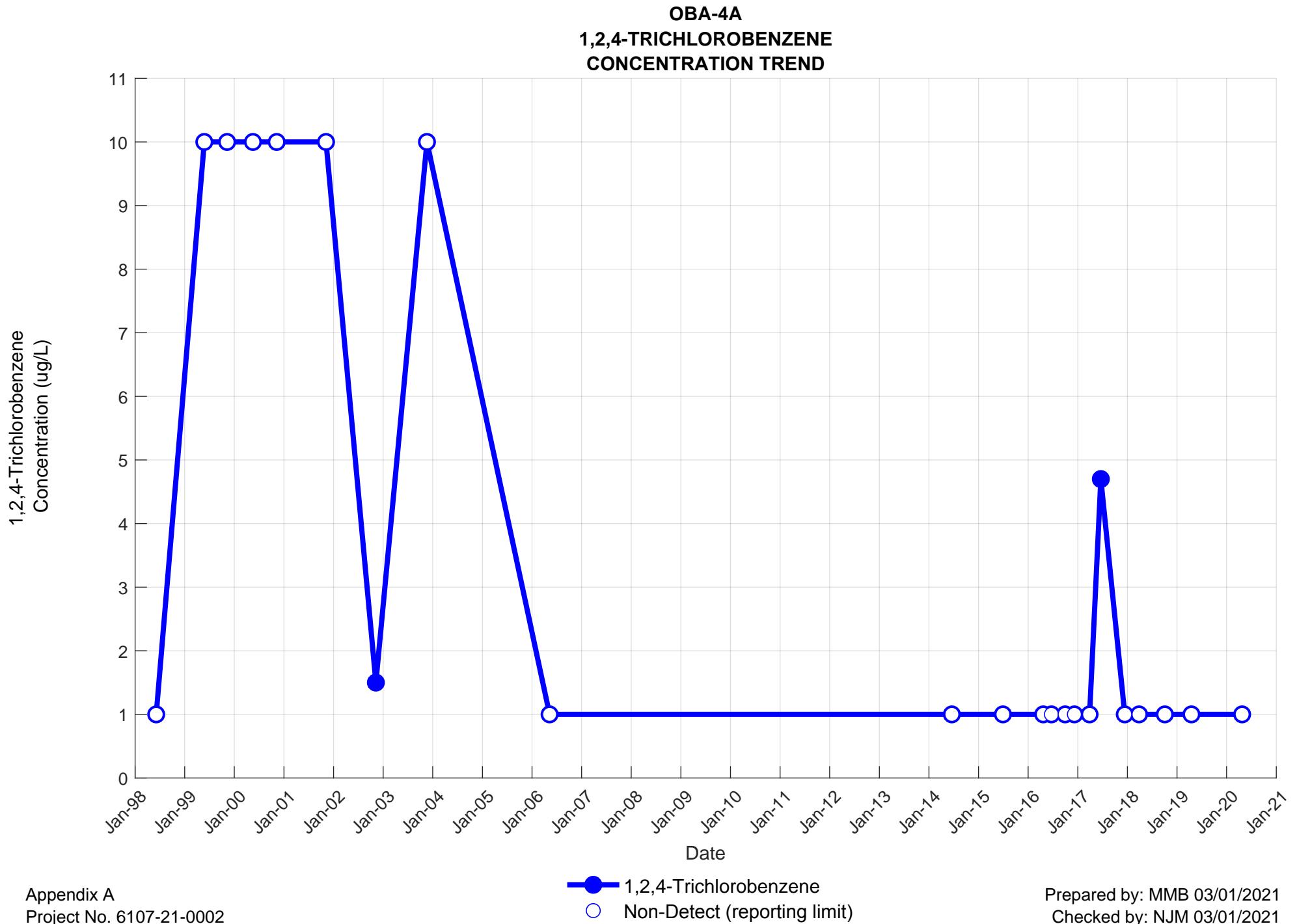


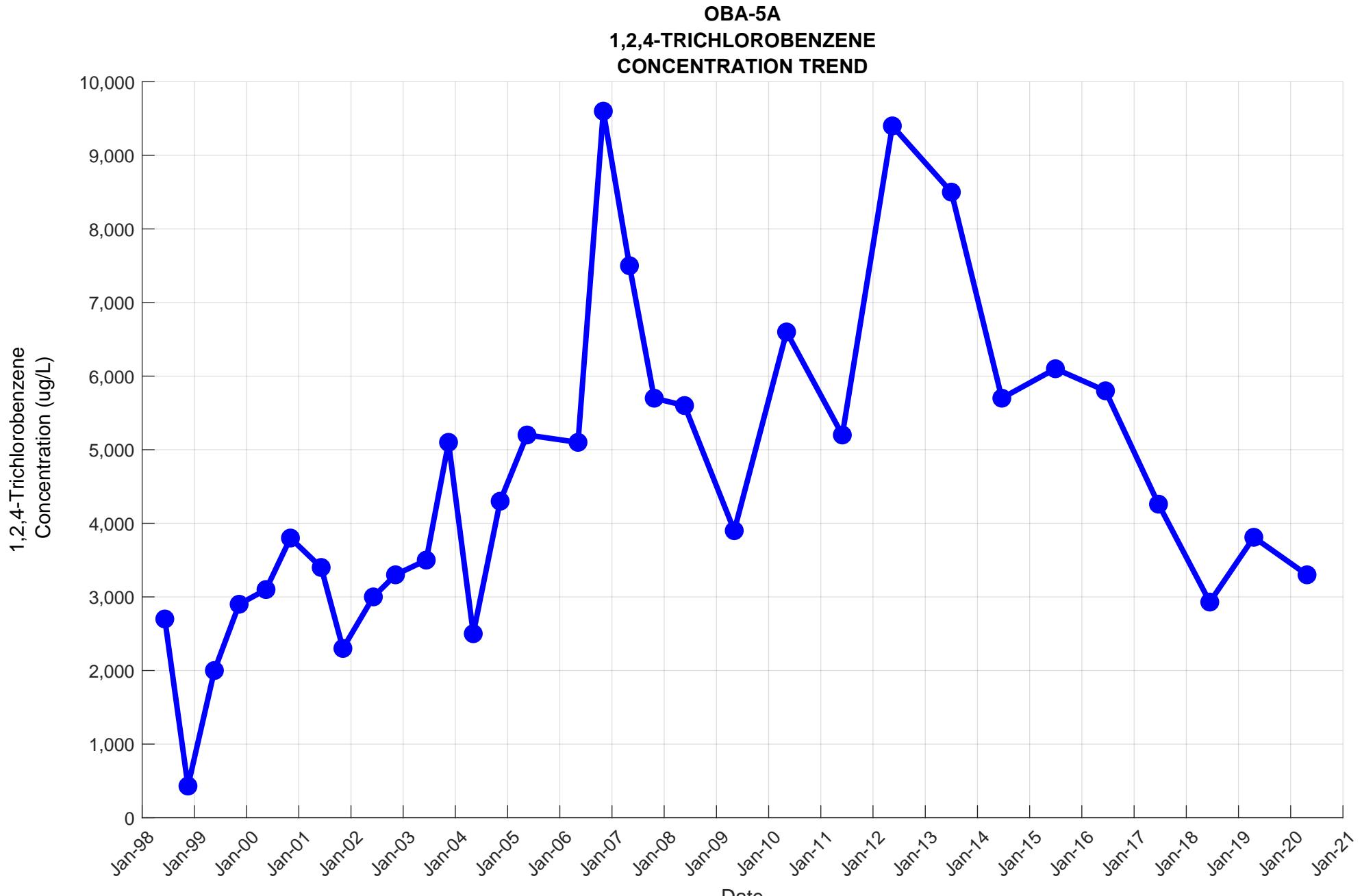
Appendix A
Constituent Concentration Trends



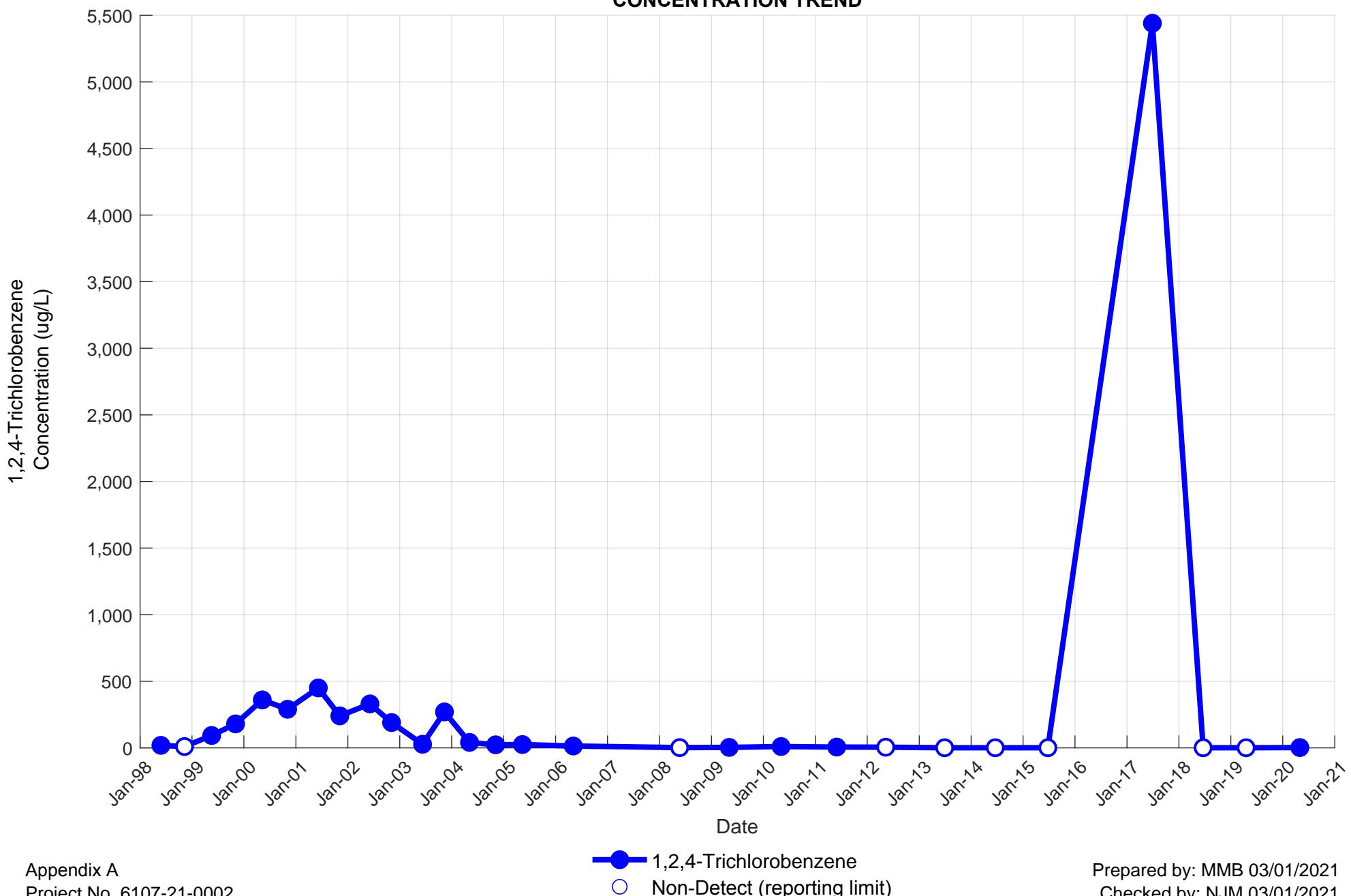
OBA-3A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



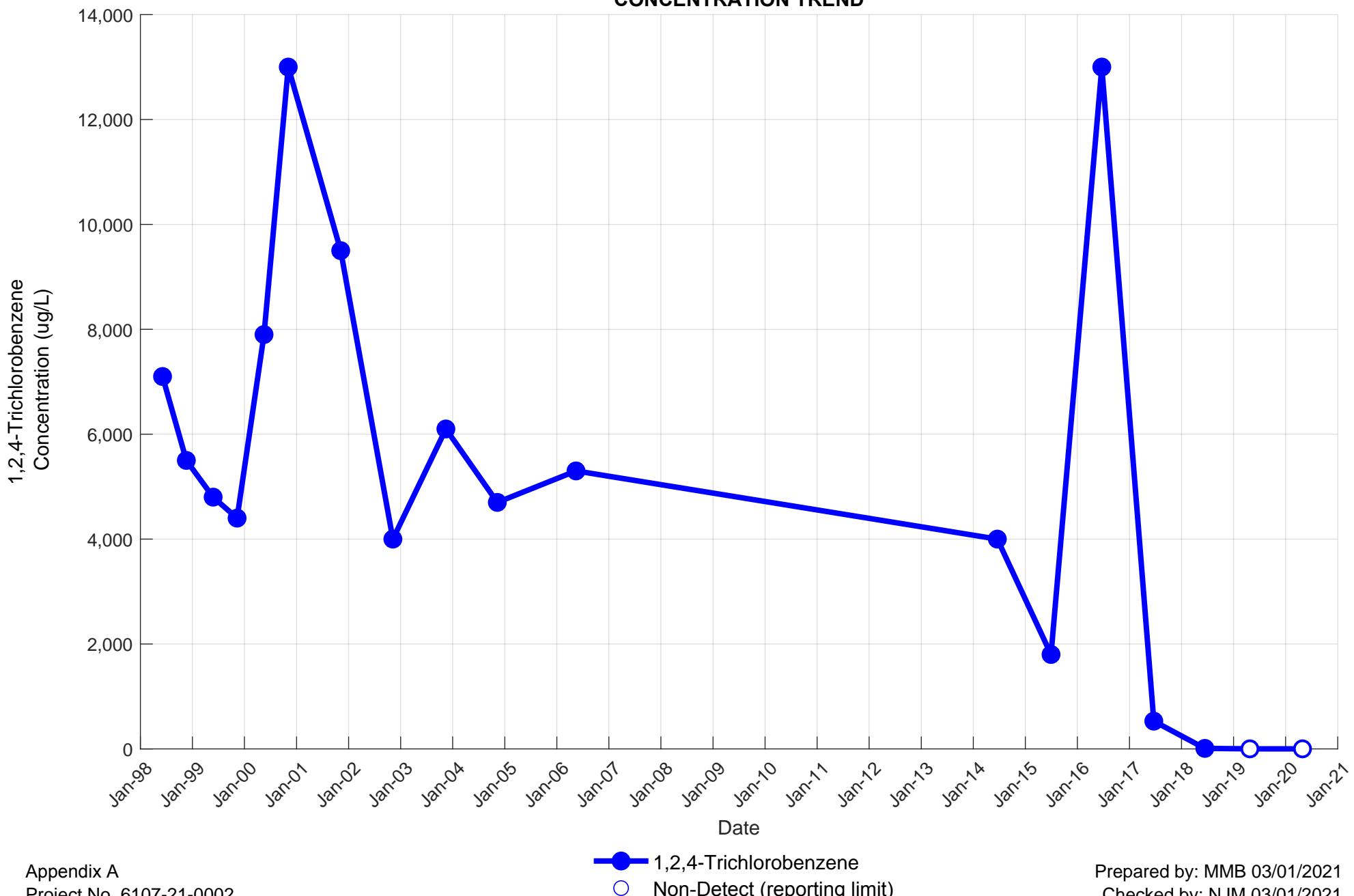




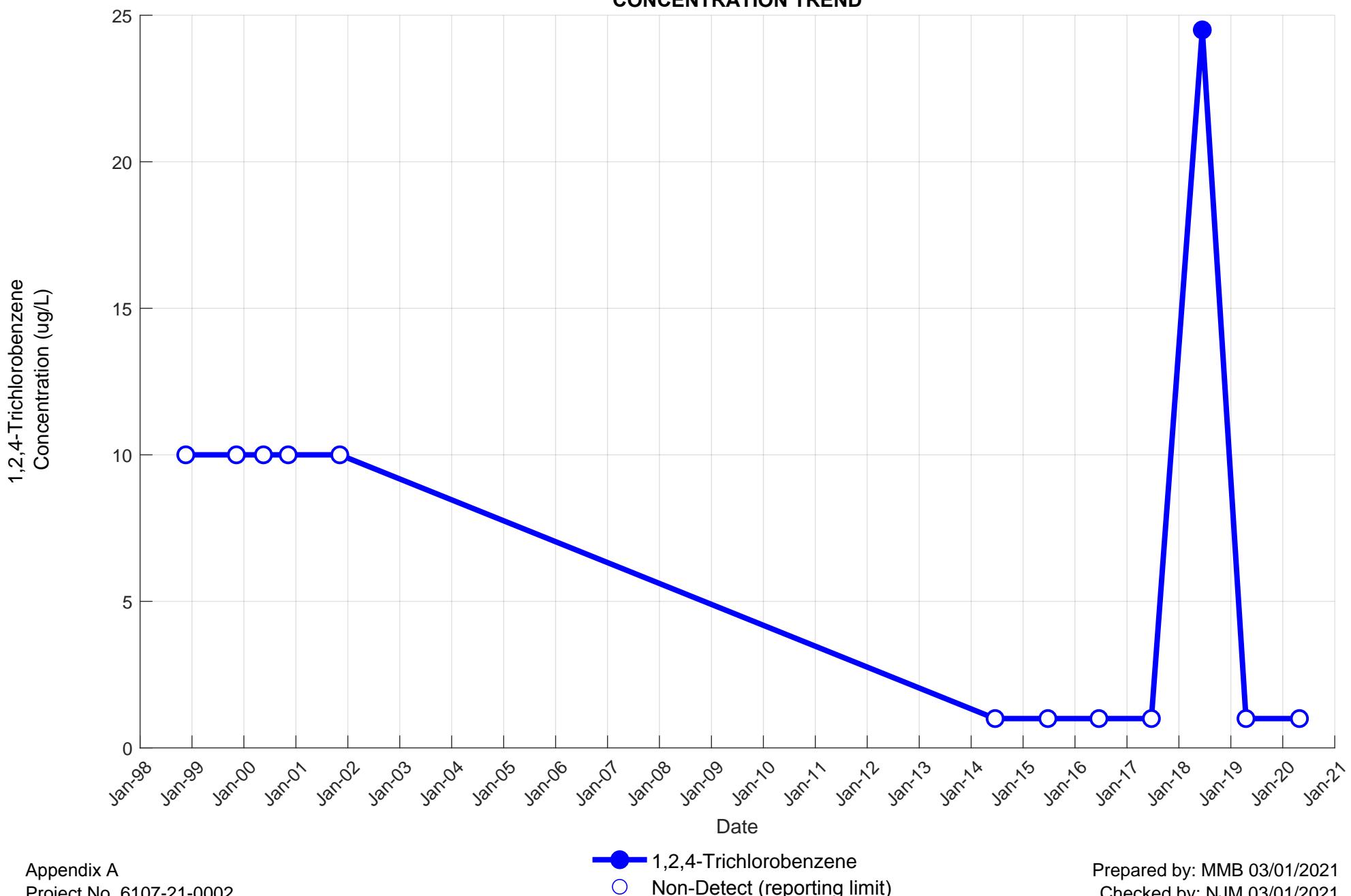
OBA-8A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



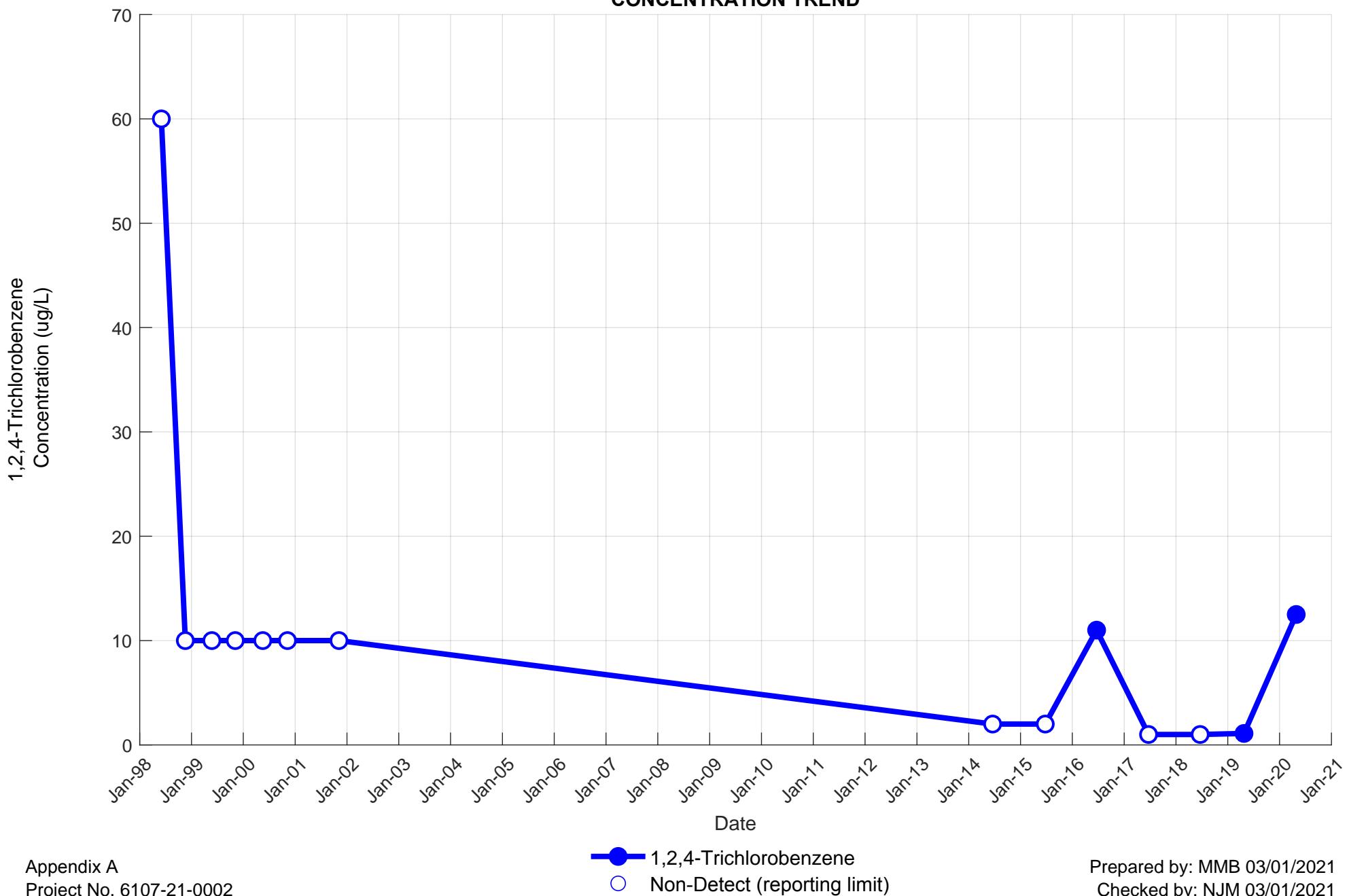
OBA-10A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



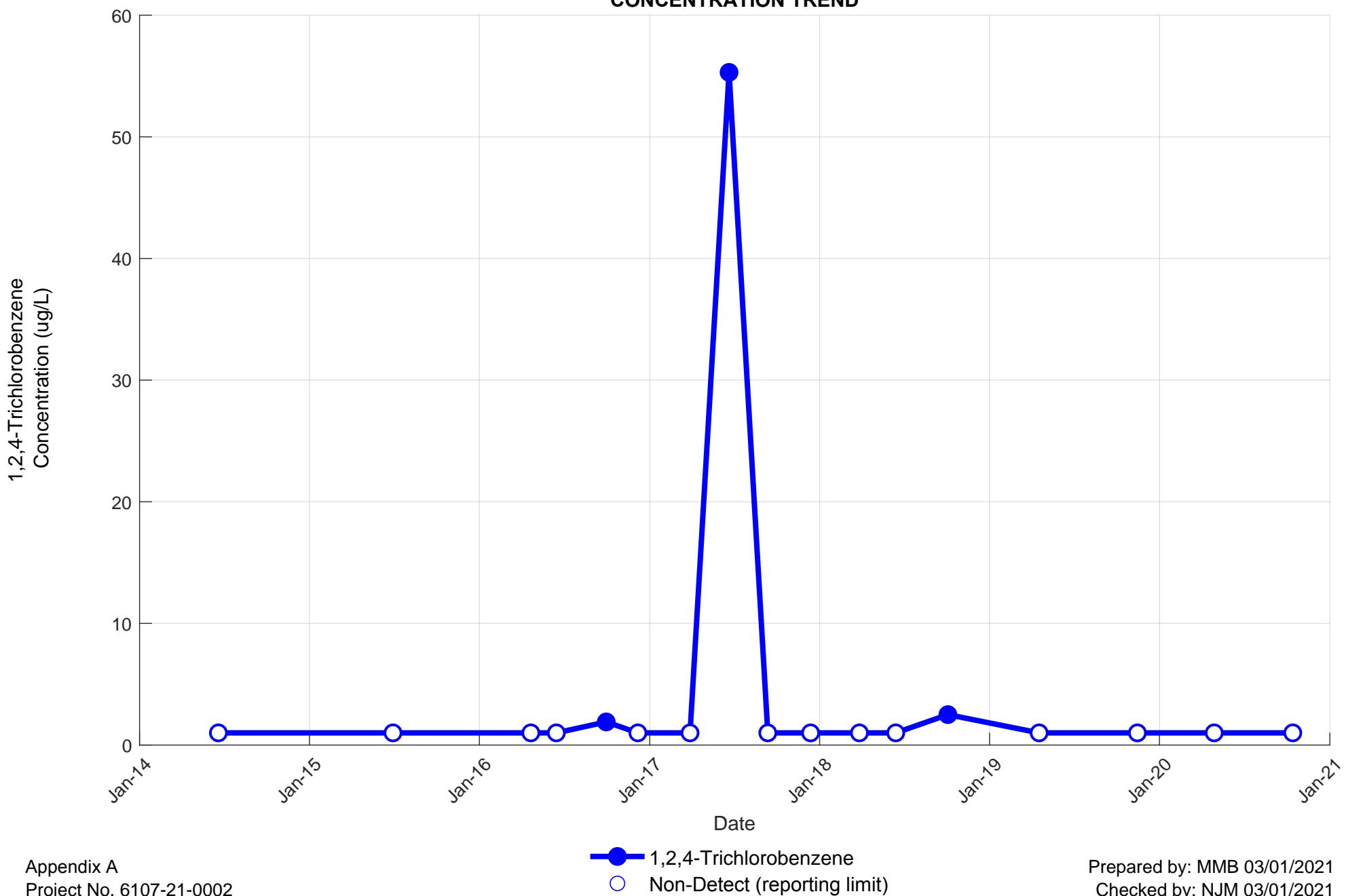
OBA-14A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



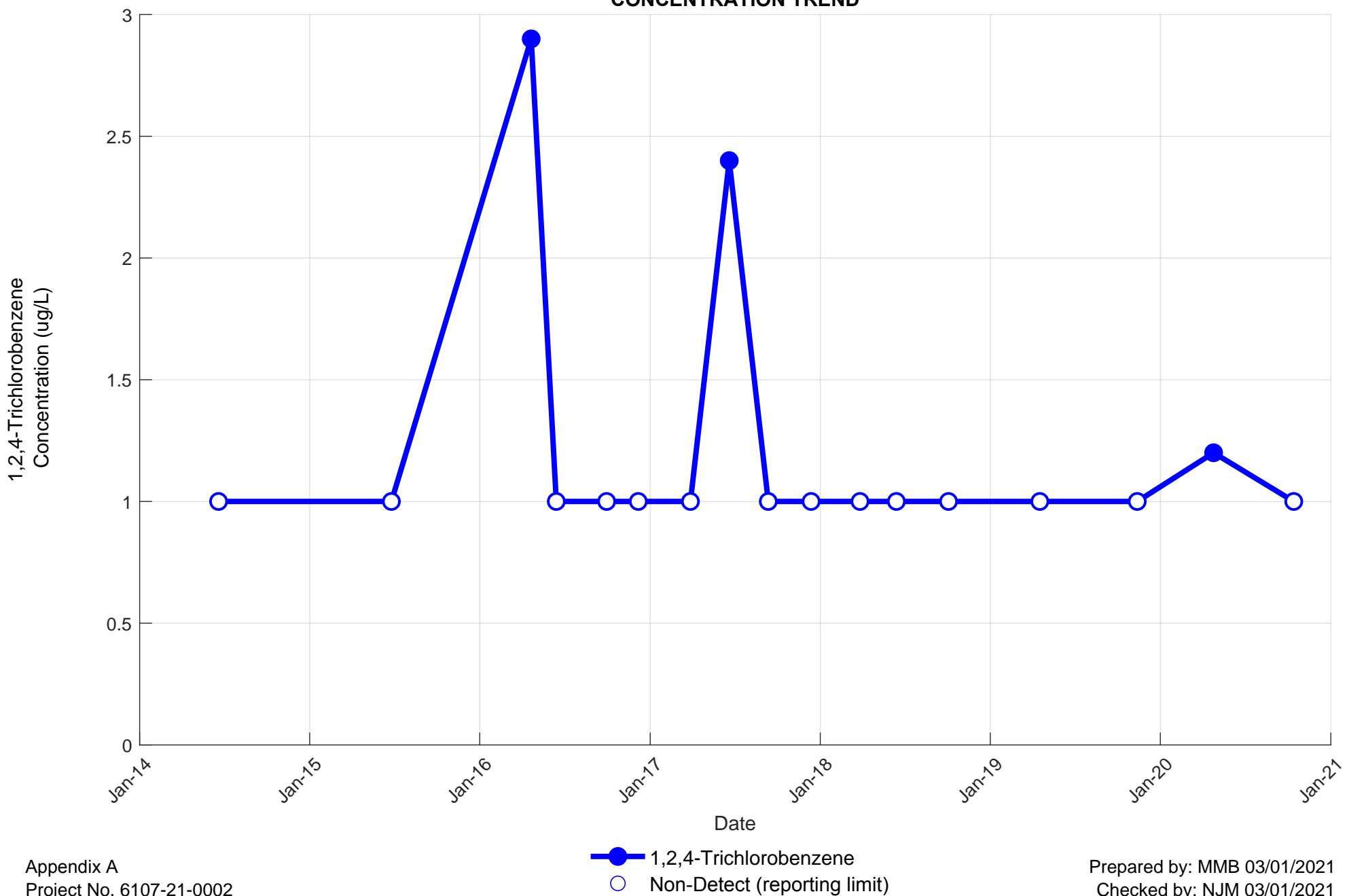
OBA-15A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



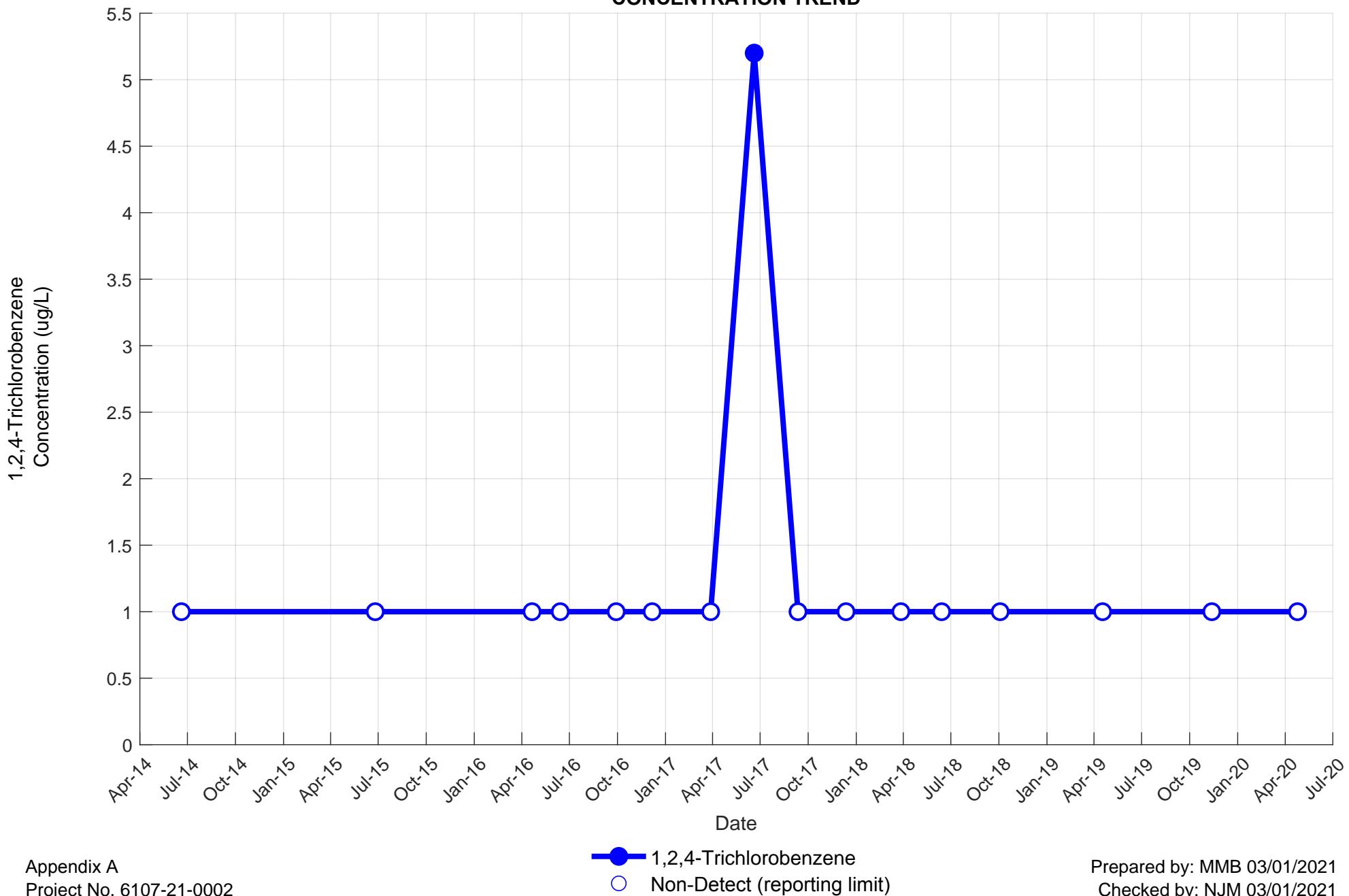
OBA-24A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



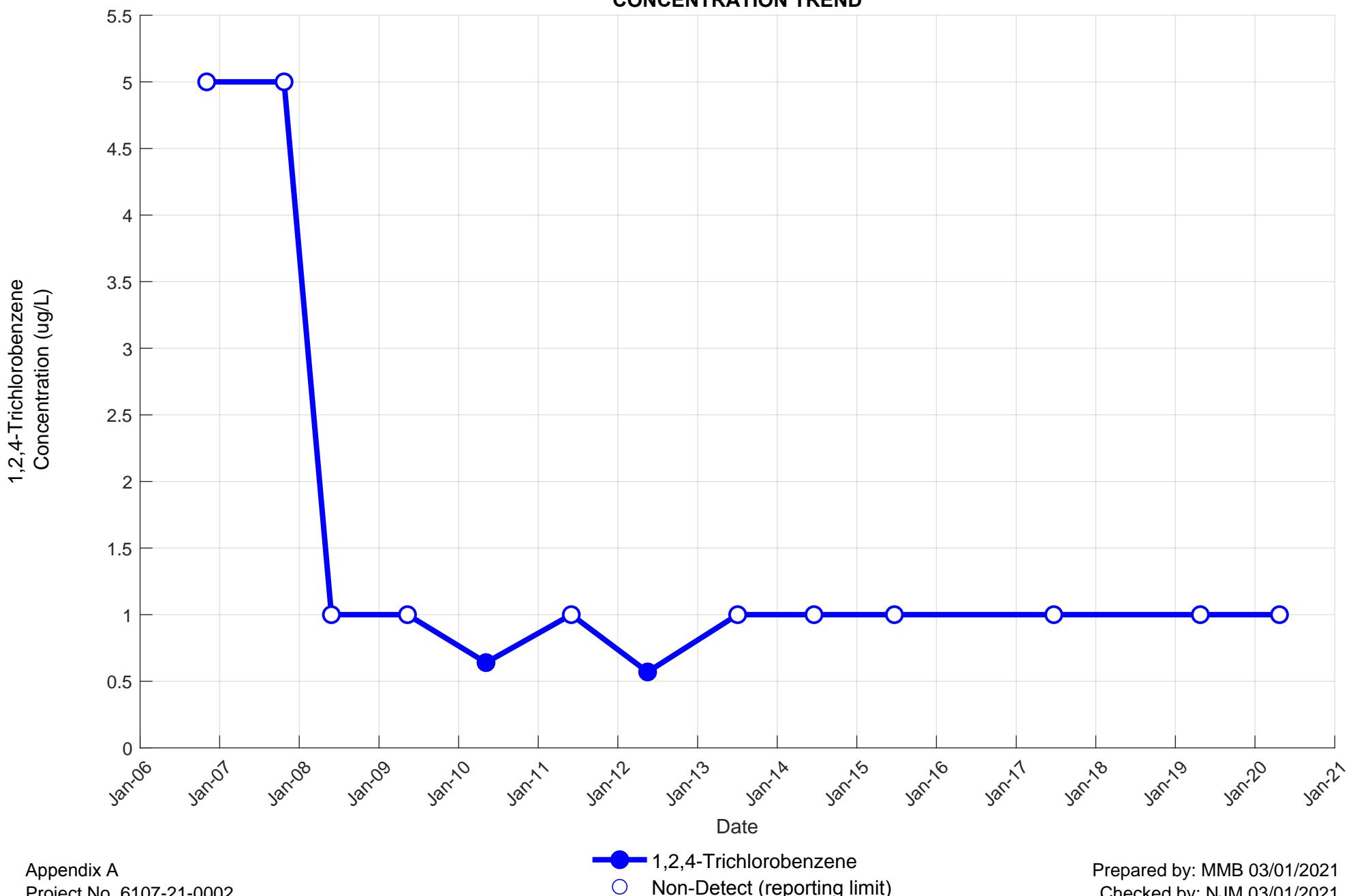
OBA-25A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



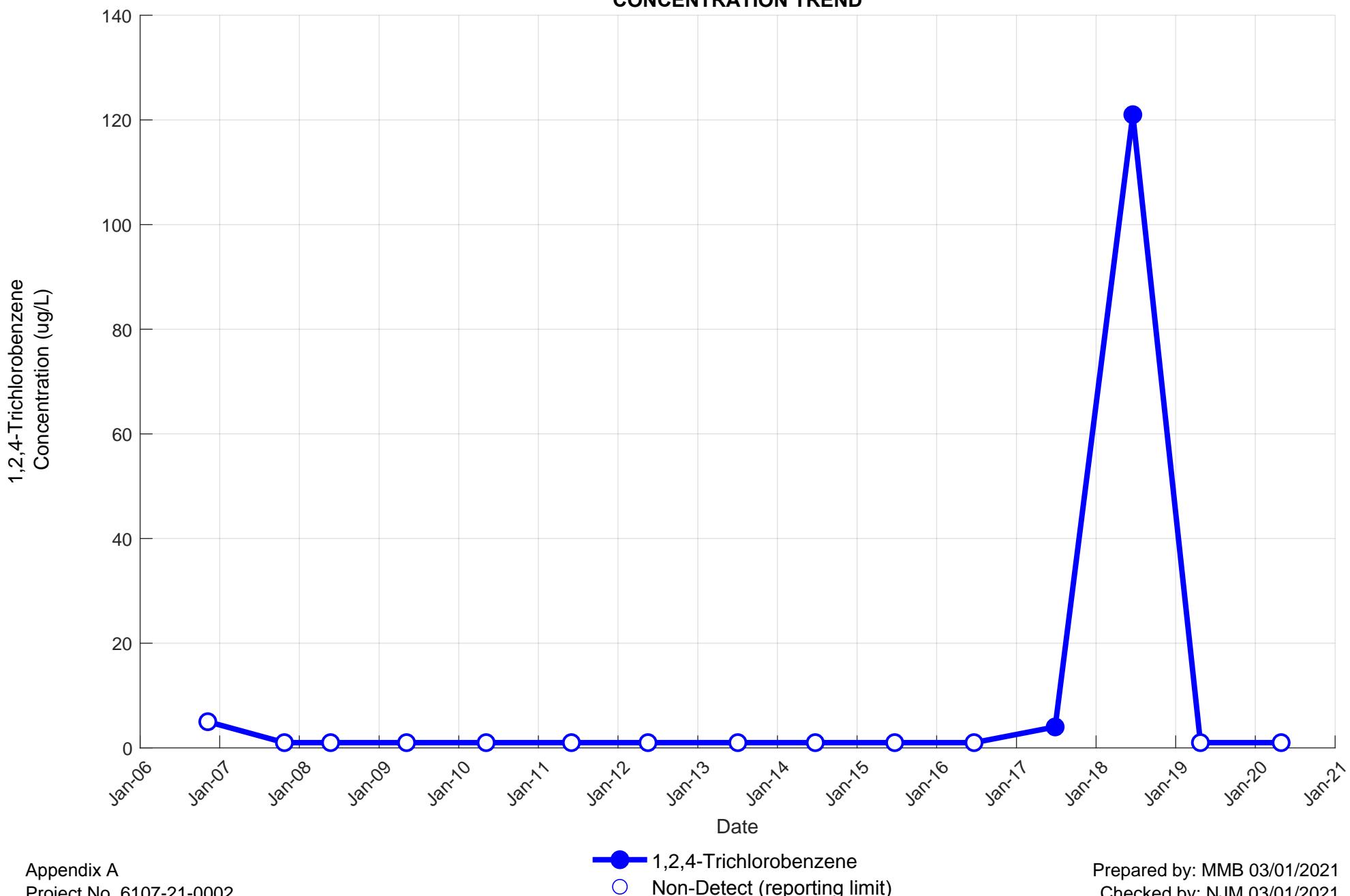
OBA-26A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



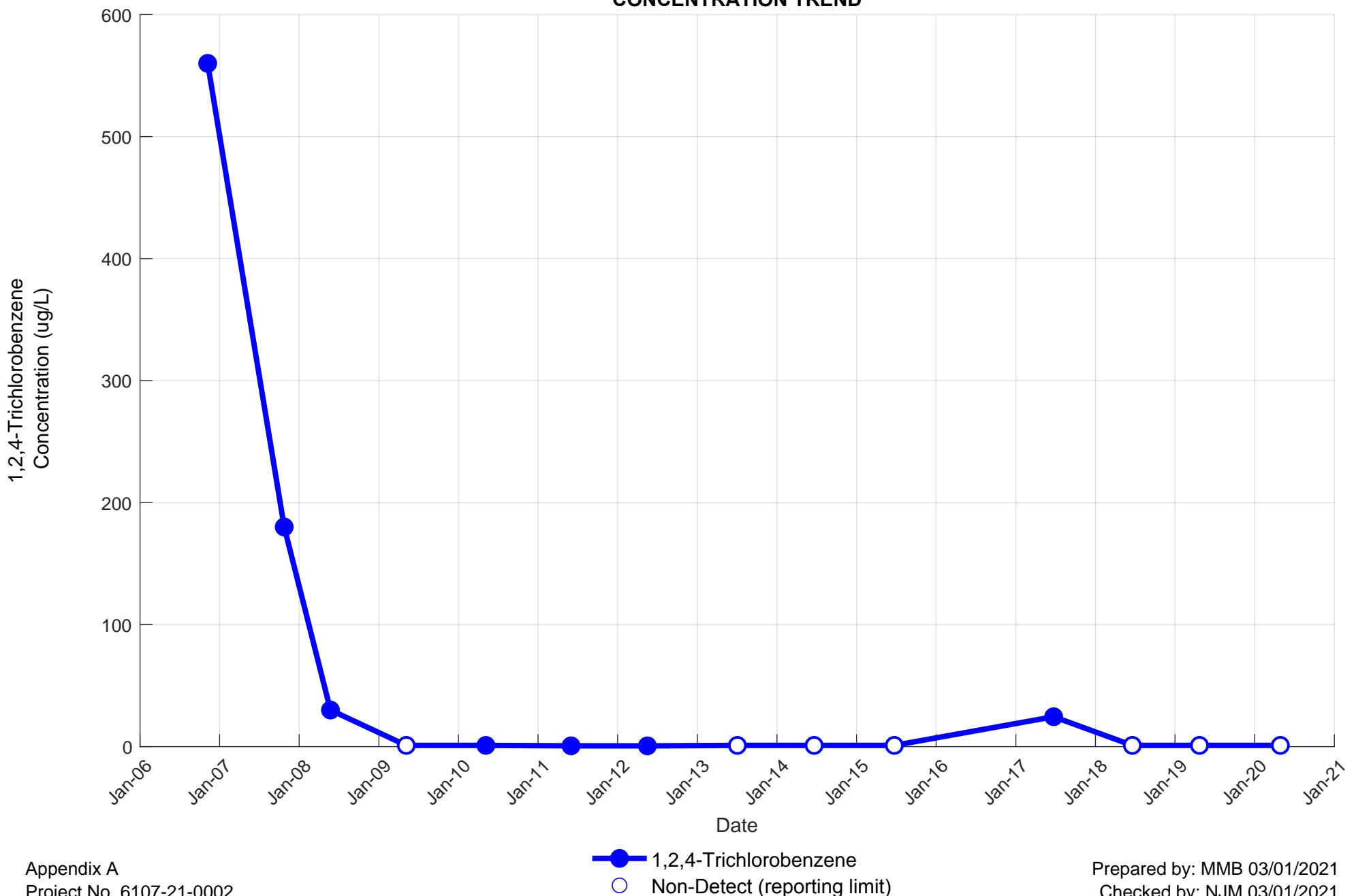
PN-3A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



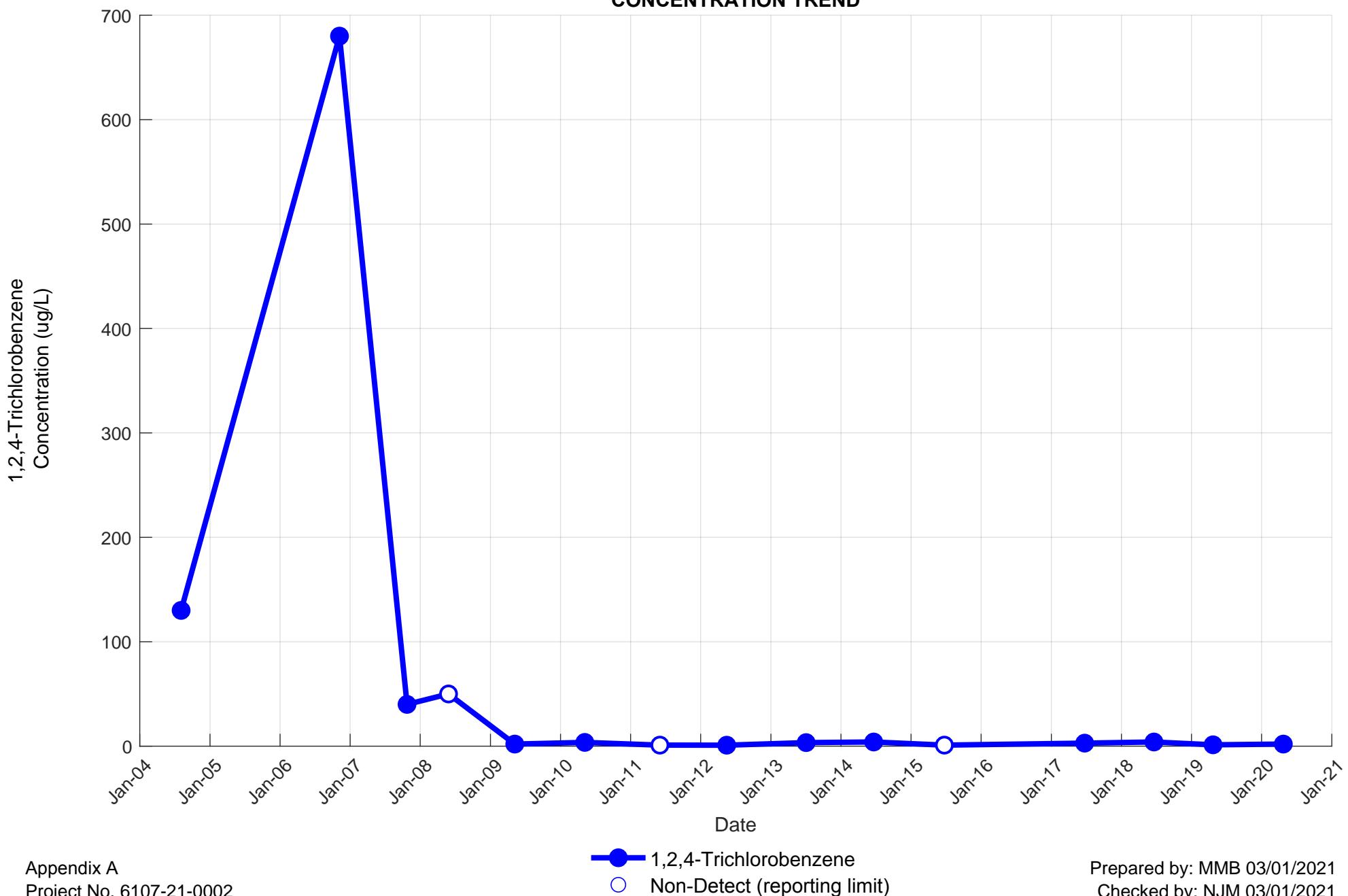
PN-5A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



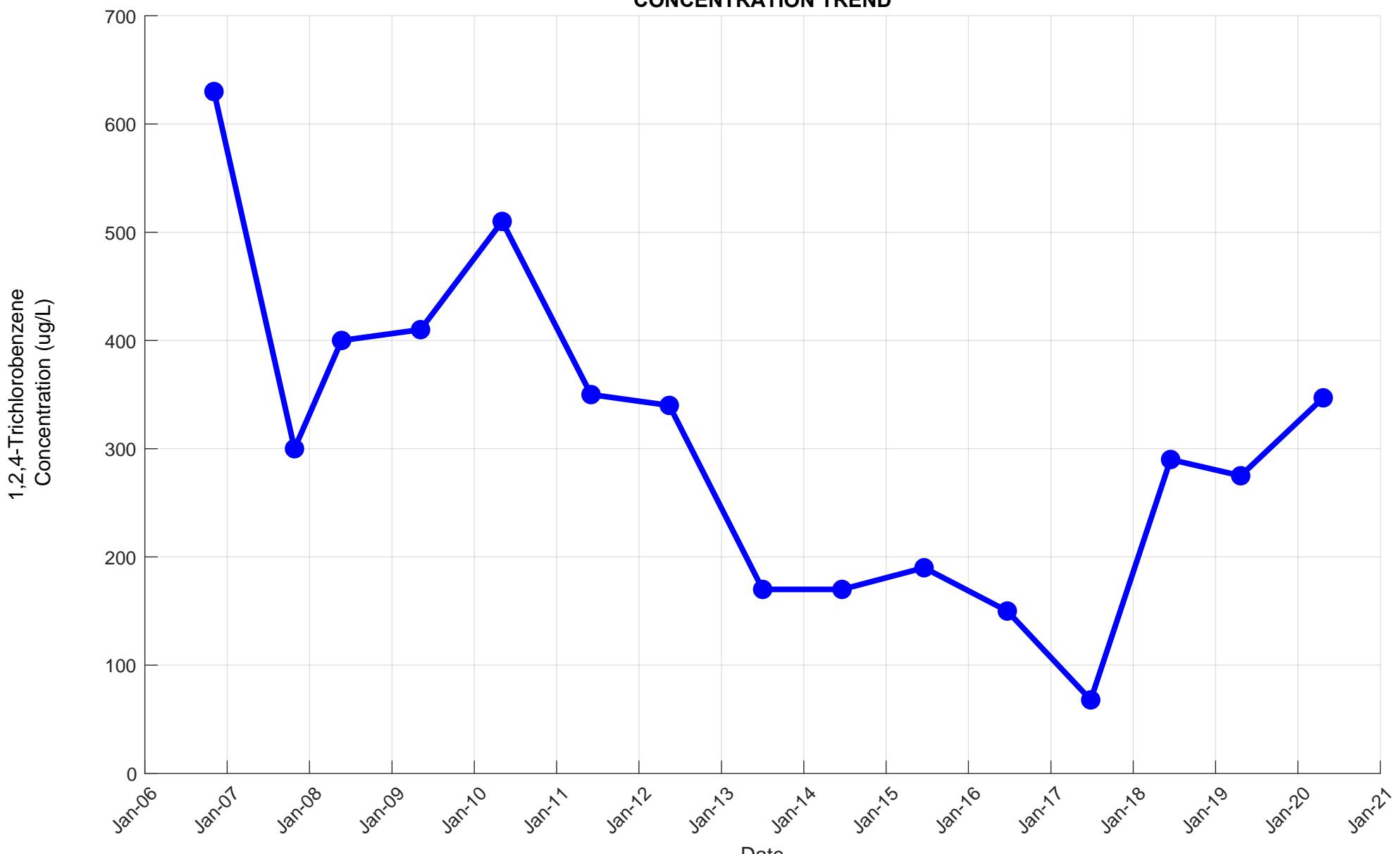
PN-7A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



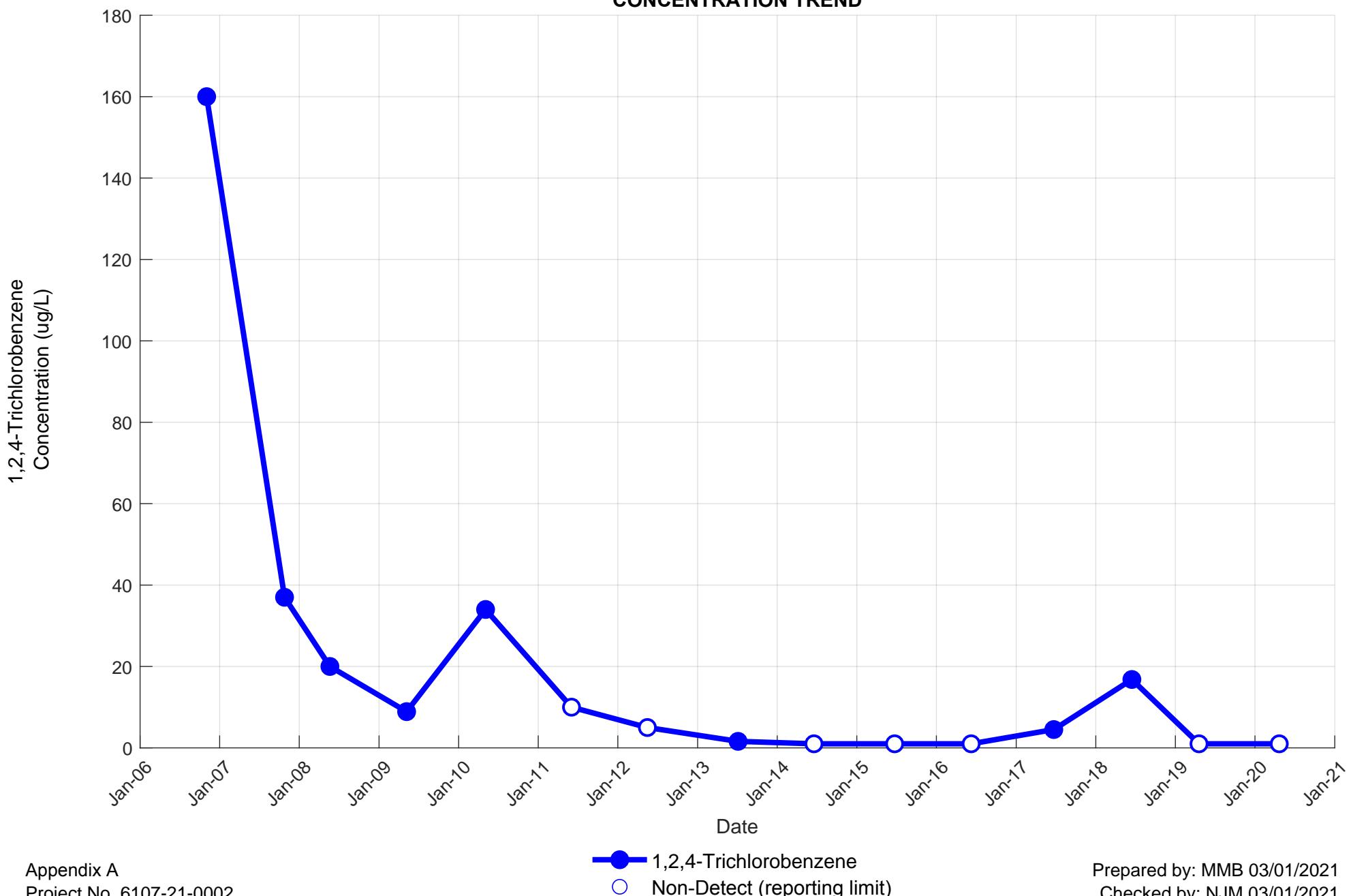
PN-11A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



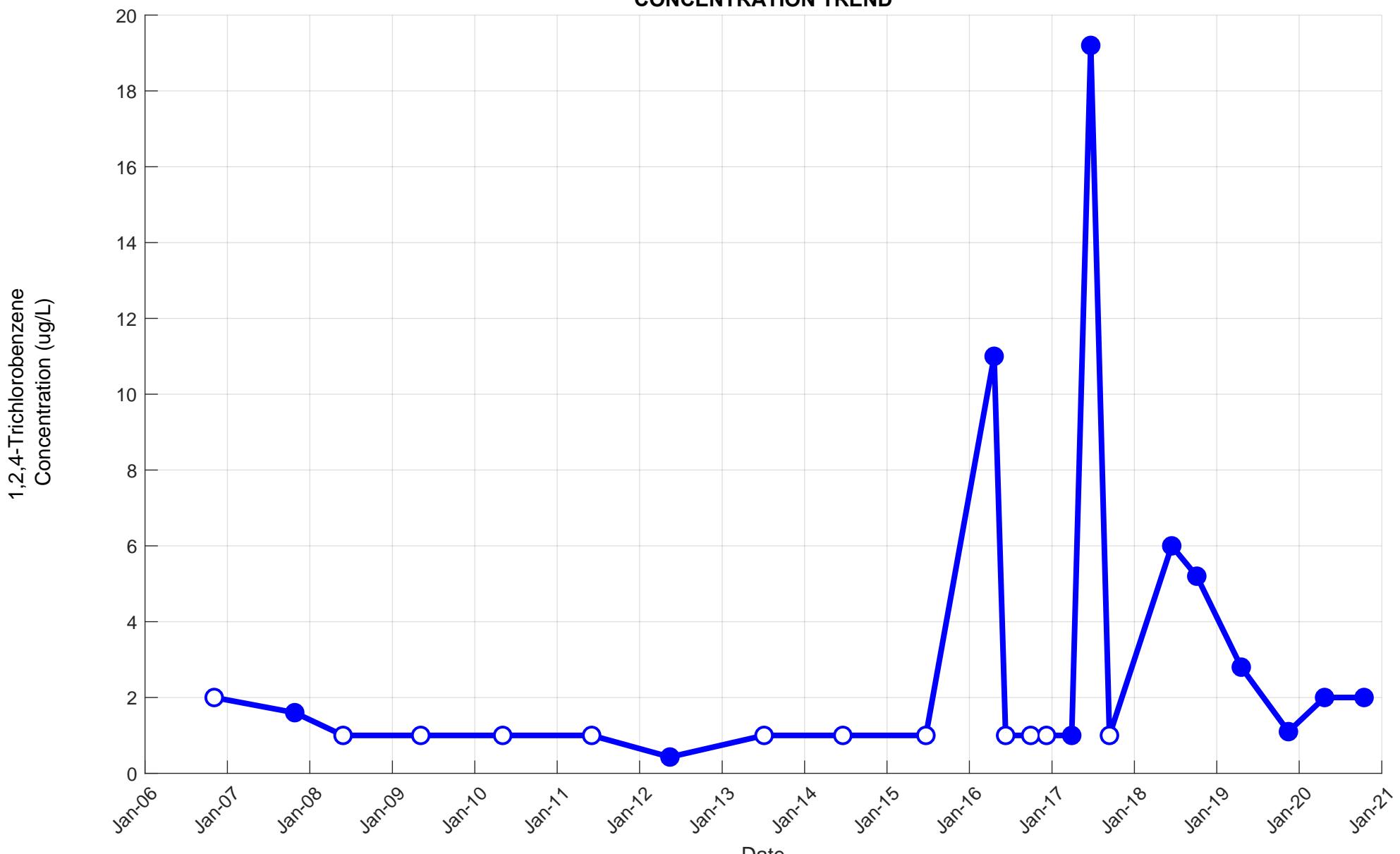
PN-14A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



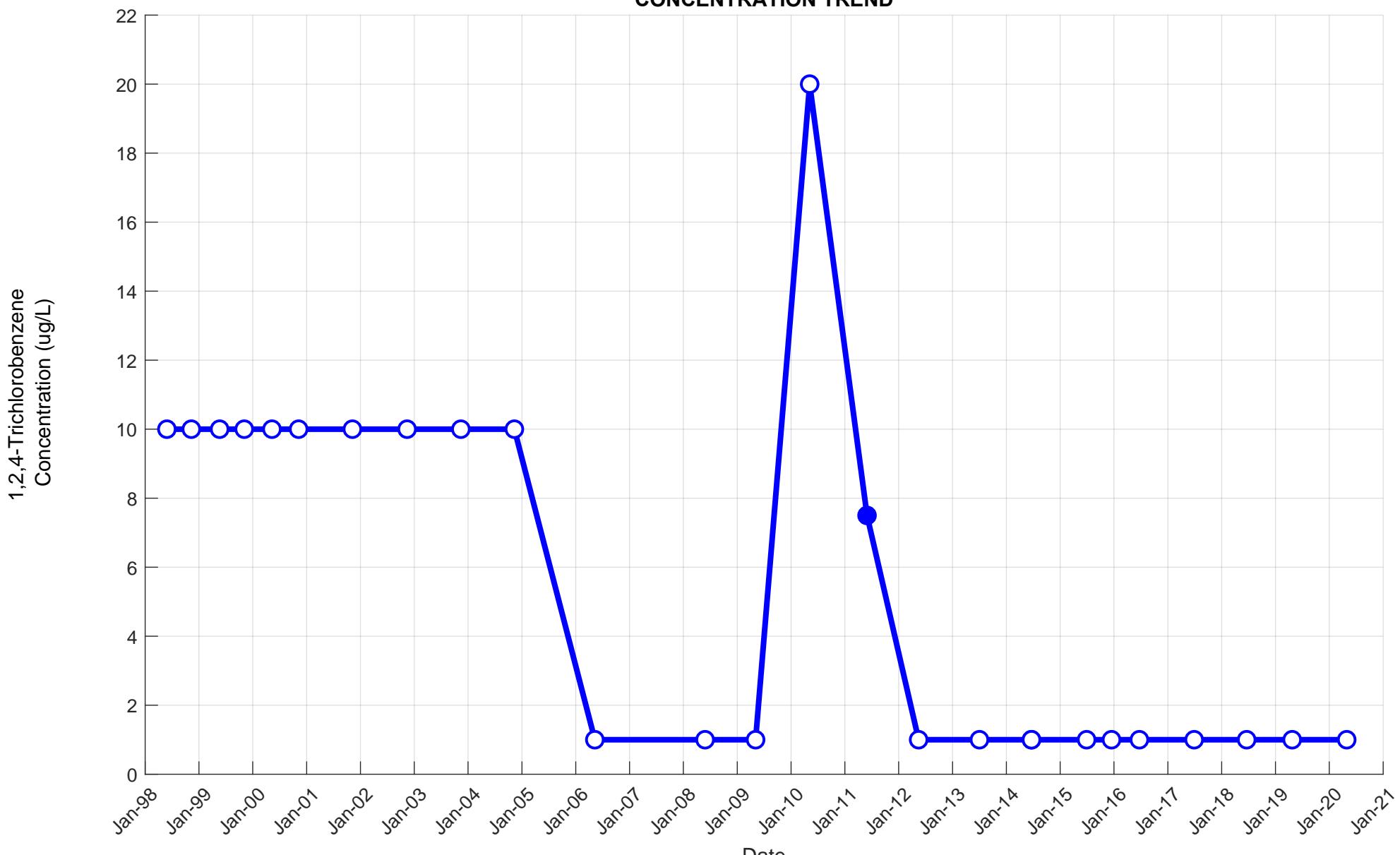
PN-17A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



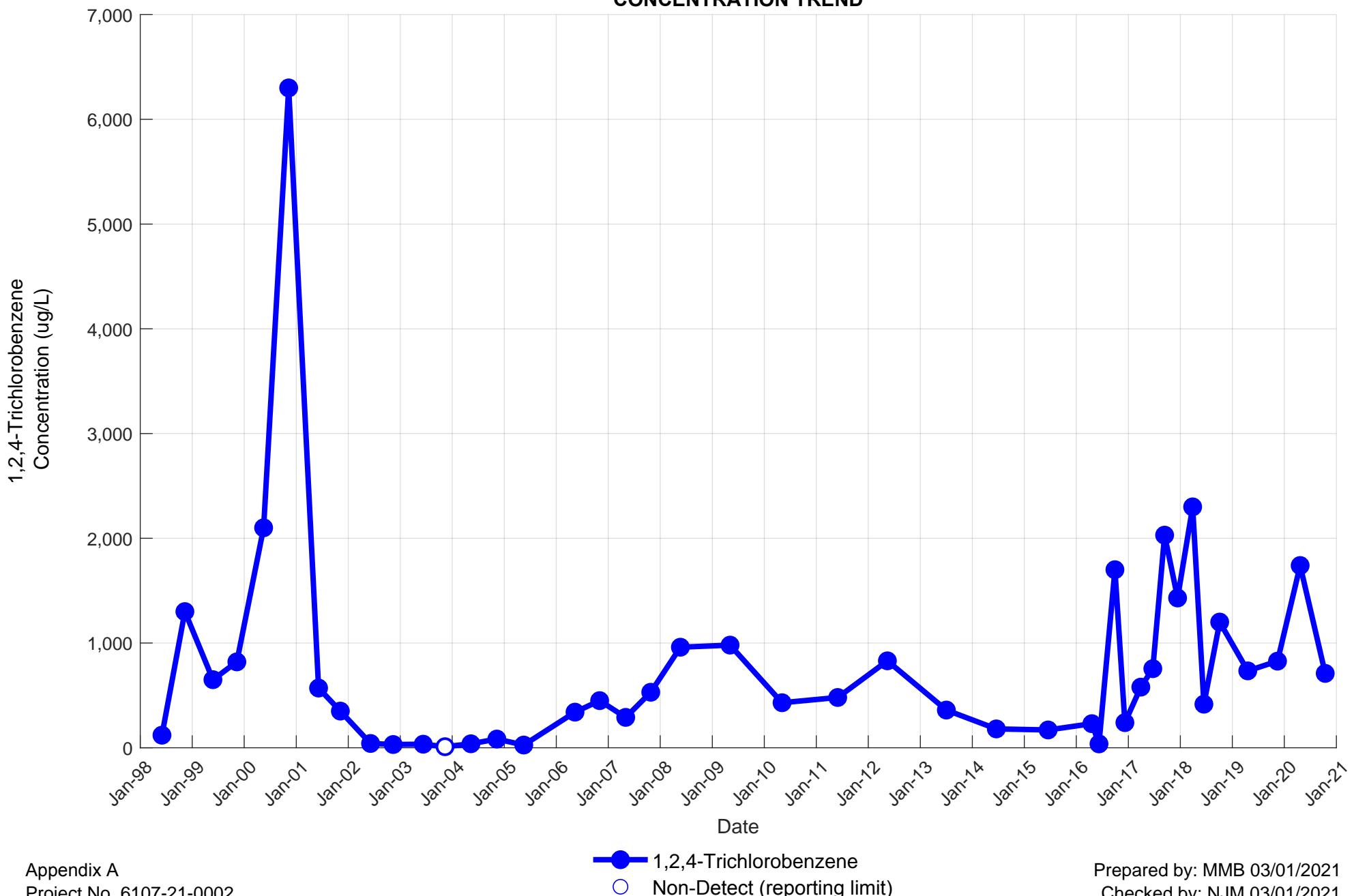
PN-20A
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



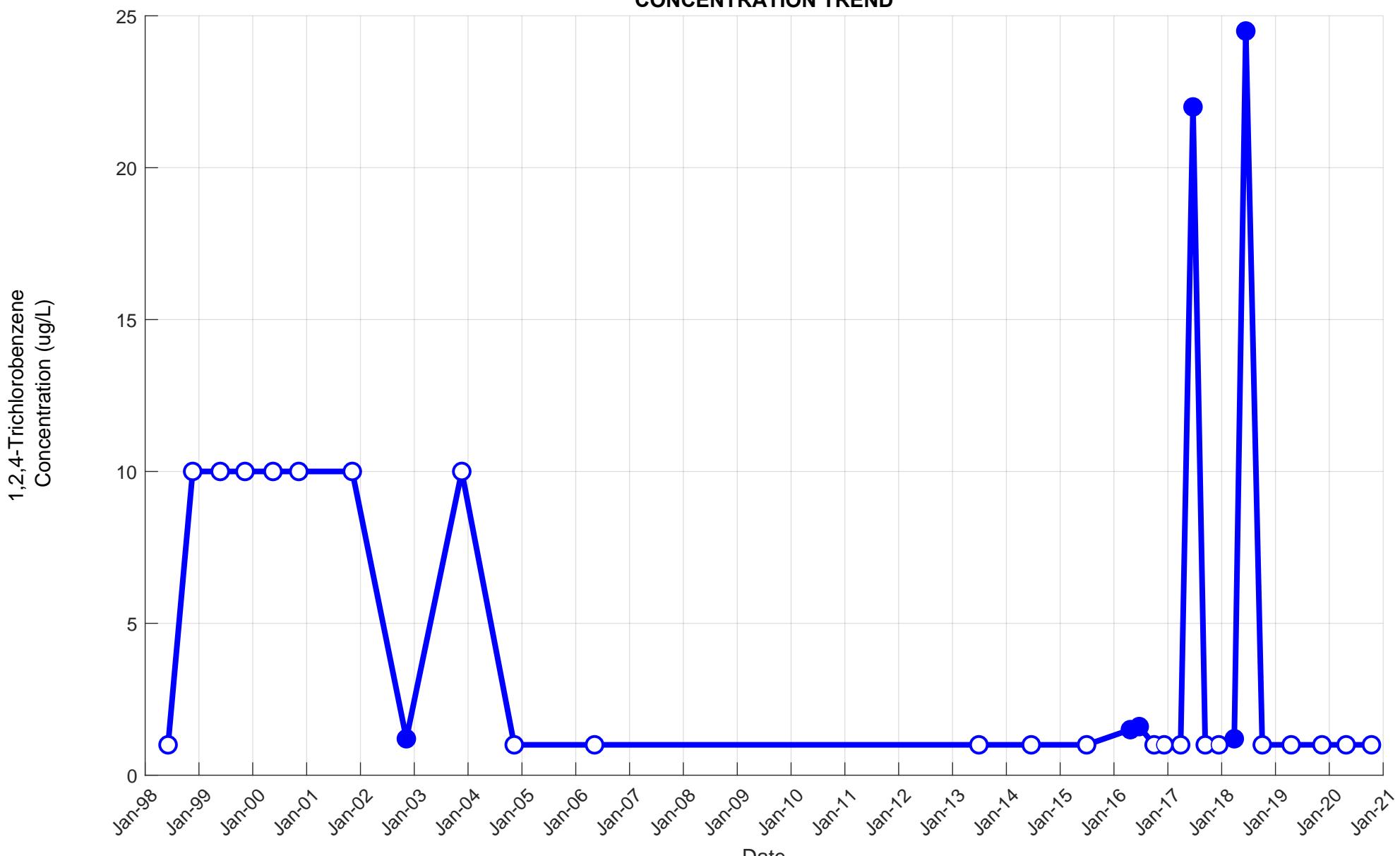
OBA-1B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



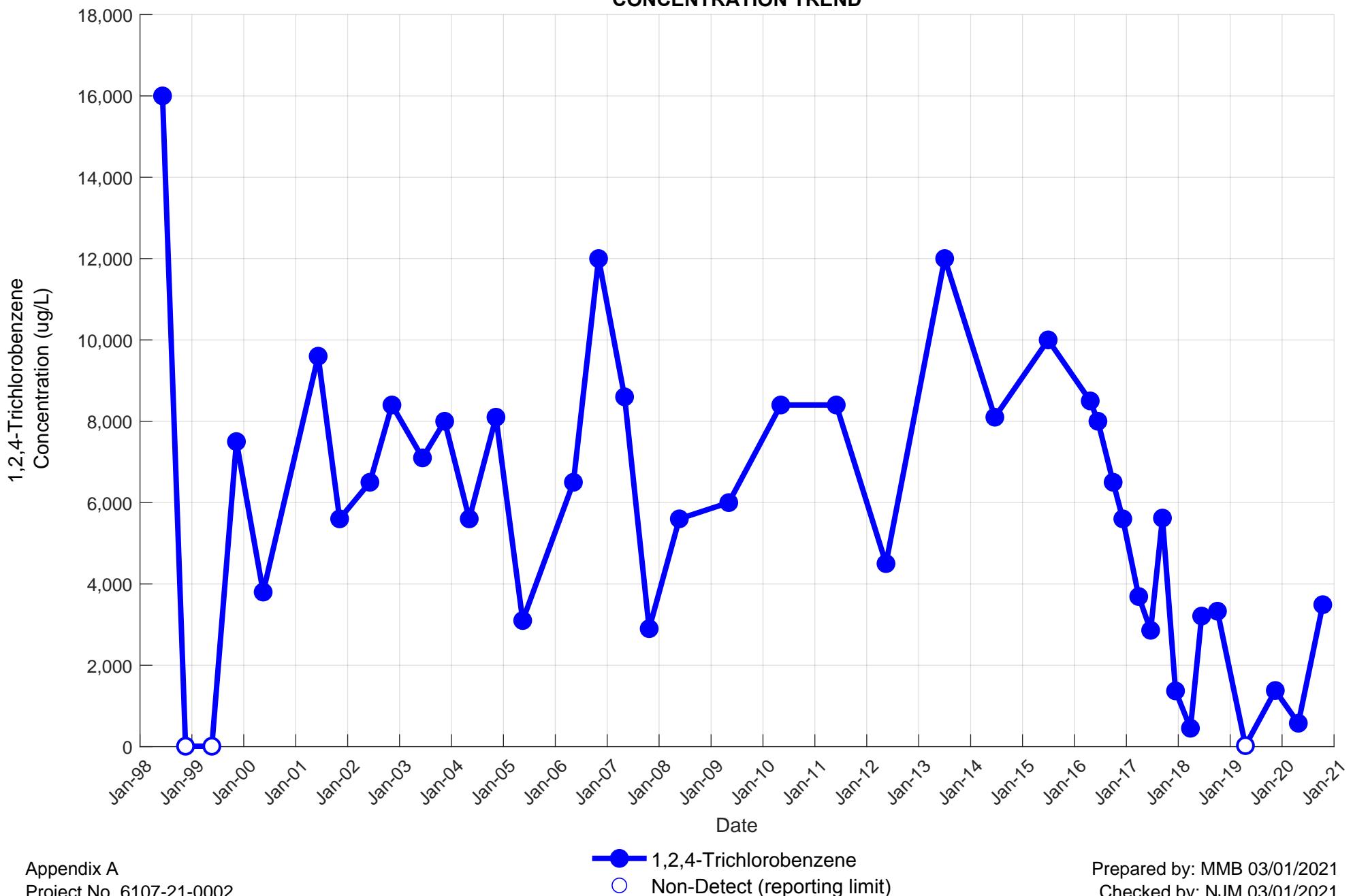
OBA-2B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND

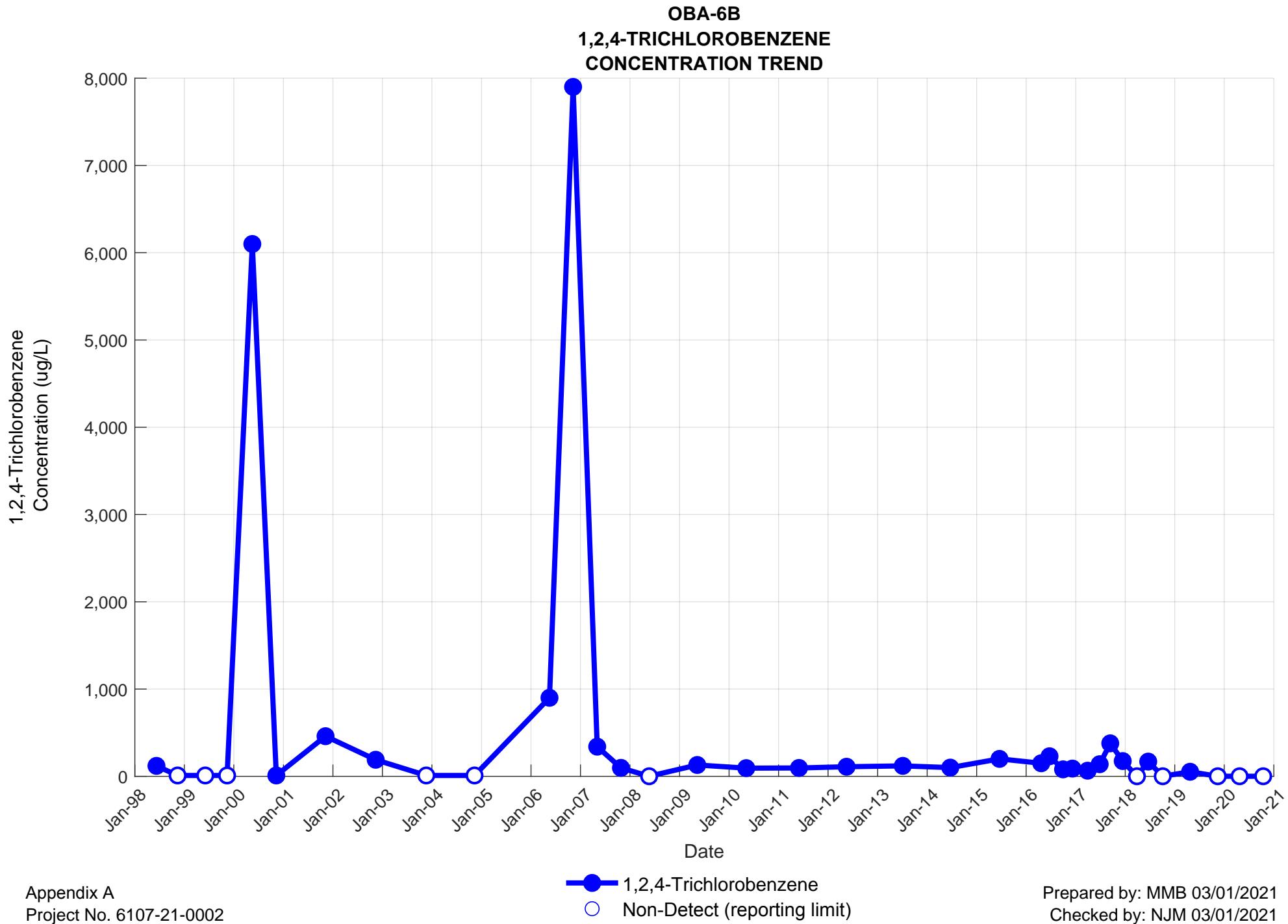


OBA-4B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND

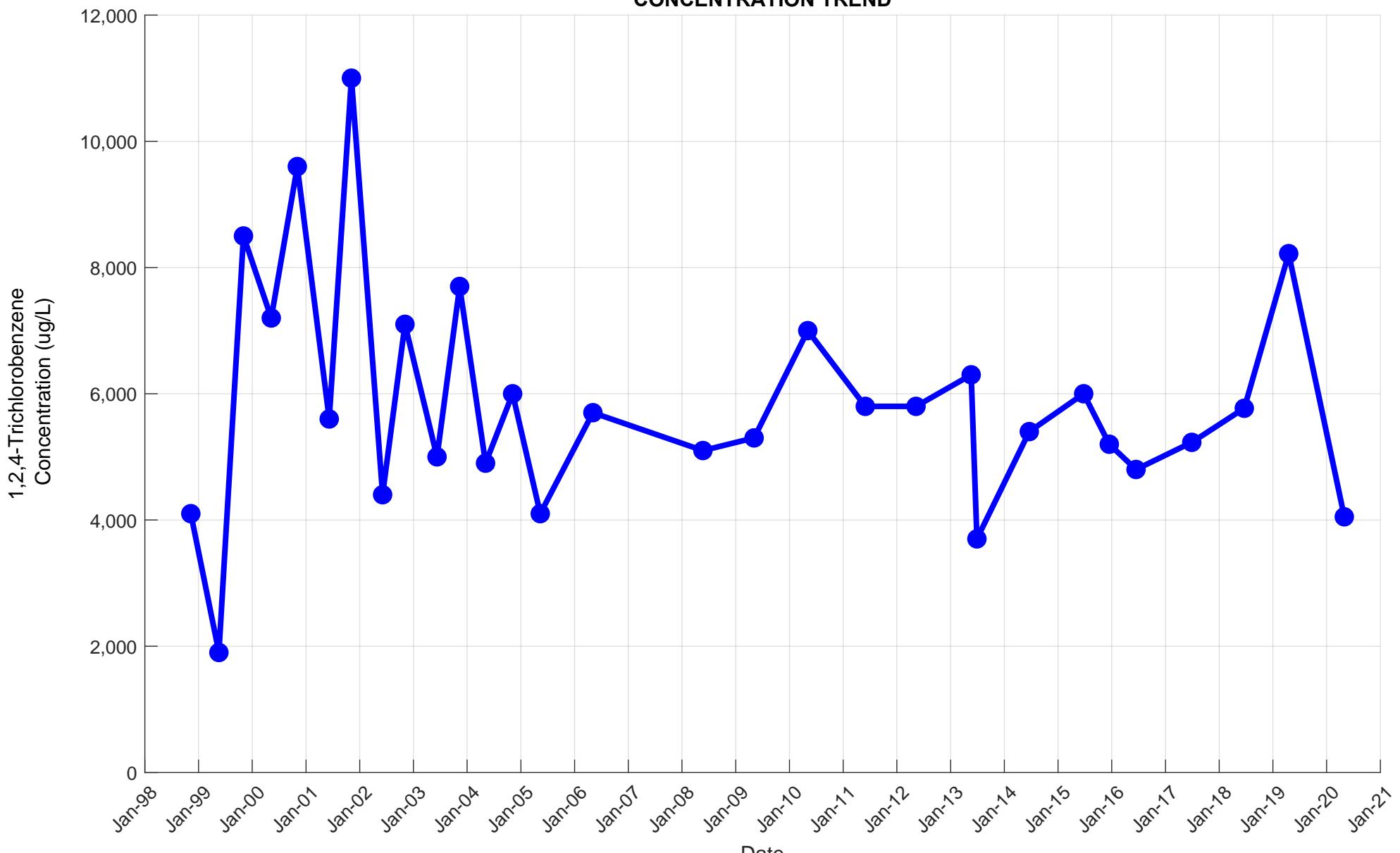


OBA-5B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND

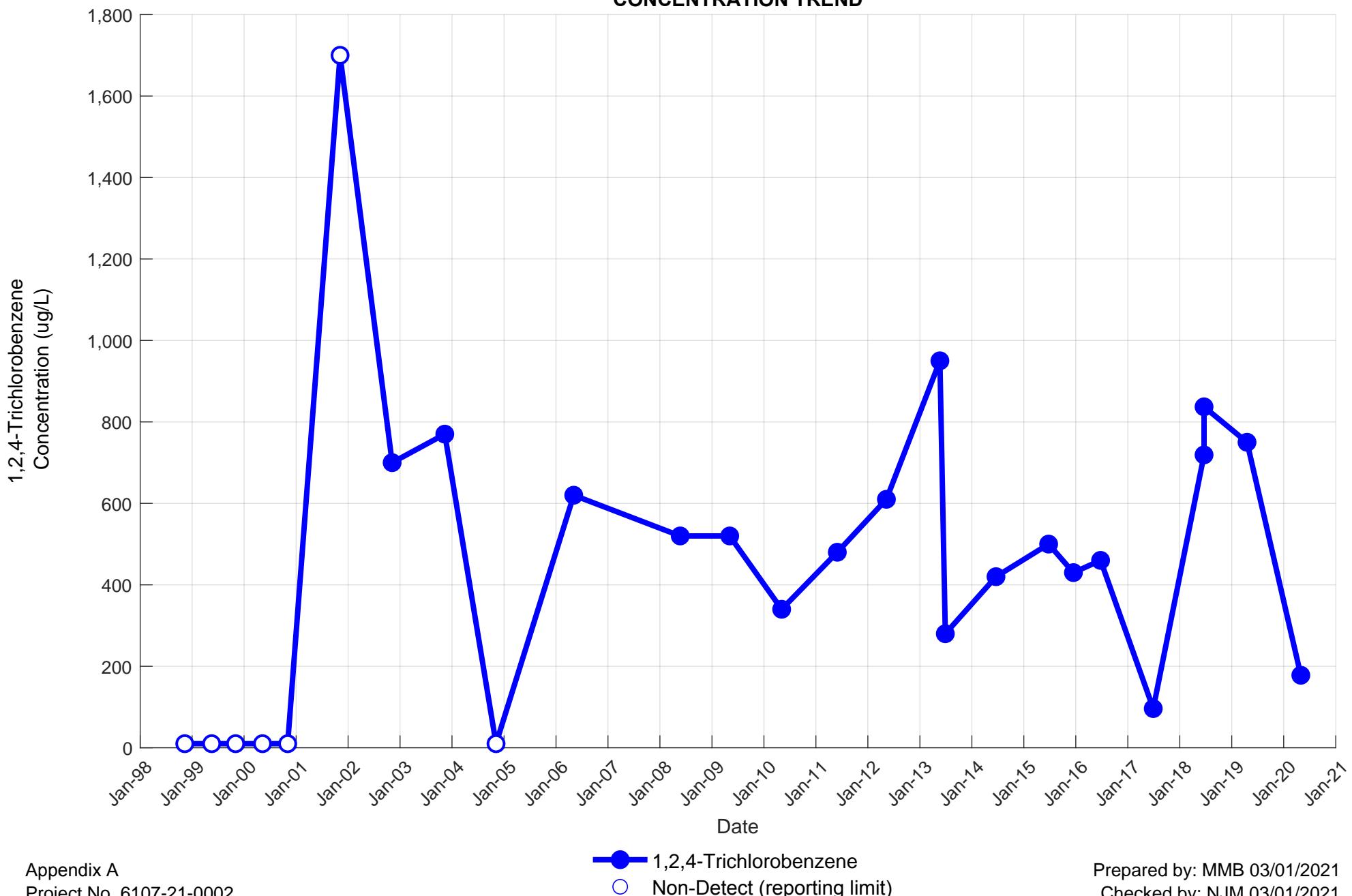




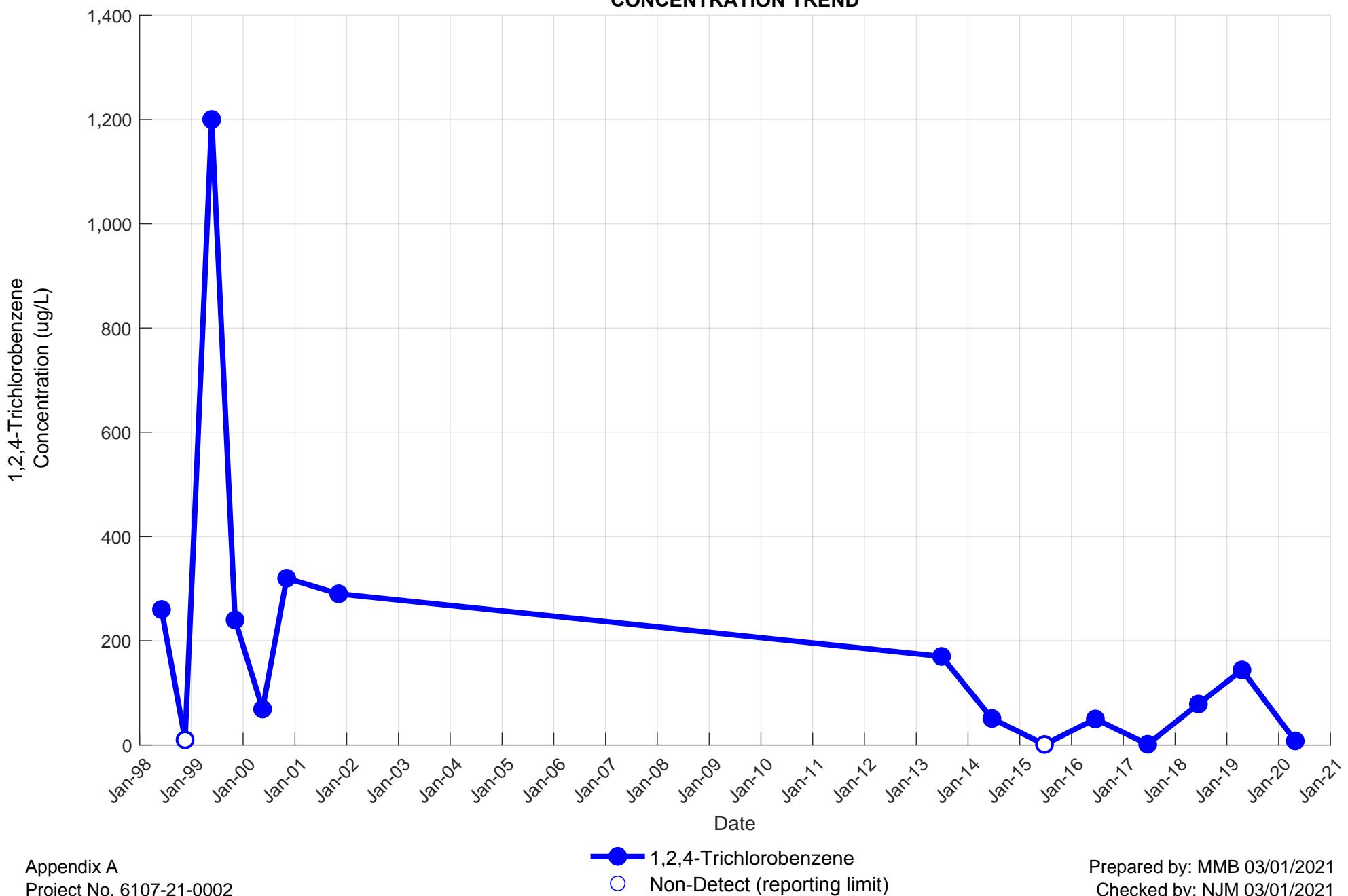
OBA-8B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



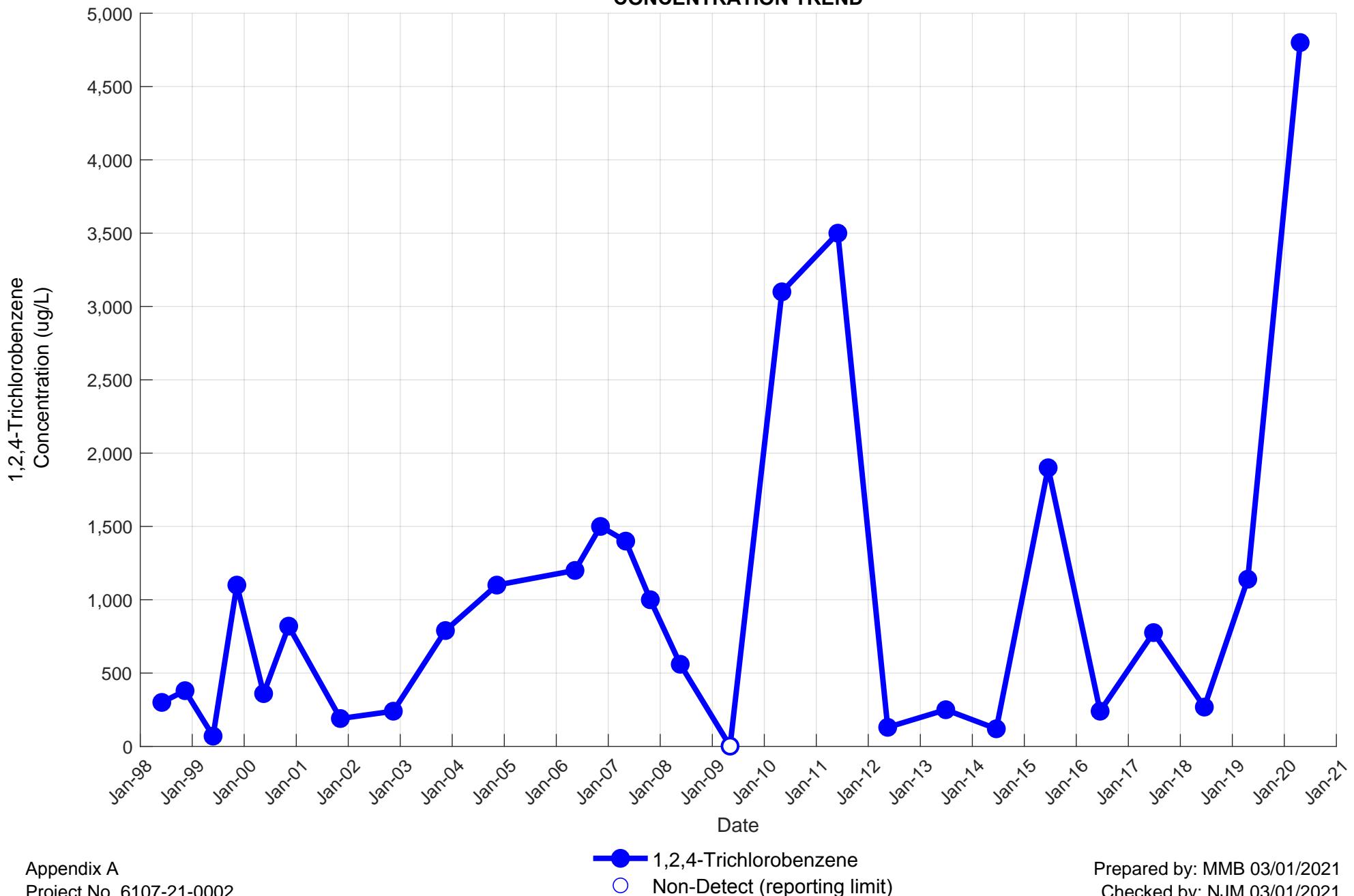
OBA-11B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



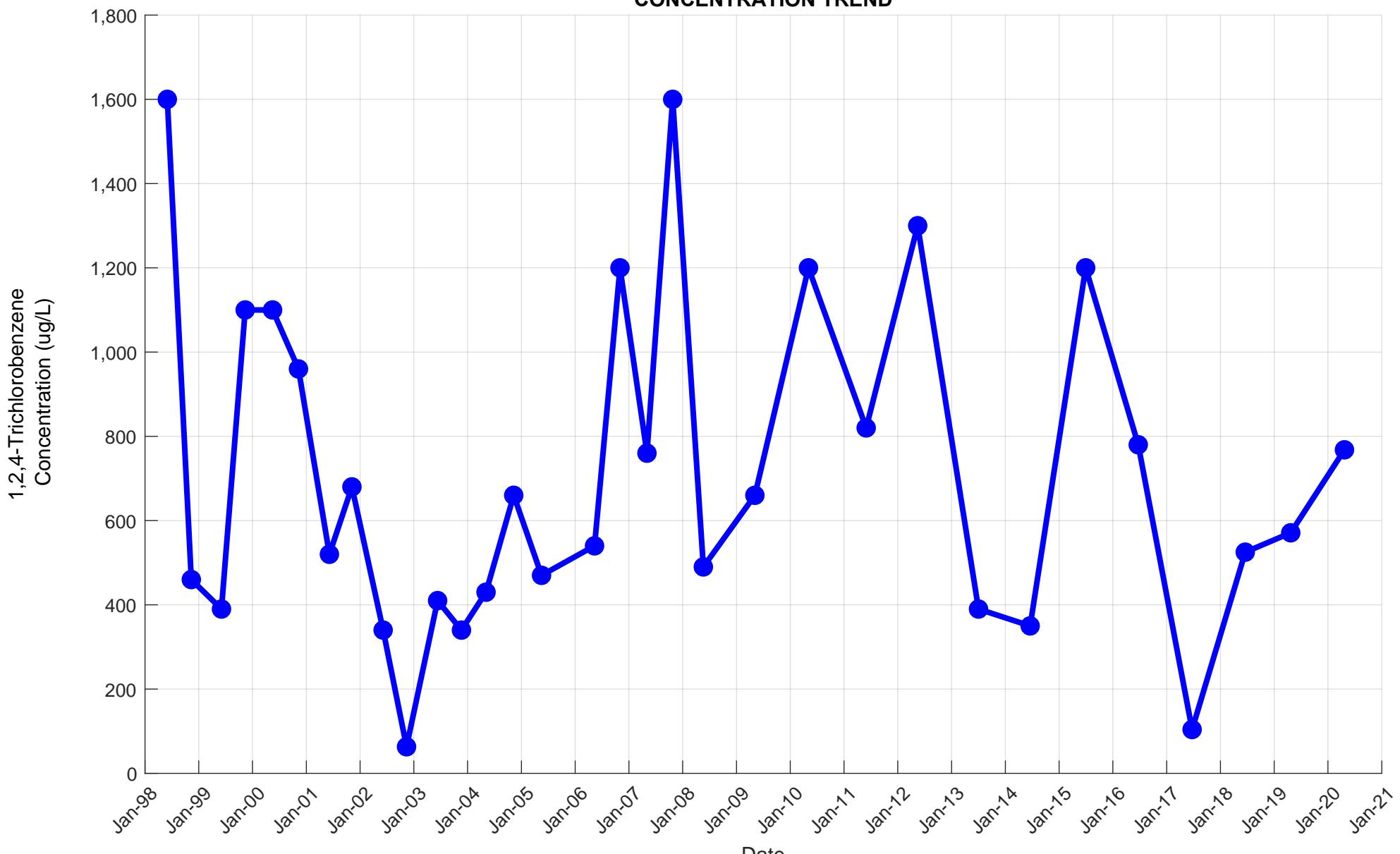
OBA-14B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND

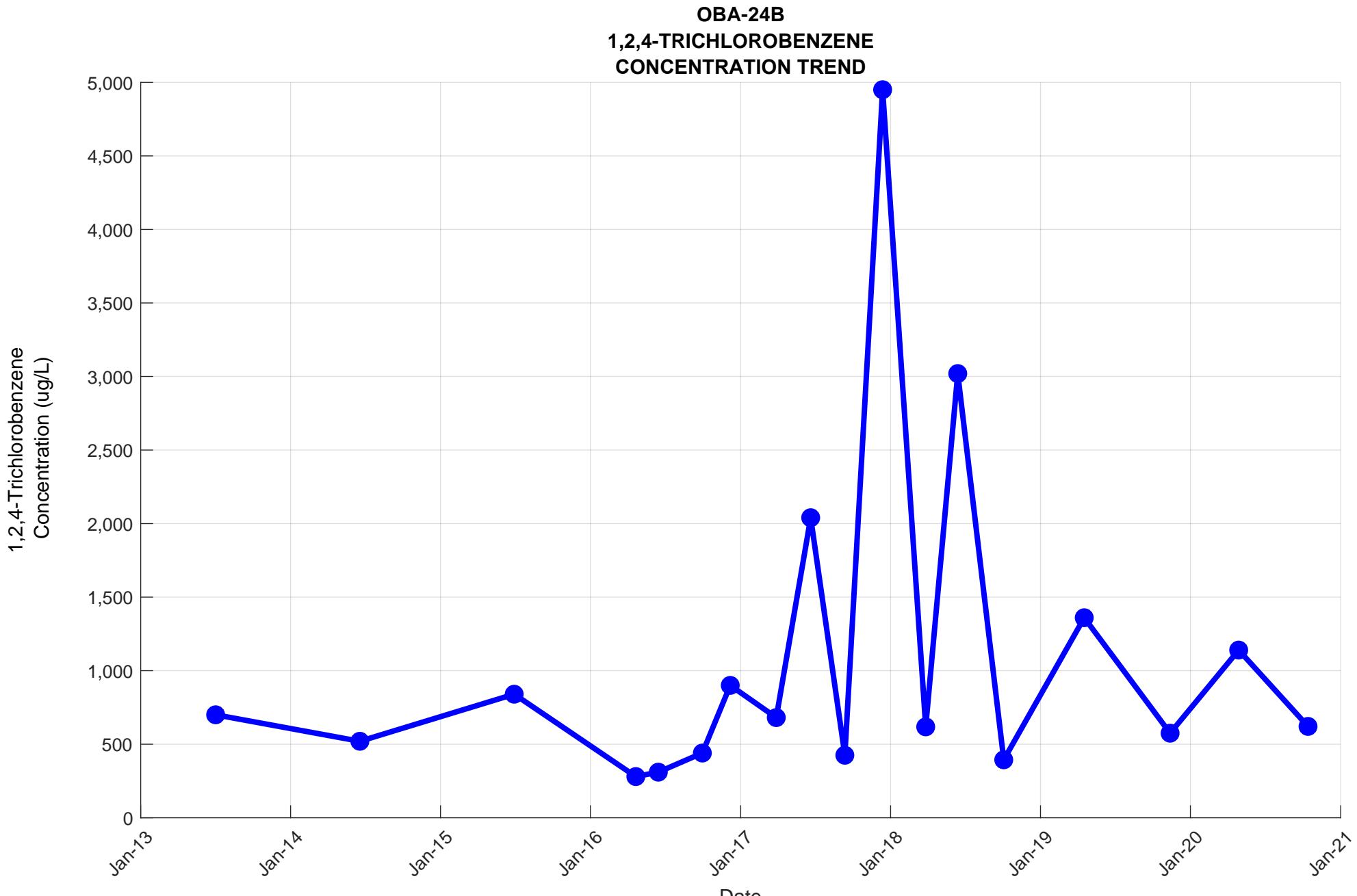


OBA-16B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND

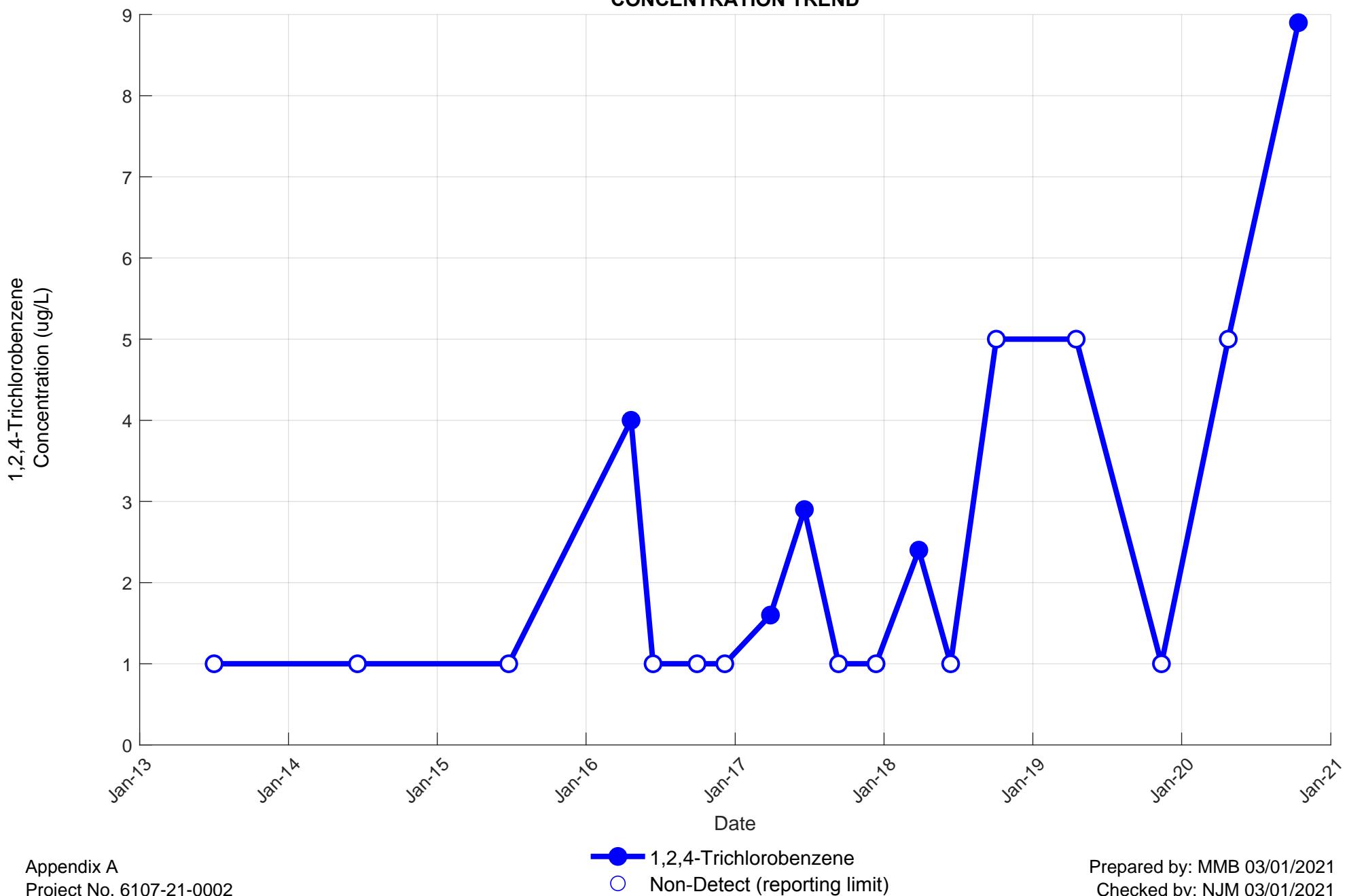


OBA-23B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND

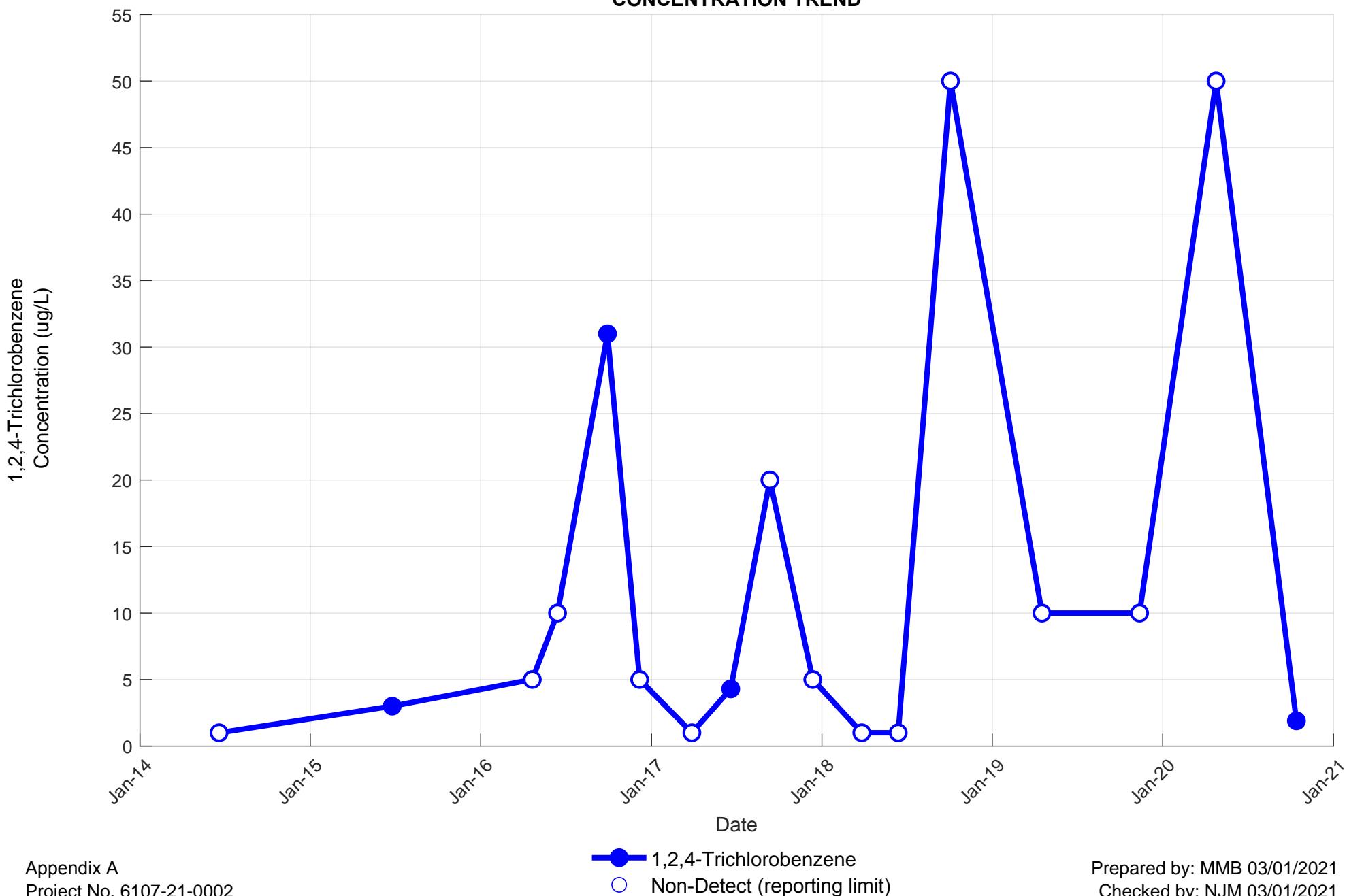




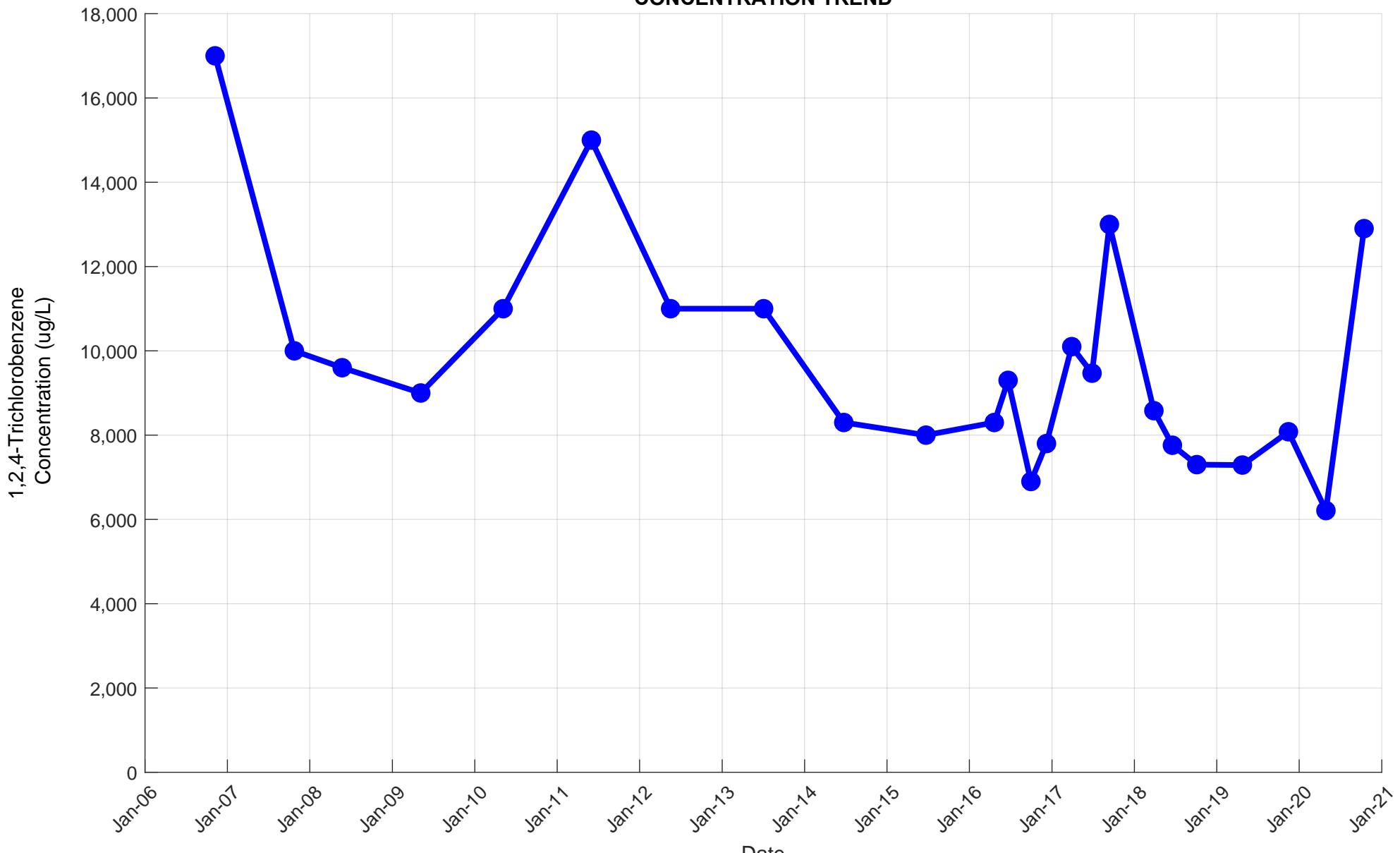
OBA-25B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



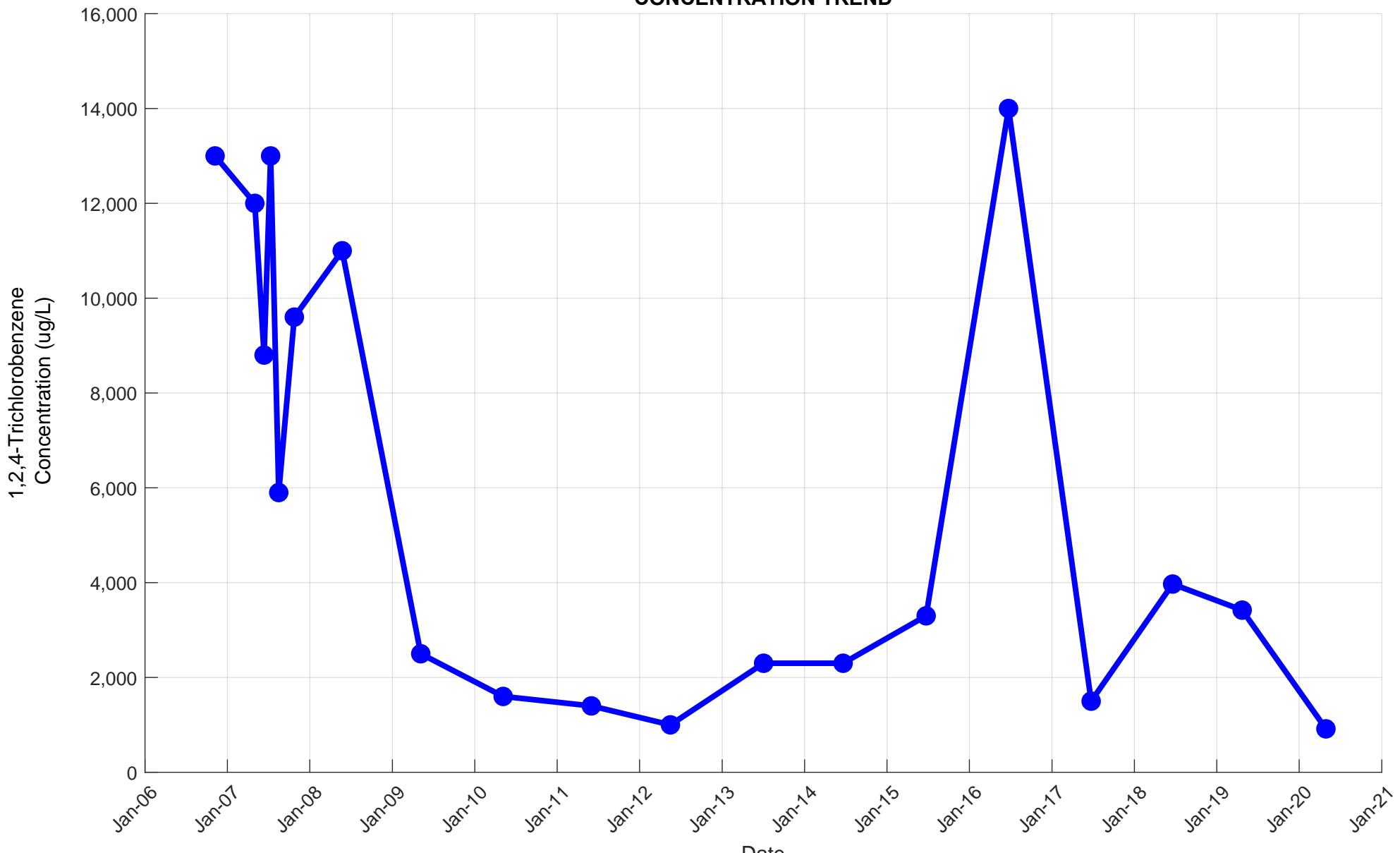
OBA-26B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



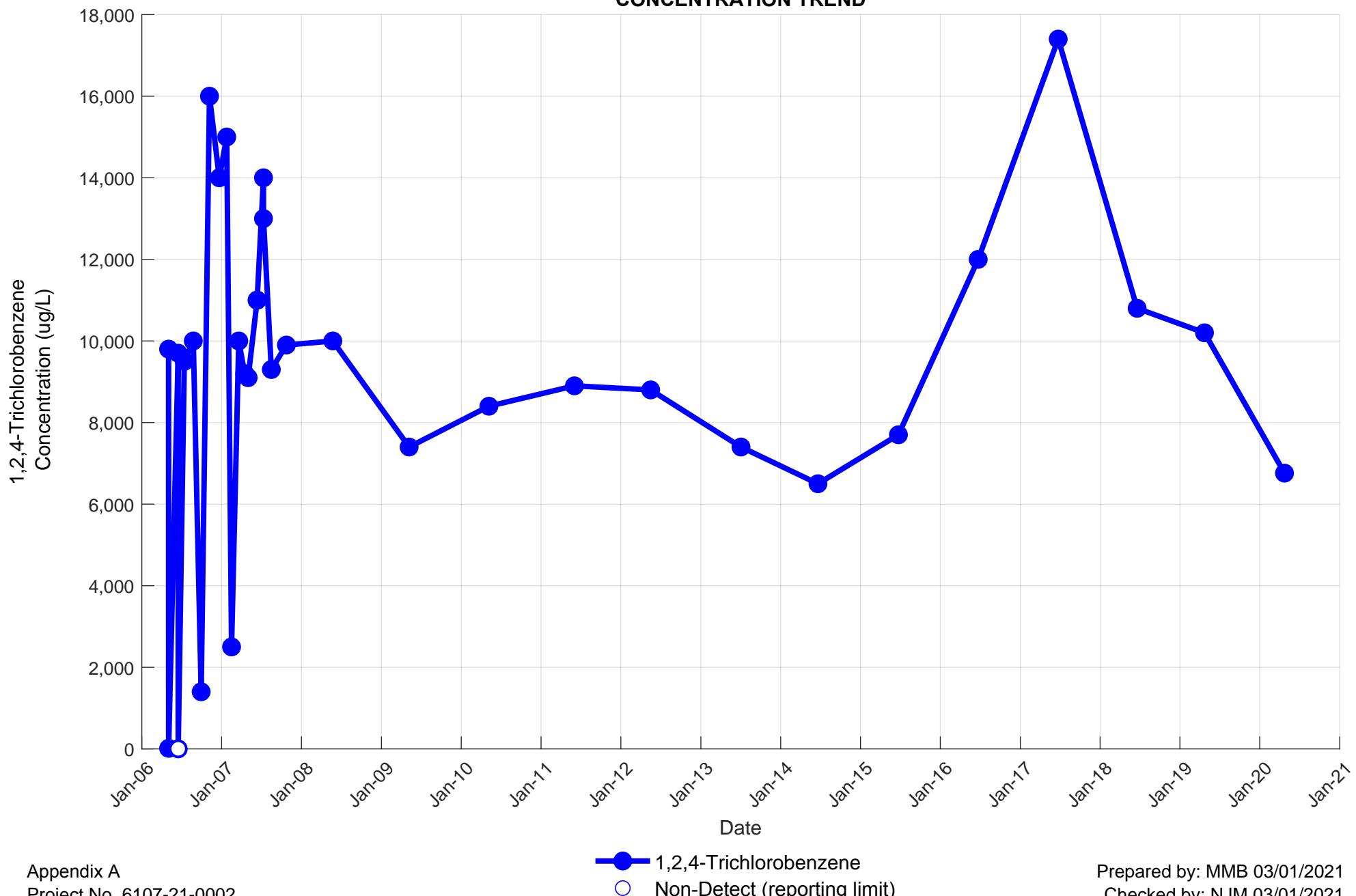
PN-5B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



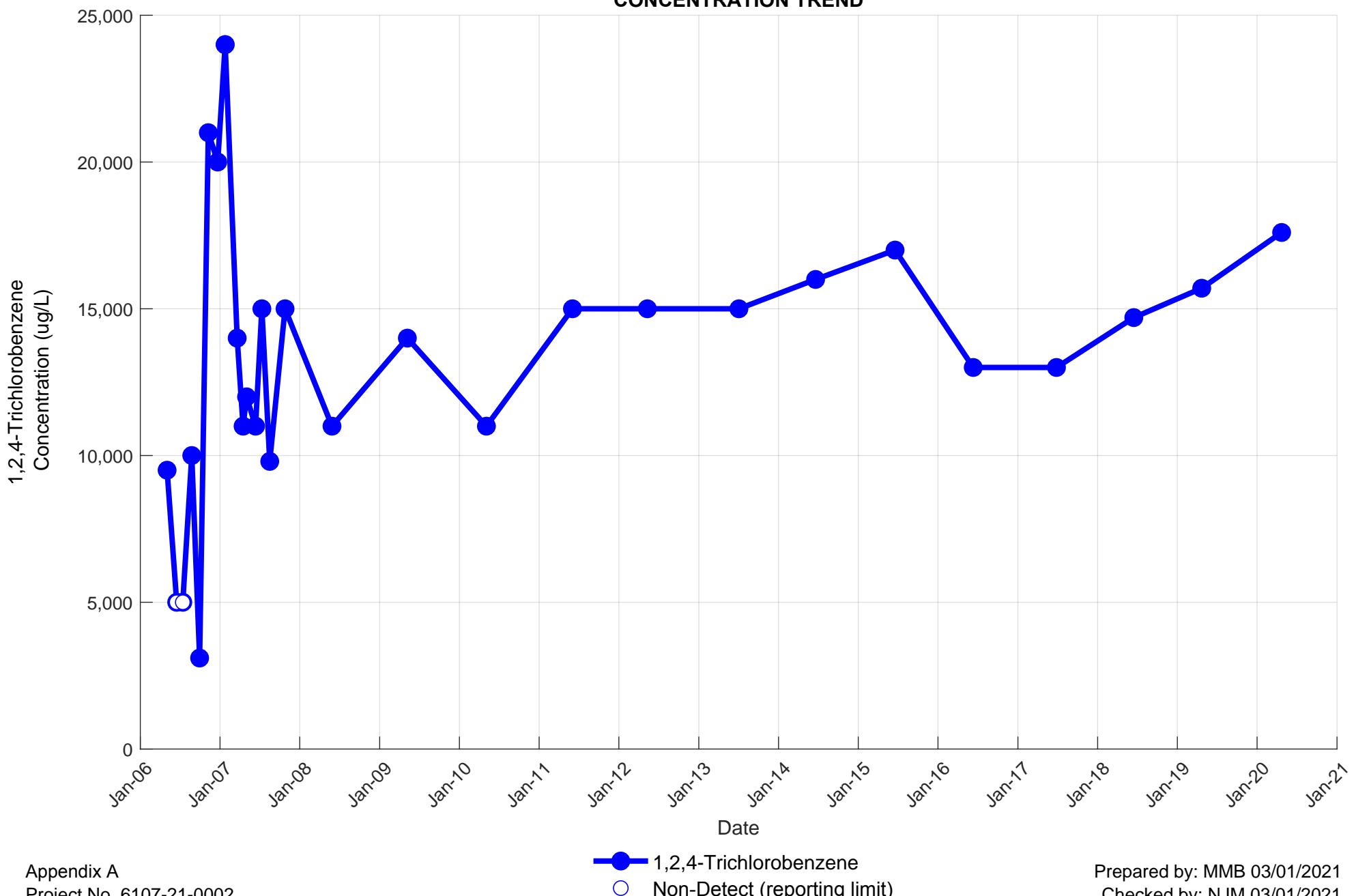
PN-7B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



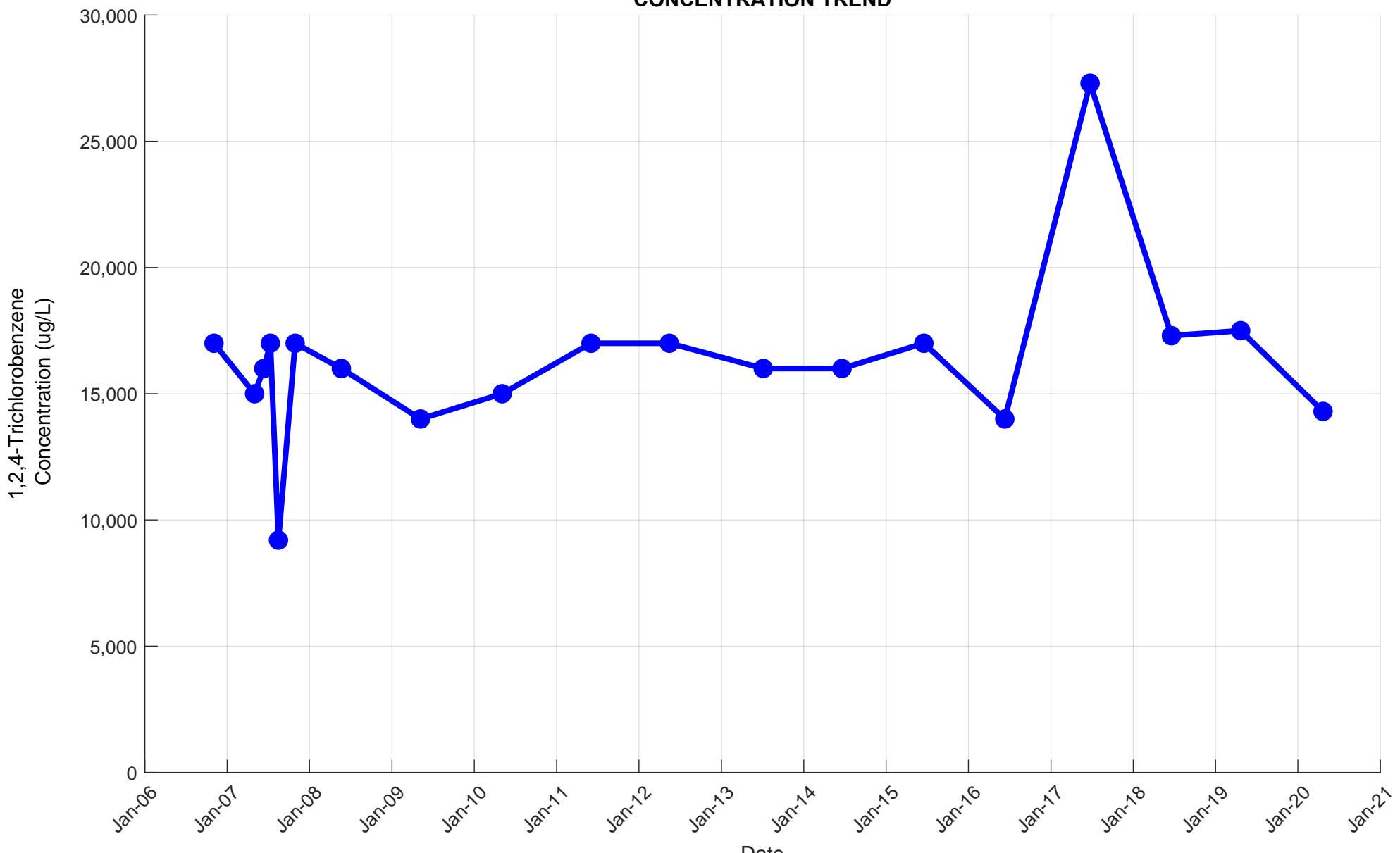
PN-11B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



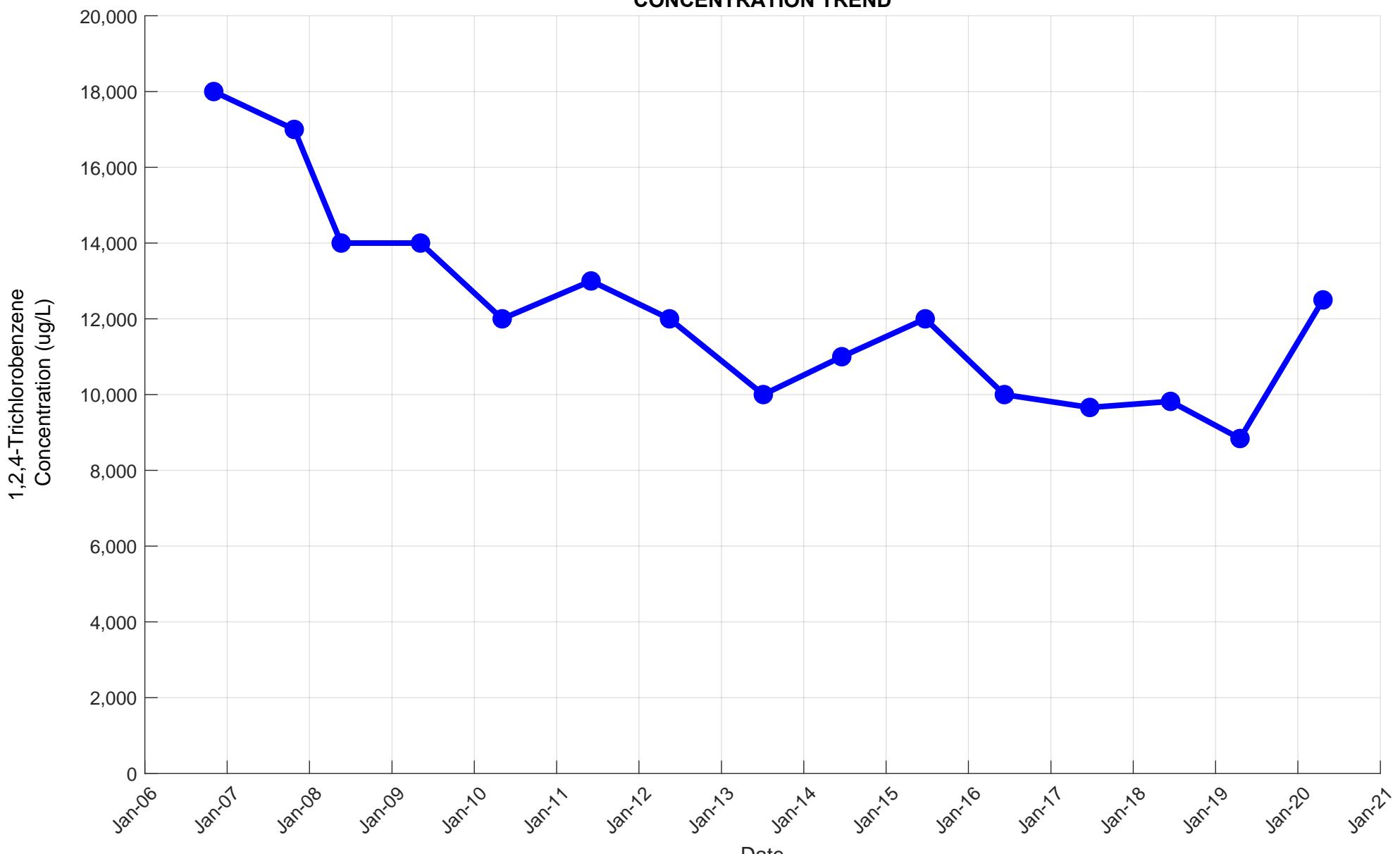
PN-12B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



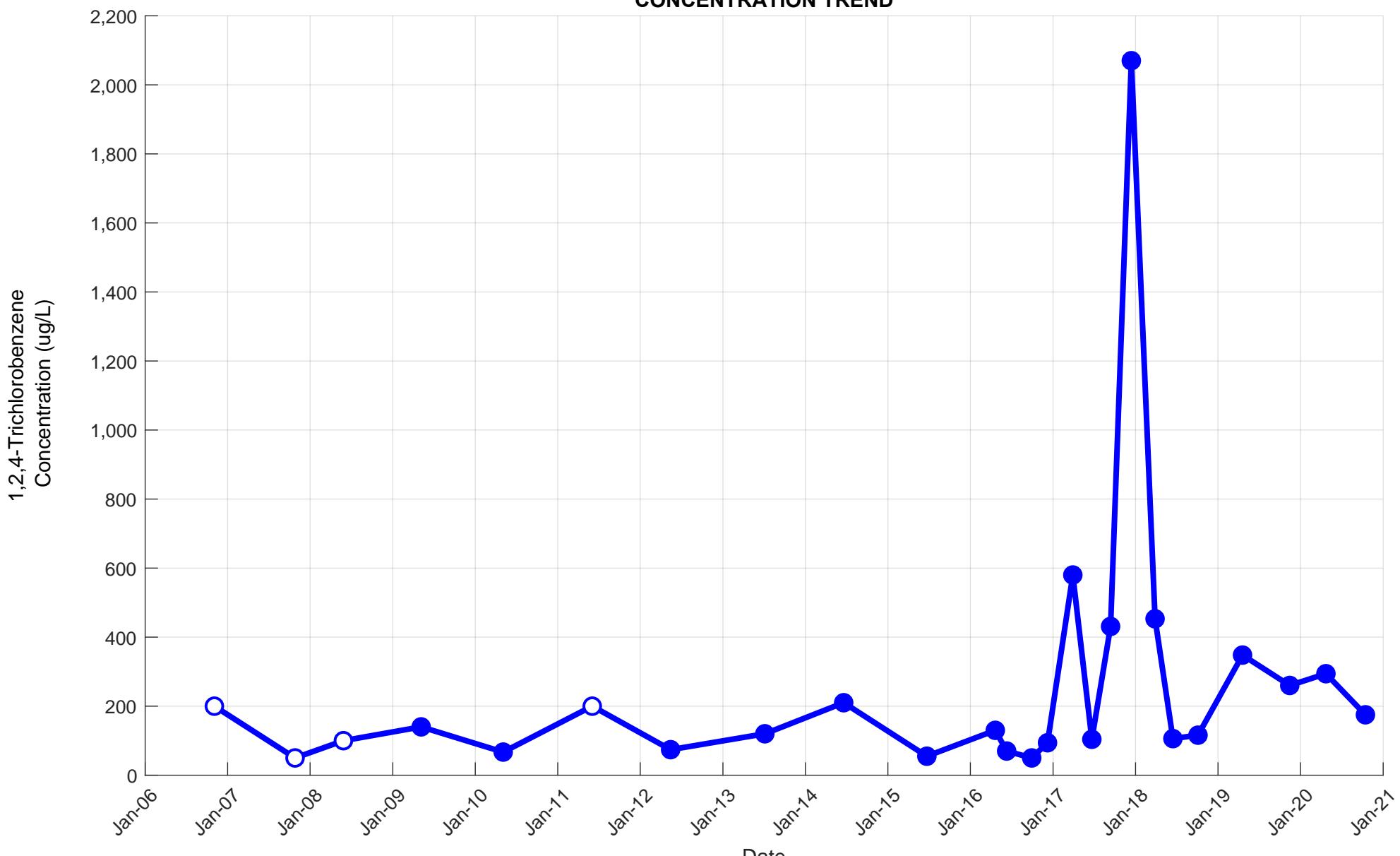
PN-15B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



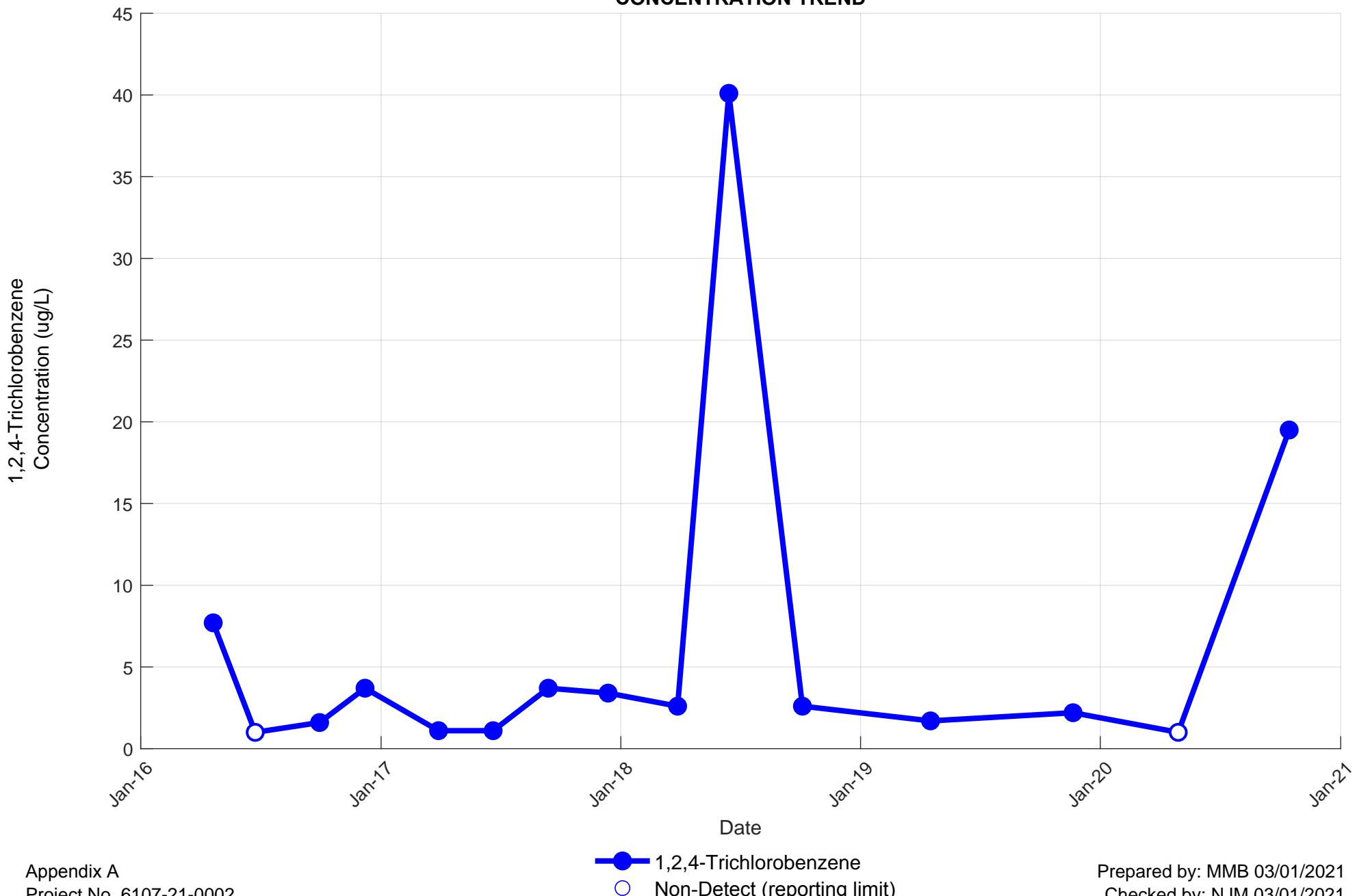
PN-17B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



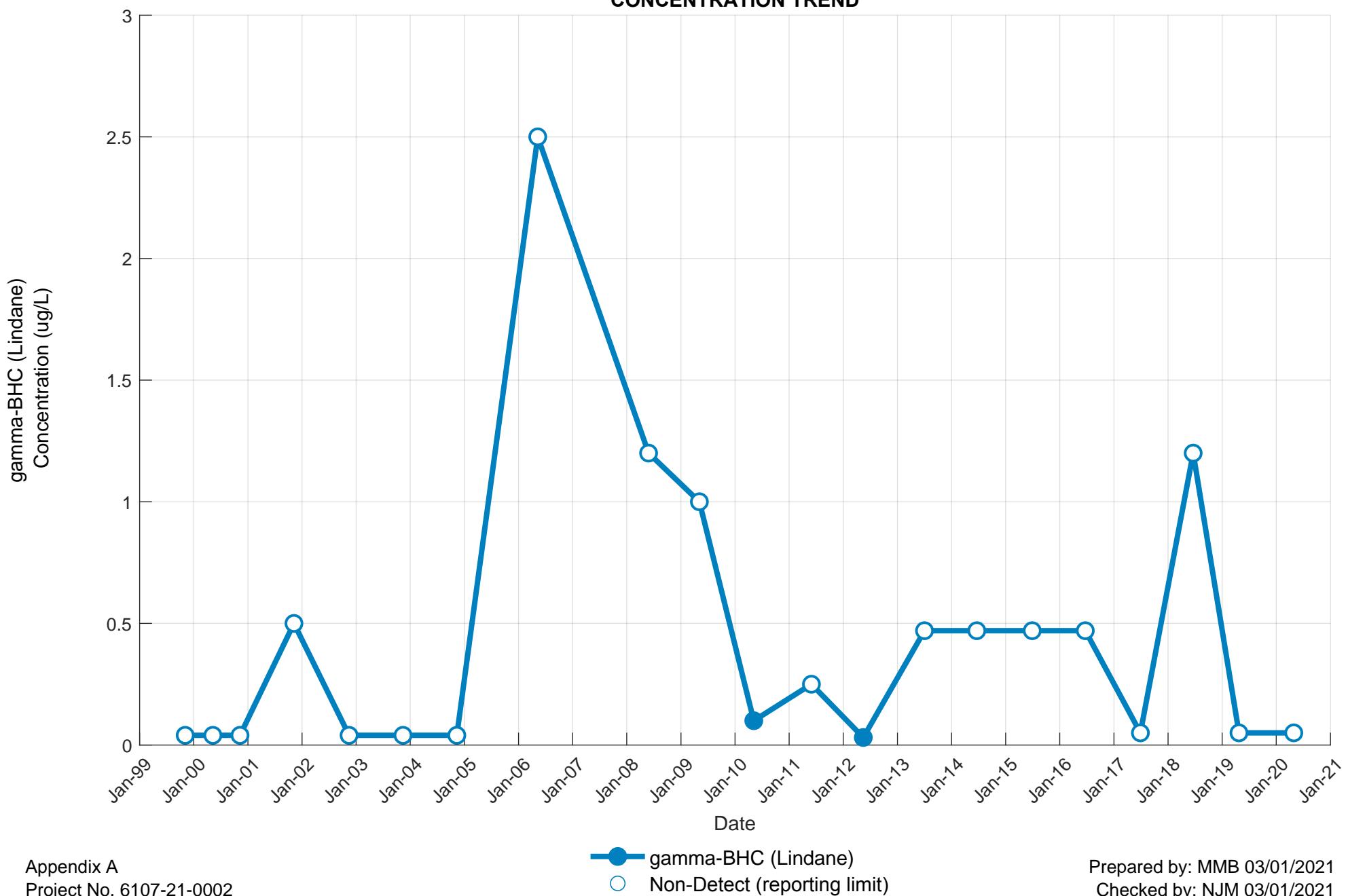
PN-20B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



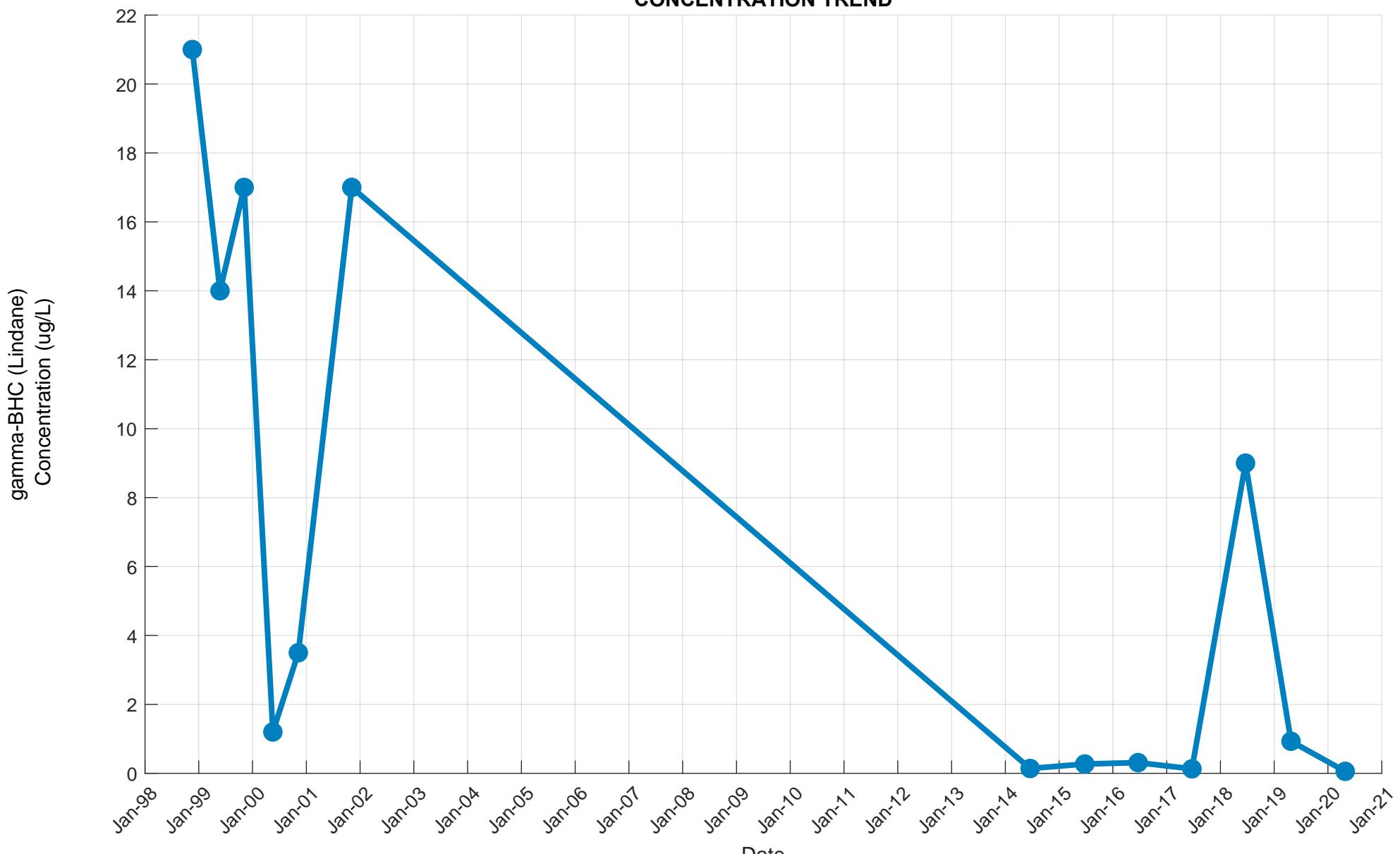
PN-24B
1,2,4-TRICHLOROBENZENE
CONCENTRATION TREND



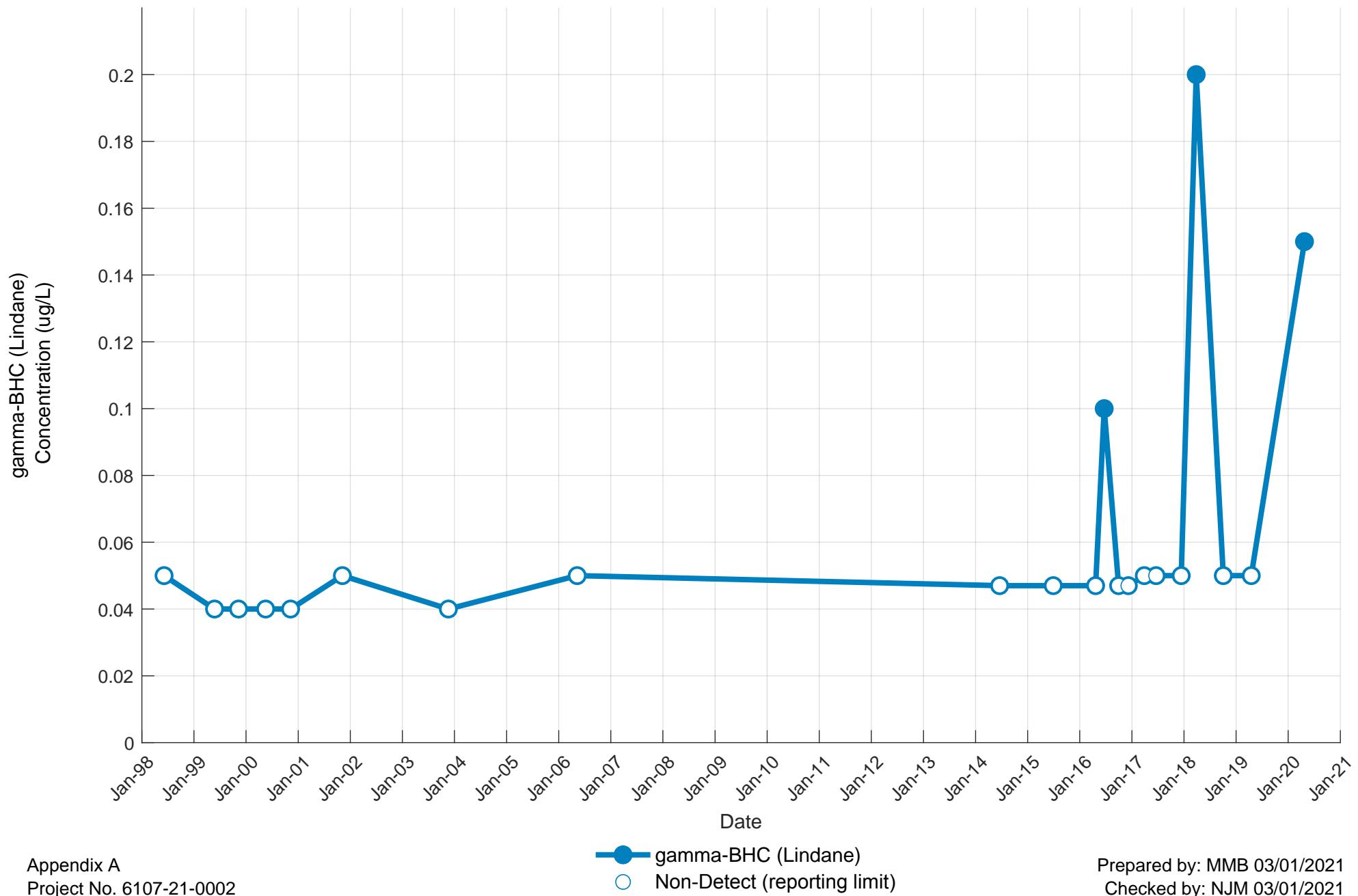
OBA-1A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



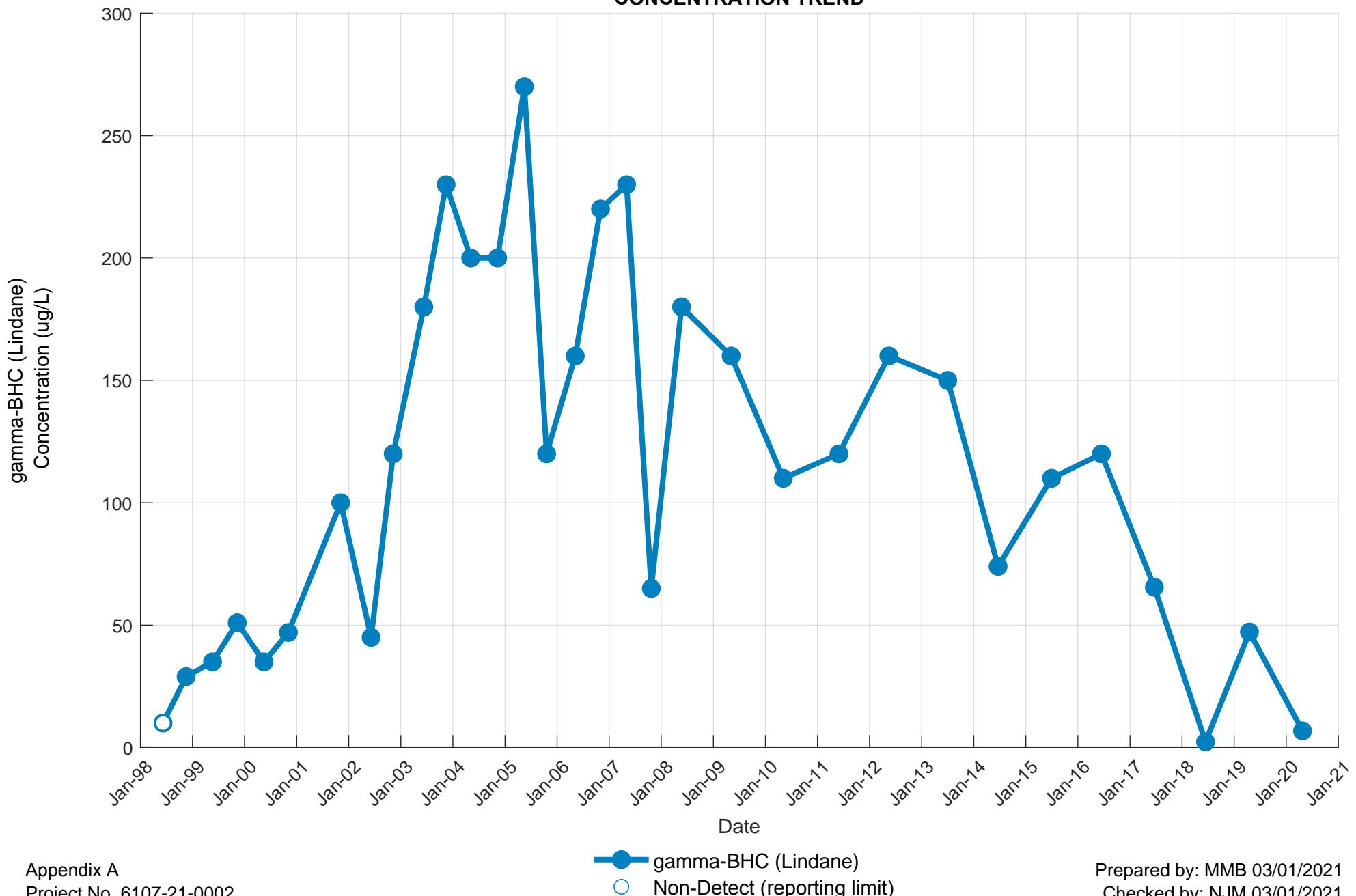
OBA-3A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



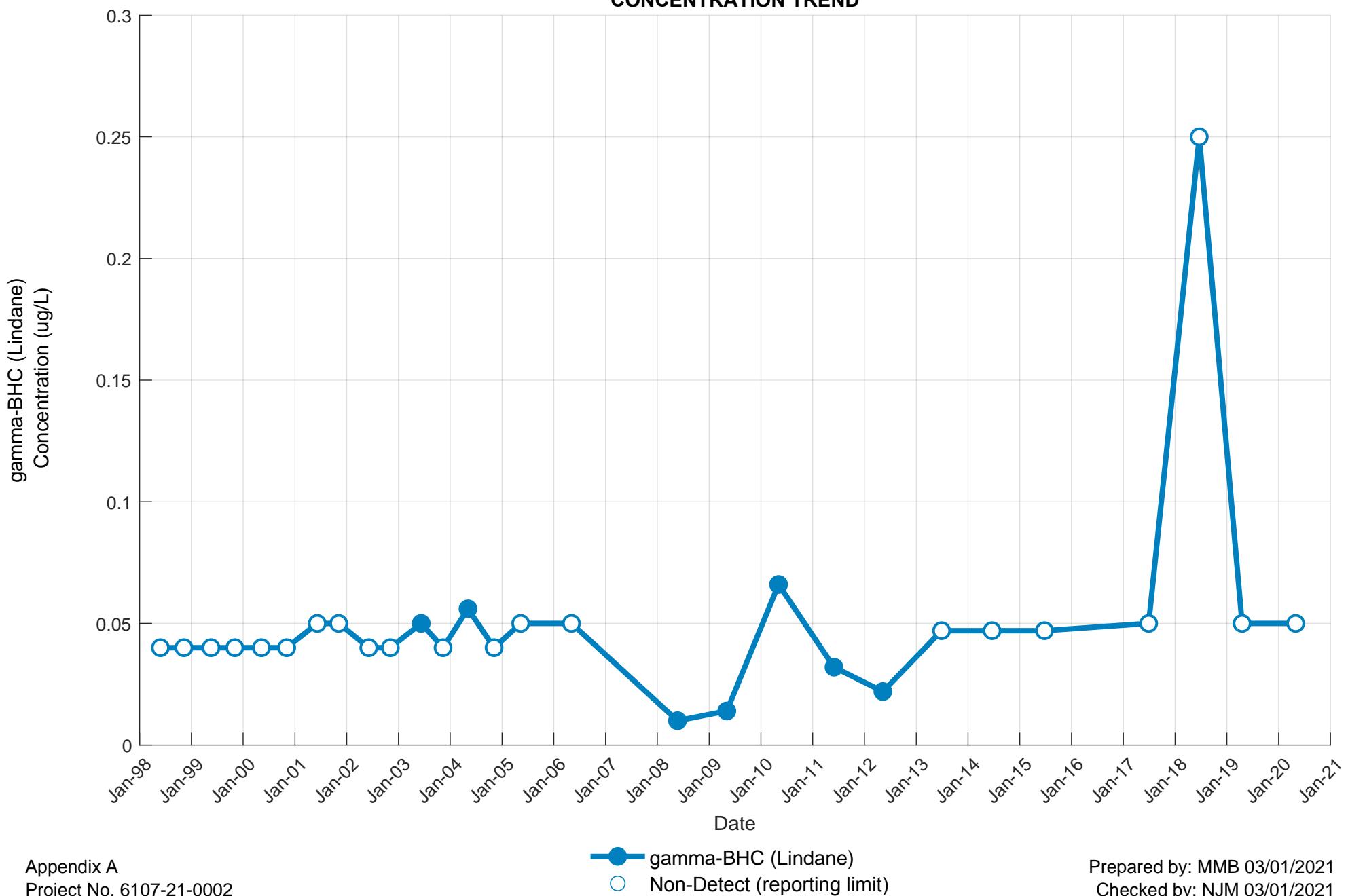
OBA-4A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



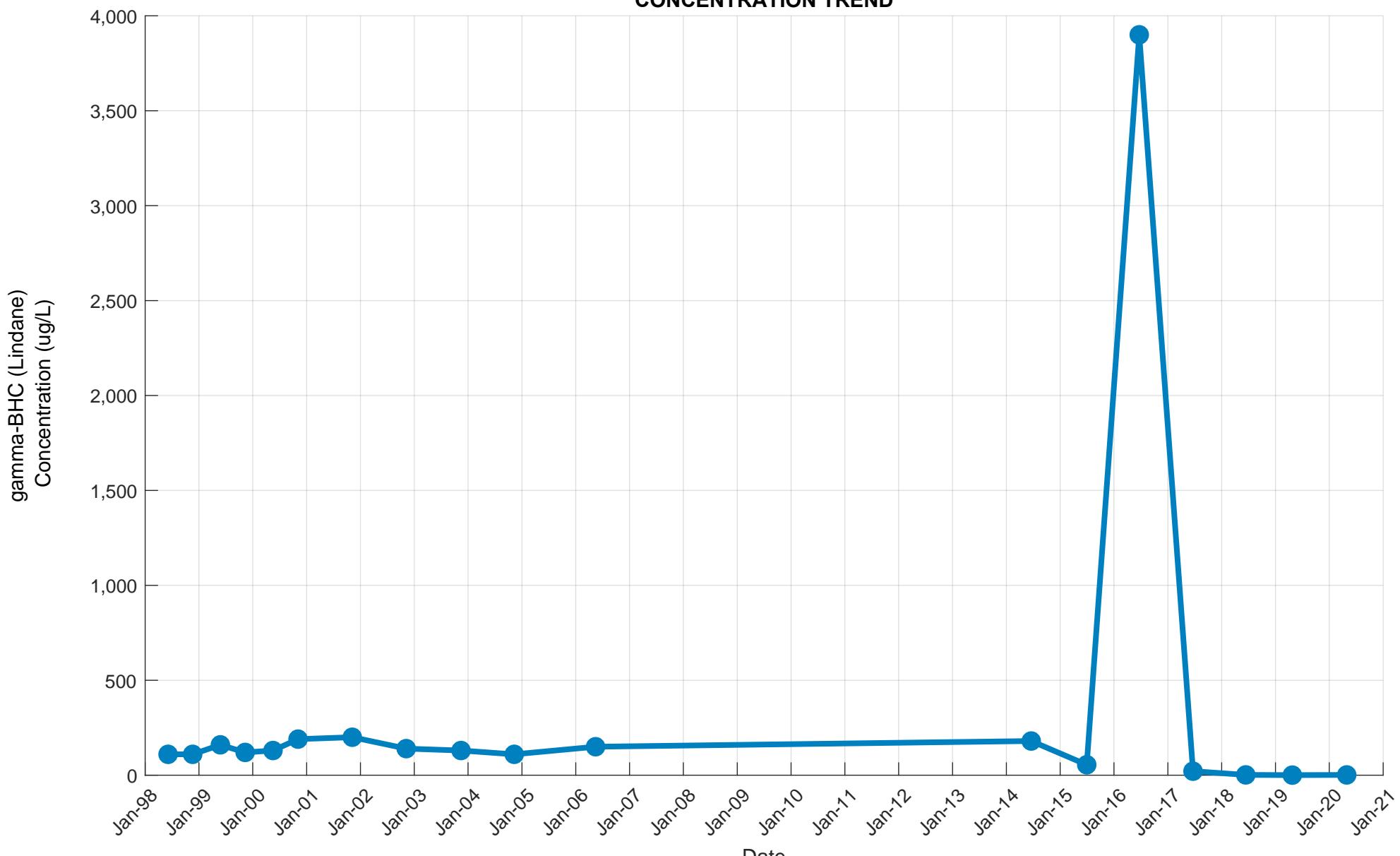
OBA-5A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



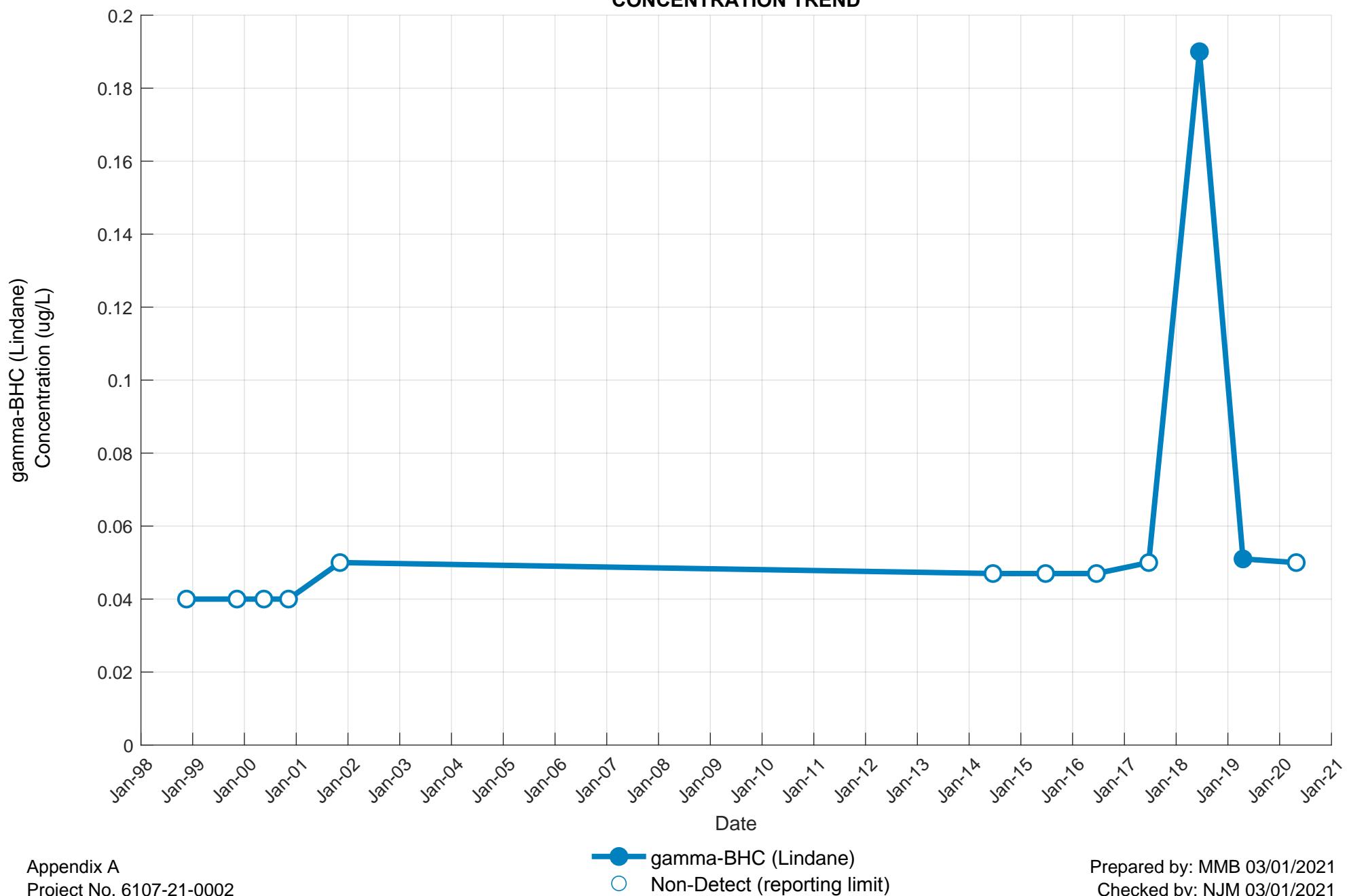
OBA-8A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



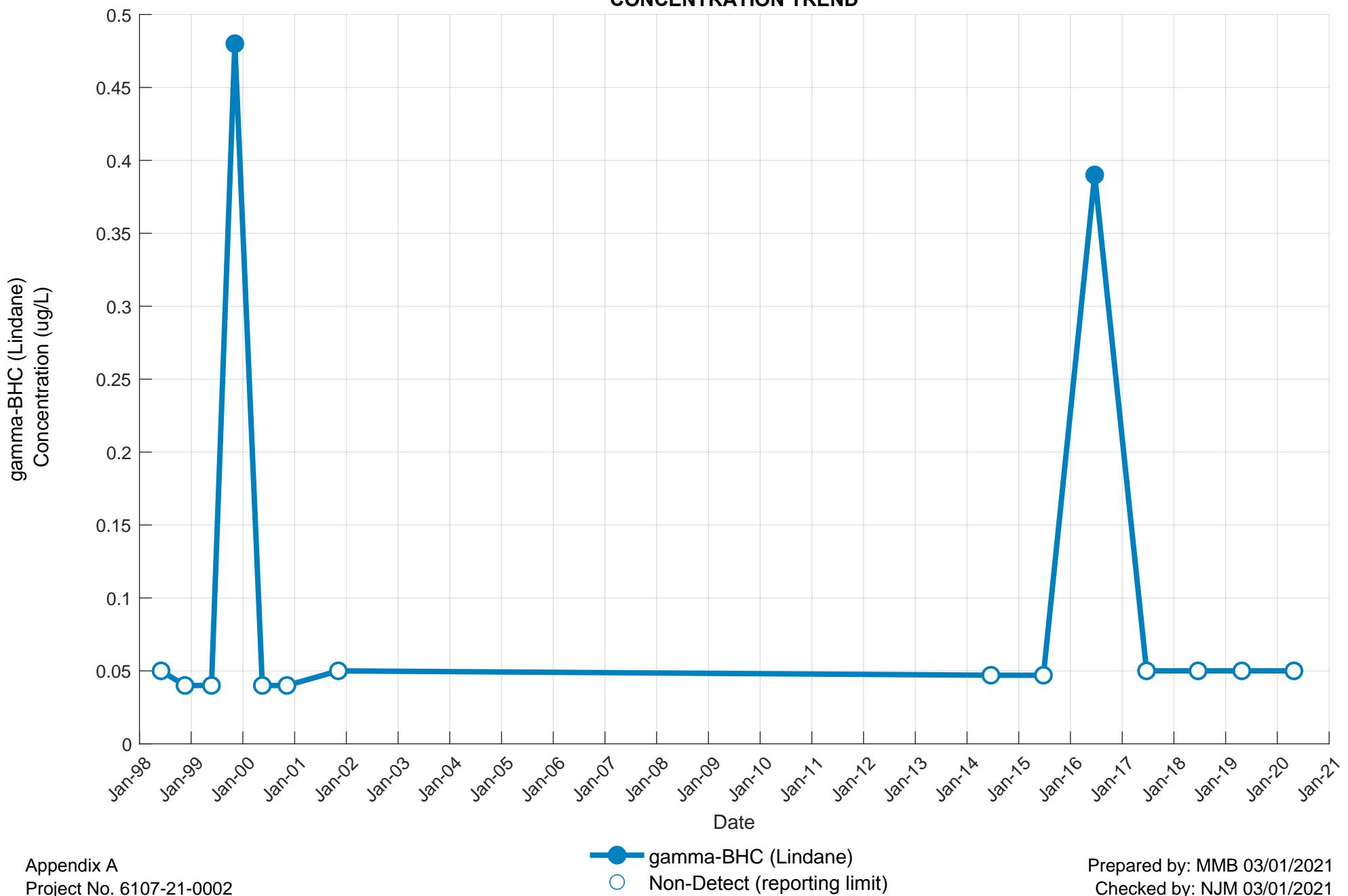
OBA-10A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



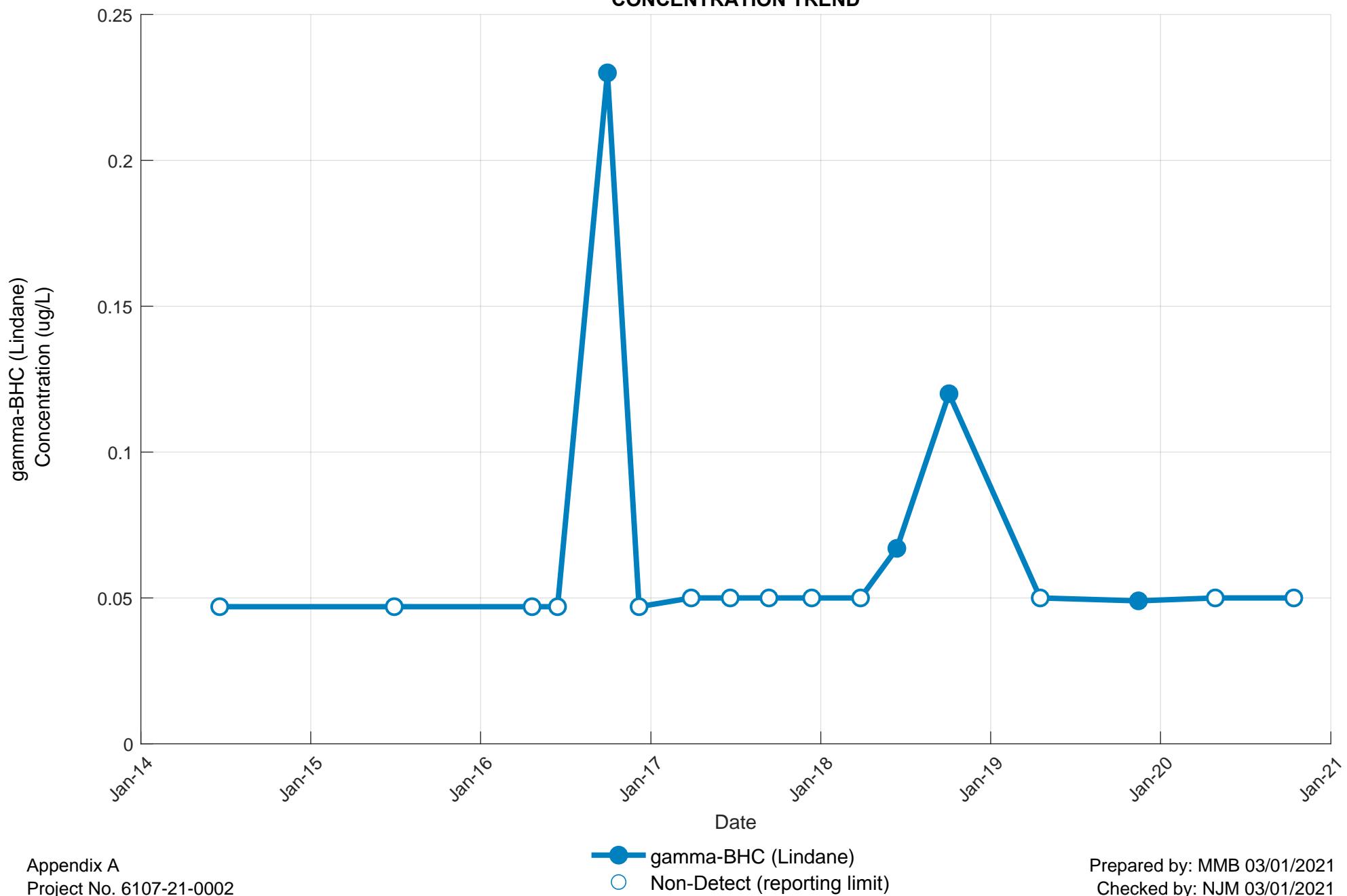
OBA-14A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



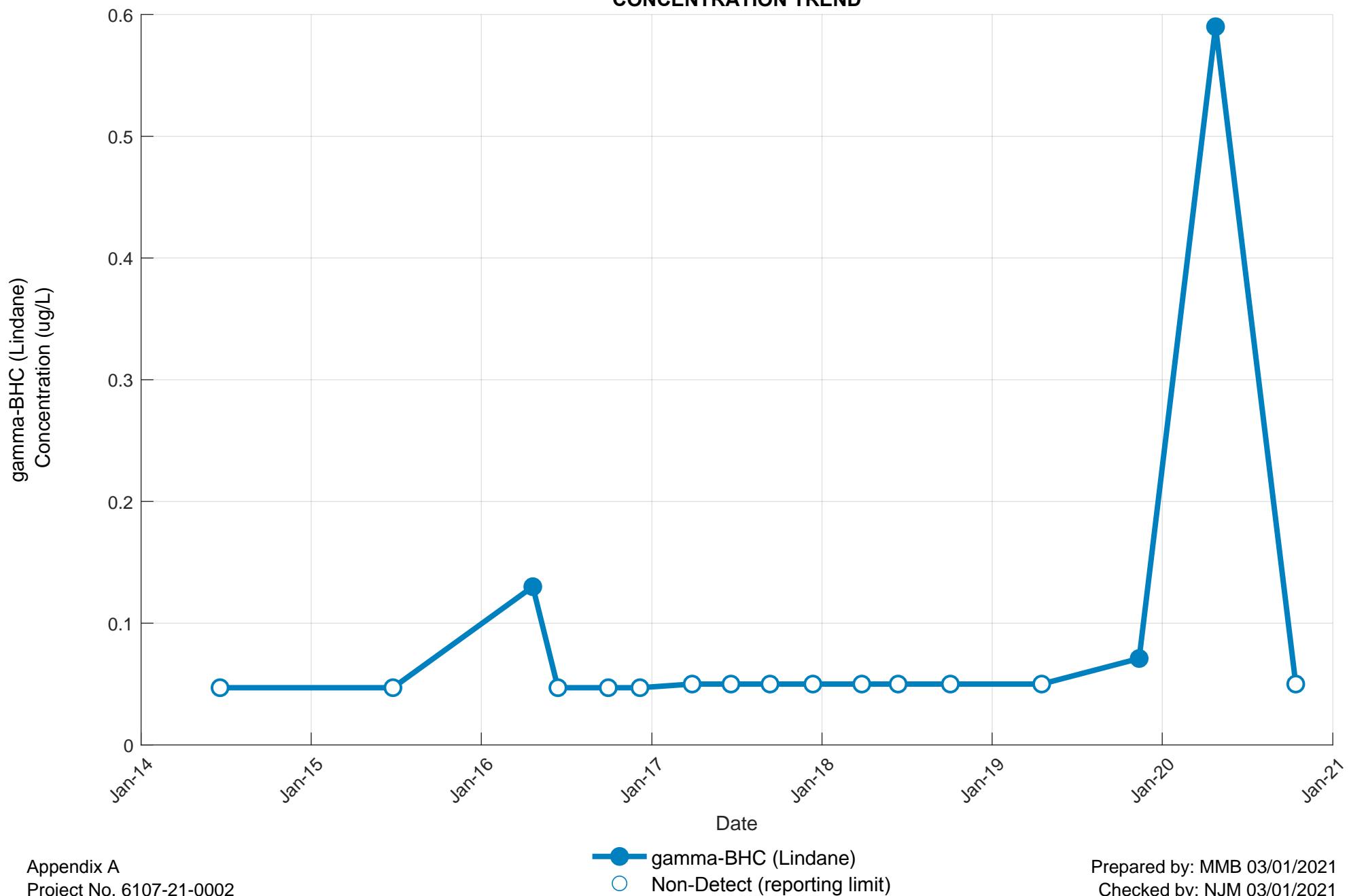
OBA-15A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



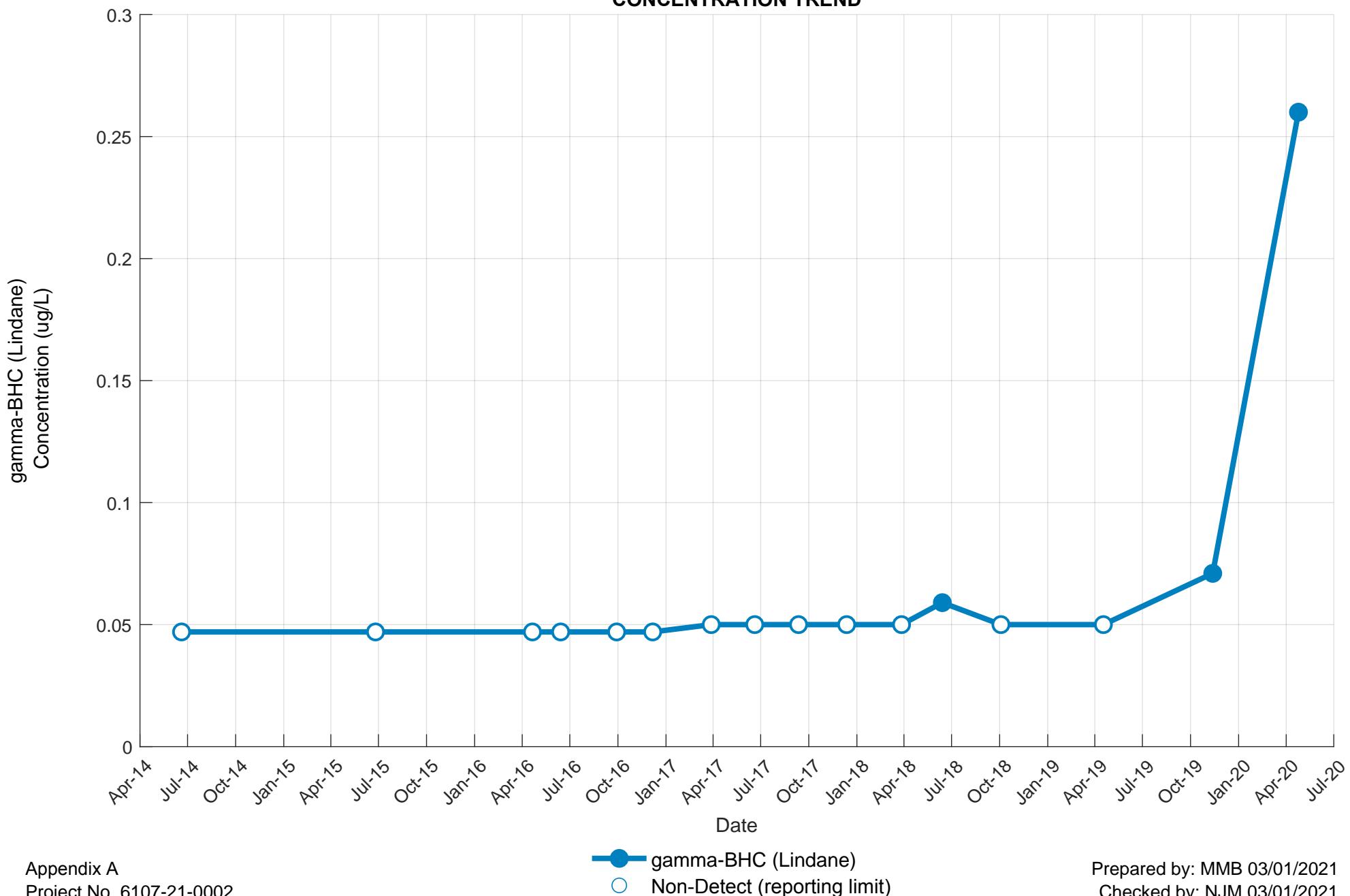
OBA-24A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



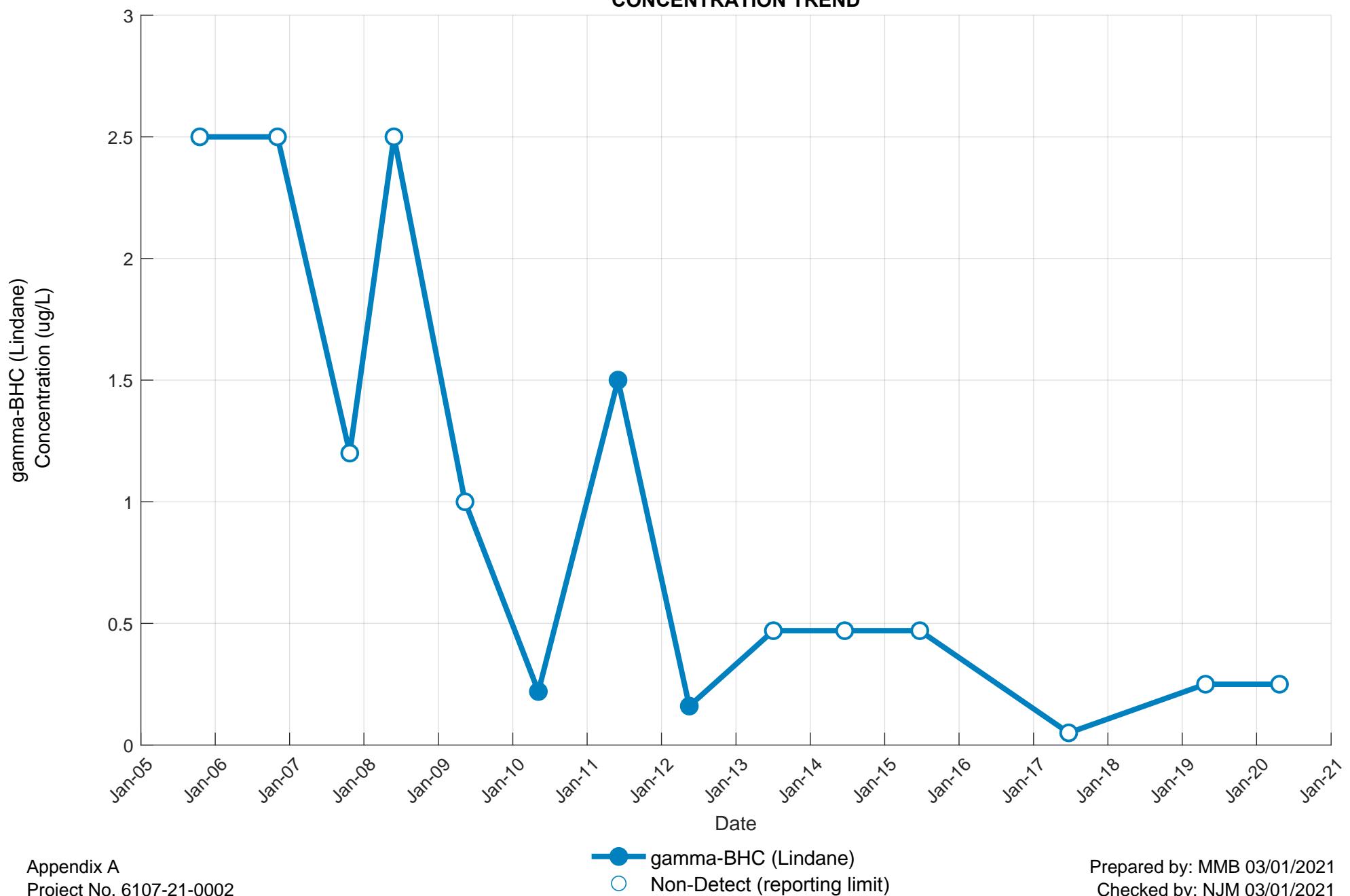
OBA-25A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



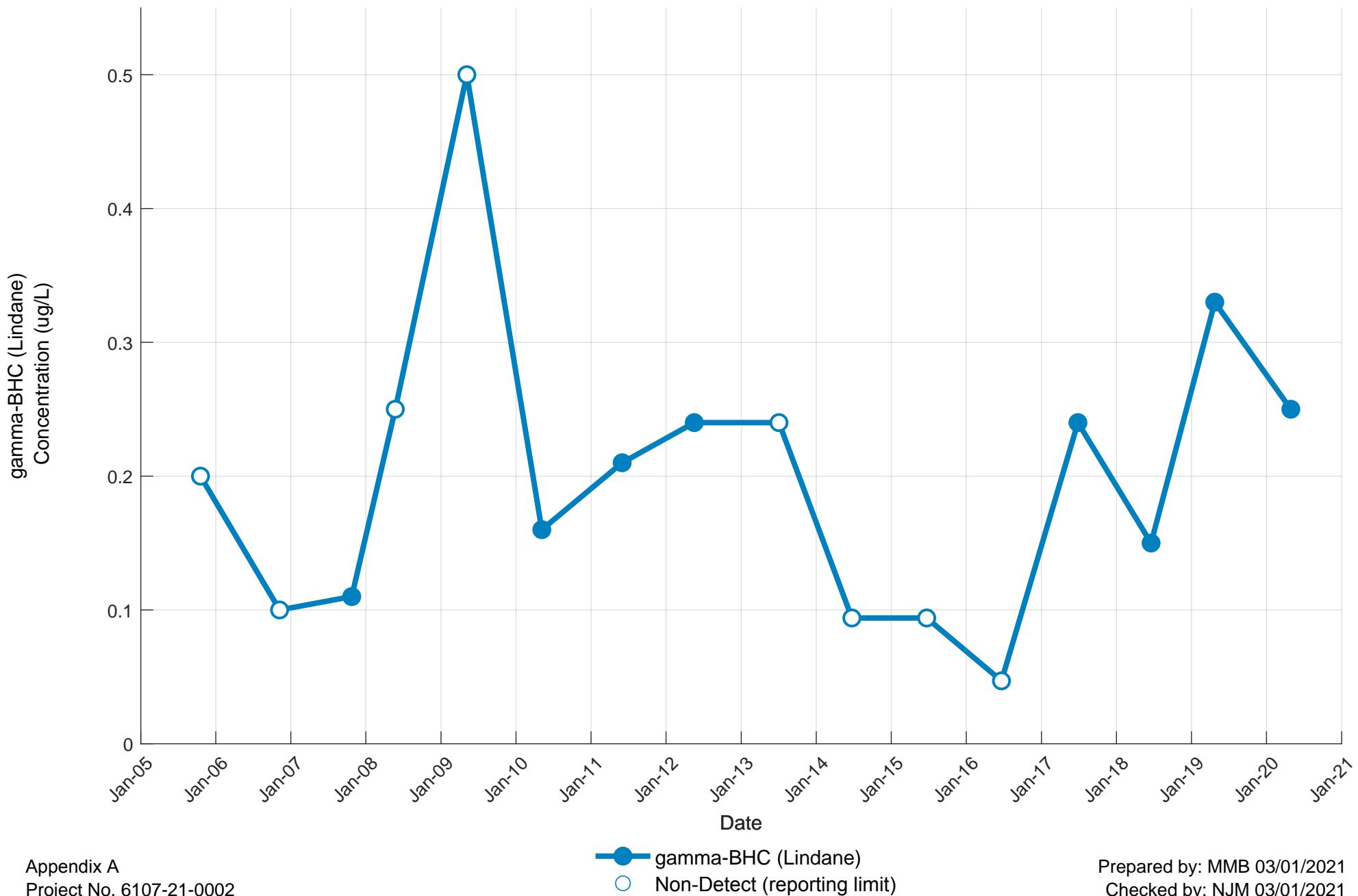
OBA-26A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



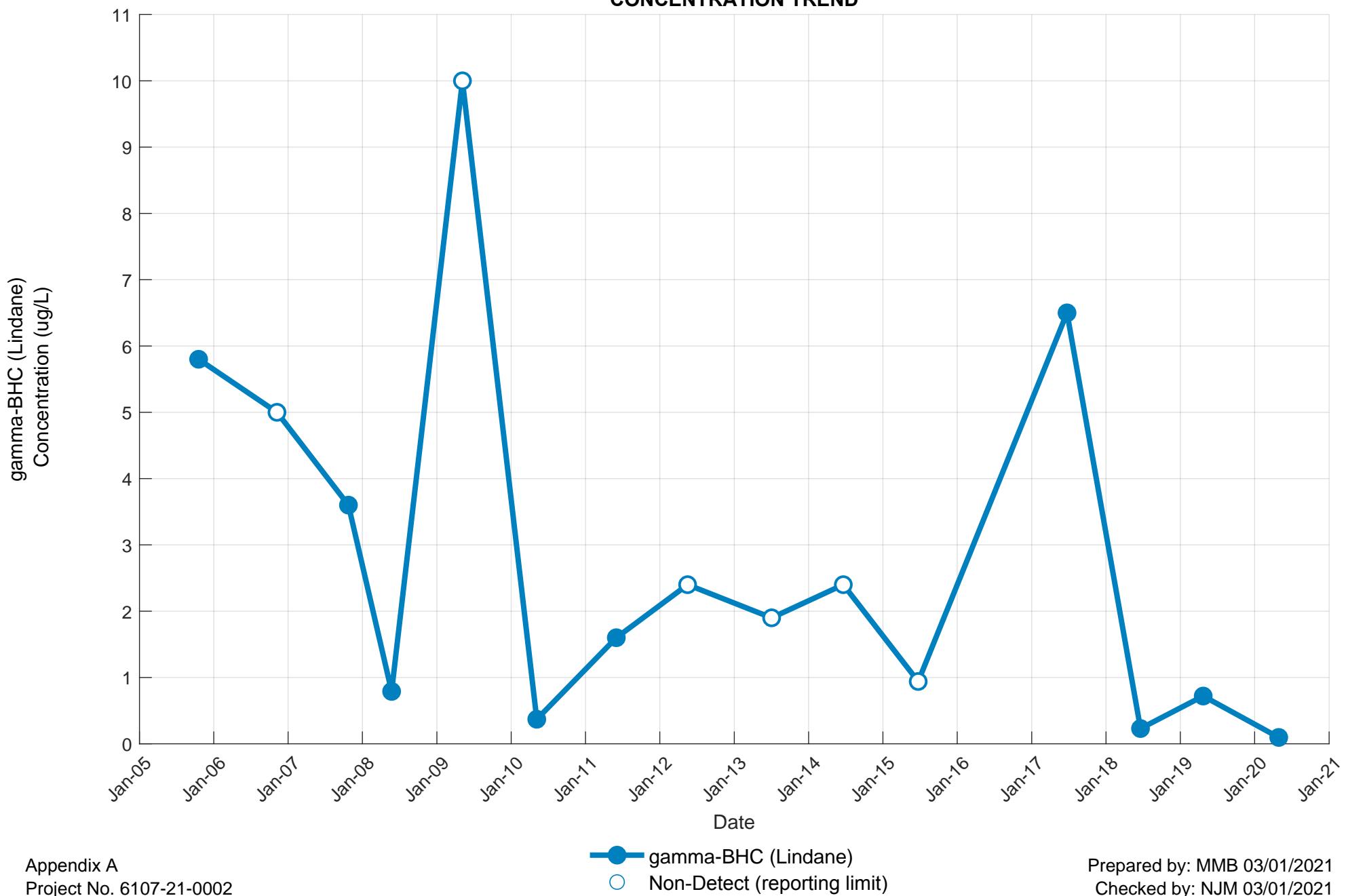
PN-3A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



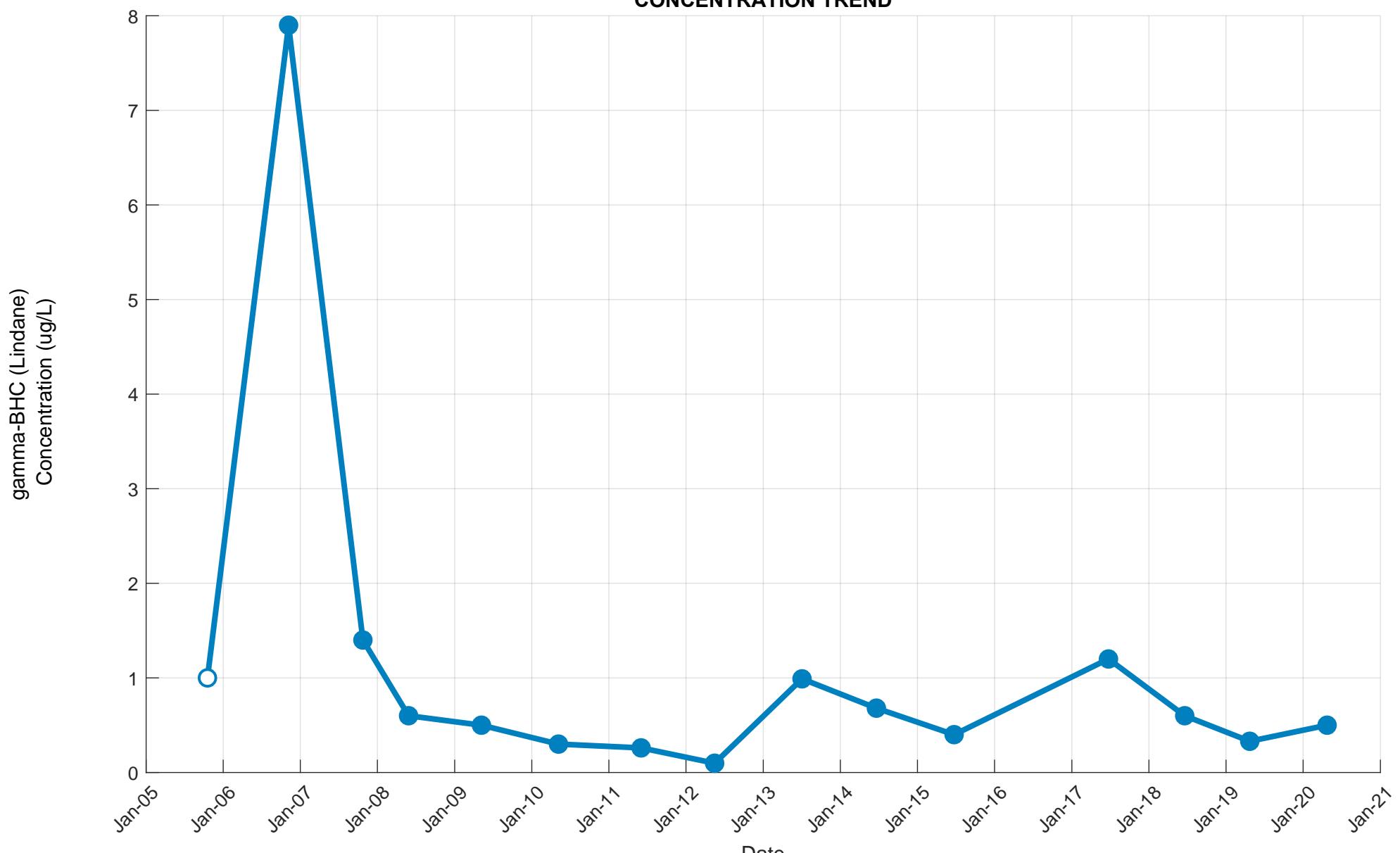
PN-5A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



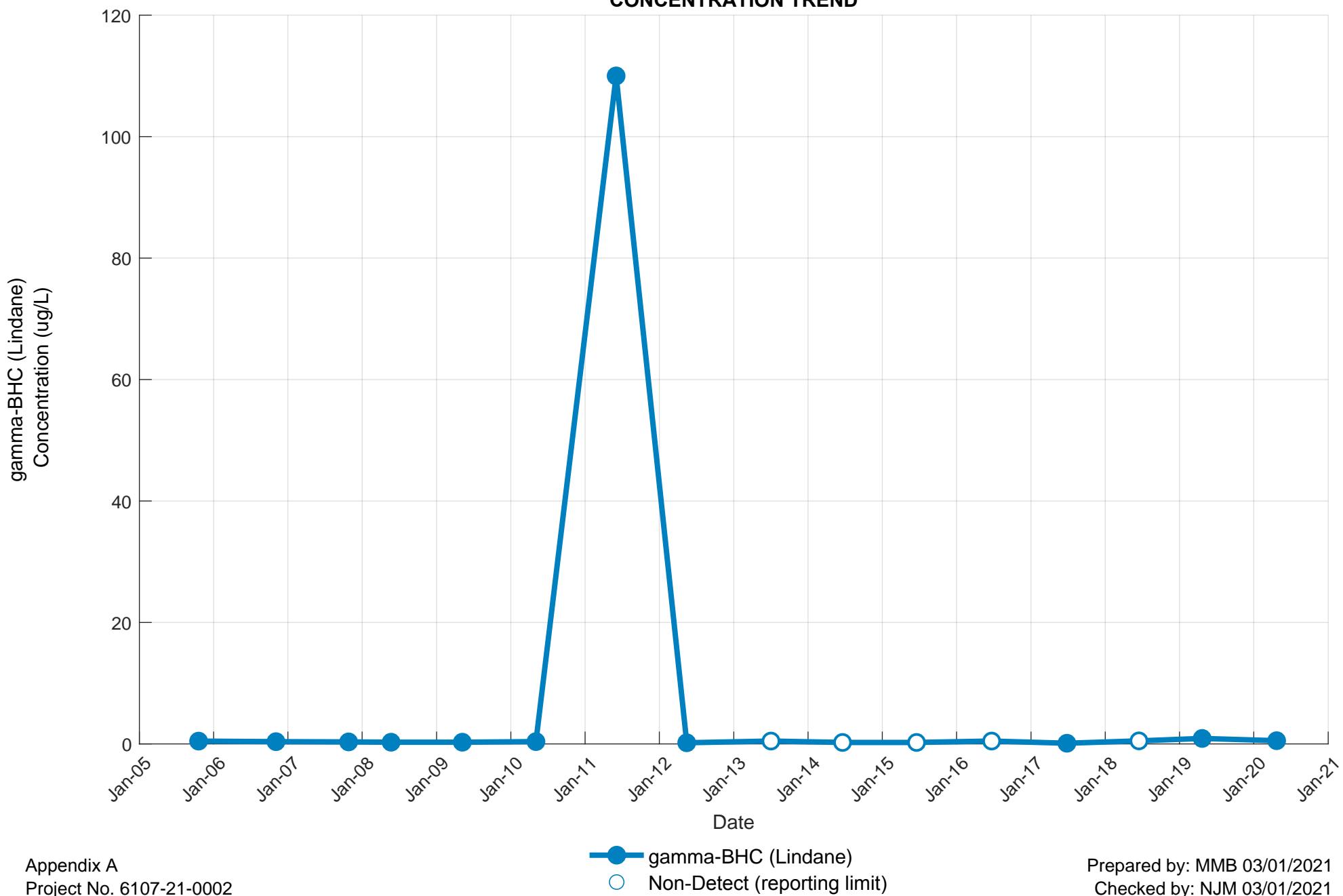
PN-7A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



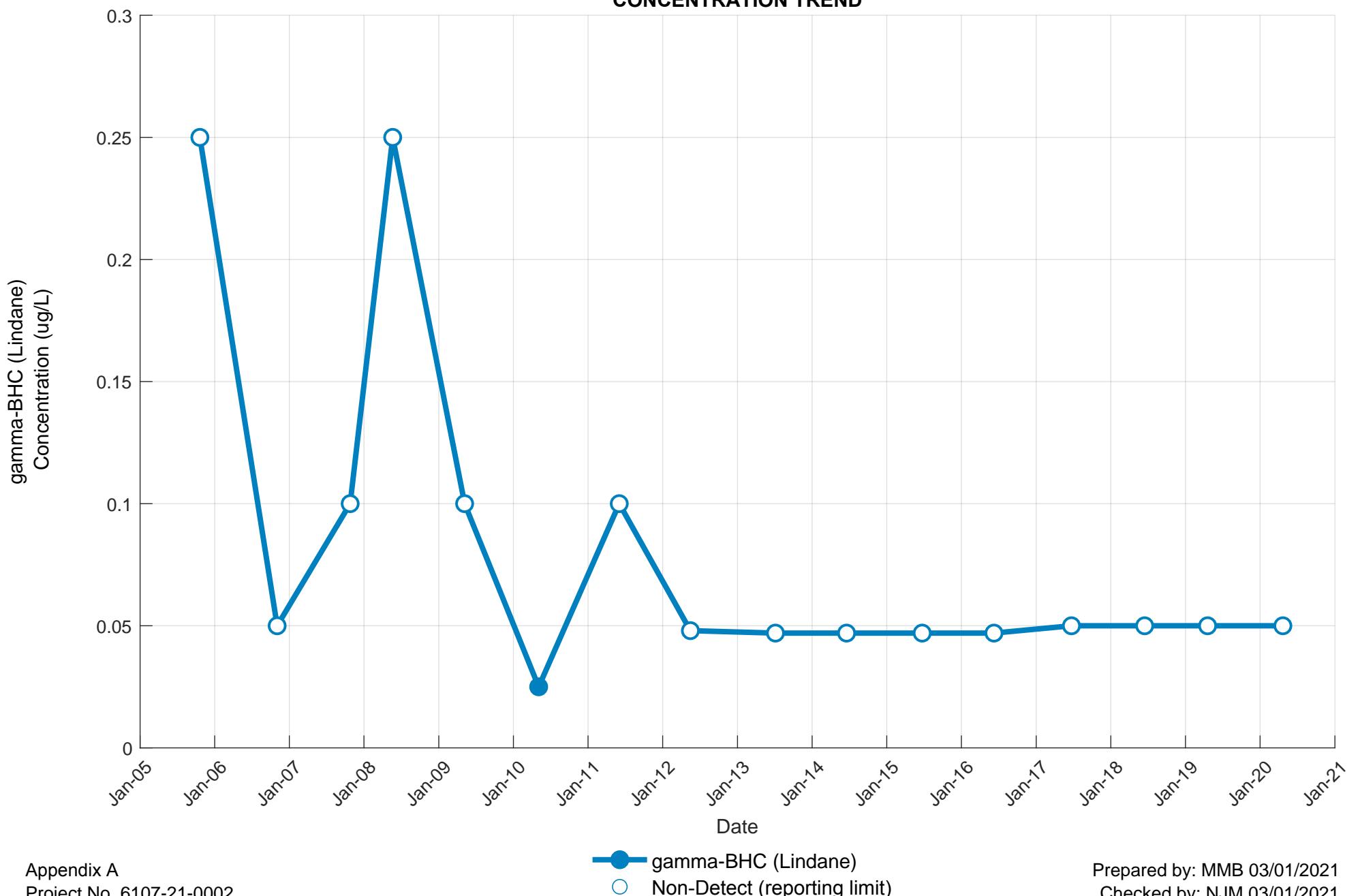
PN-11A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



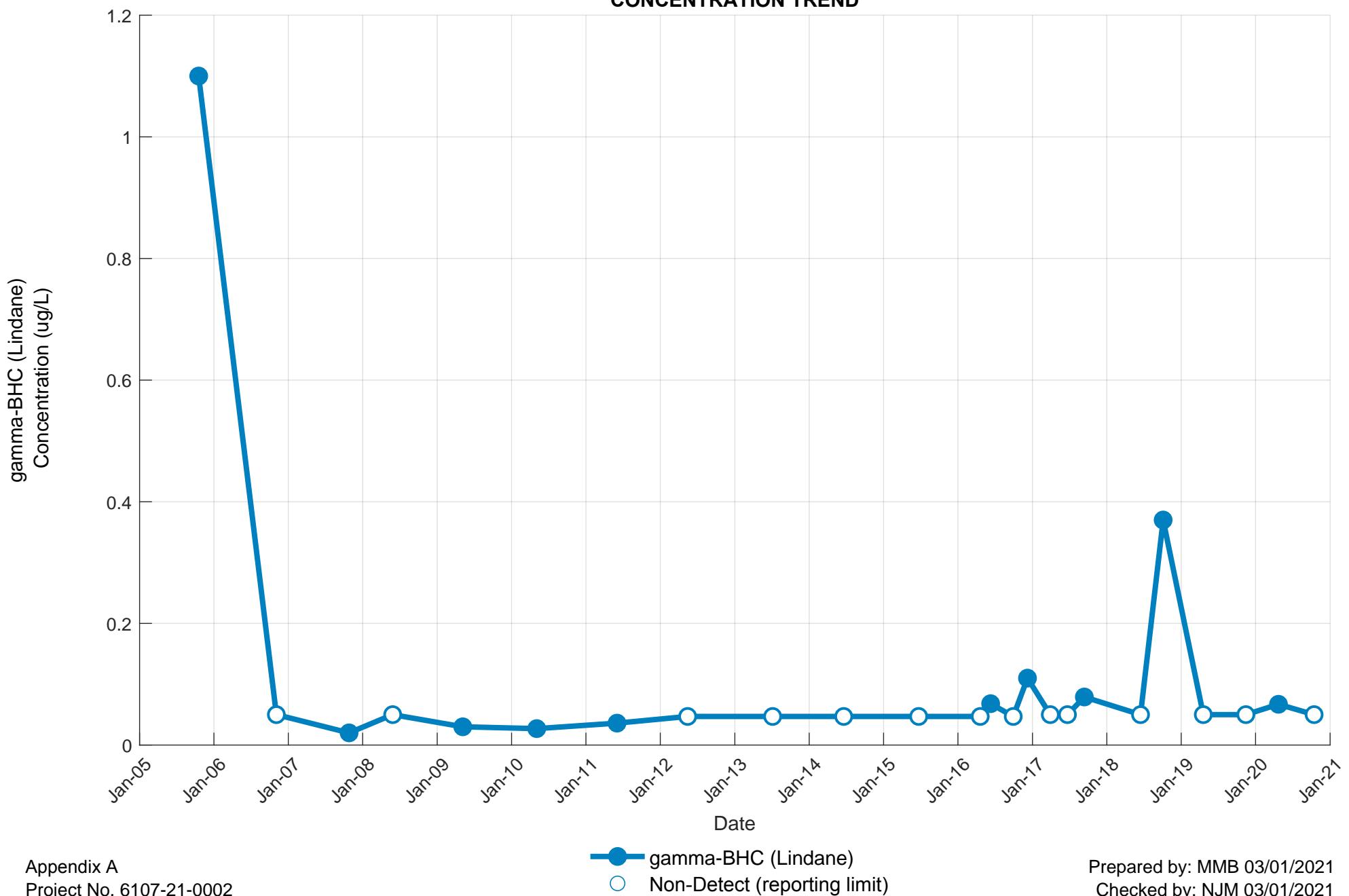
PN-14A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



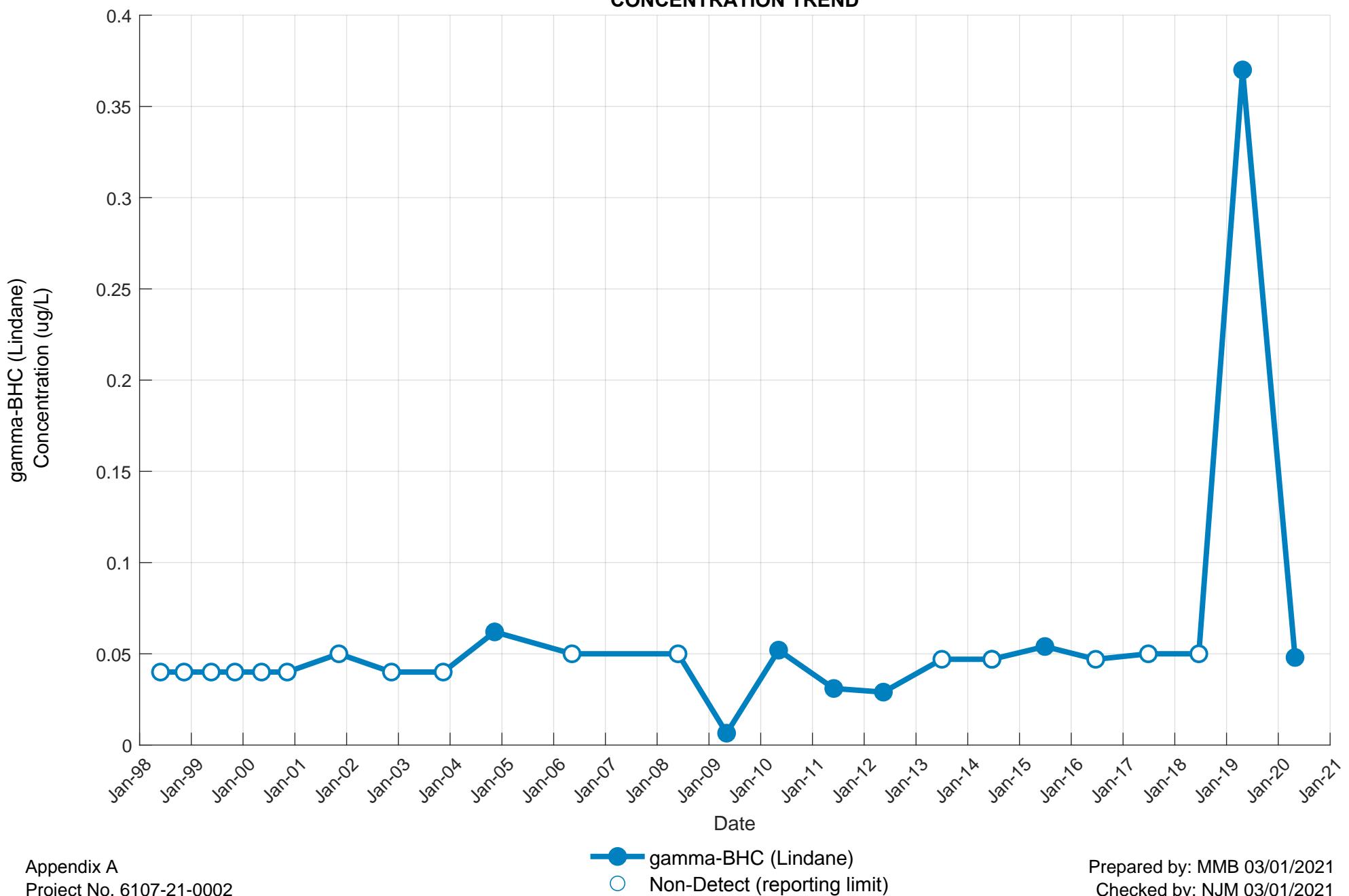
PN-17A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



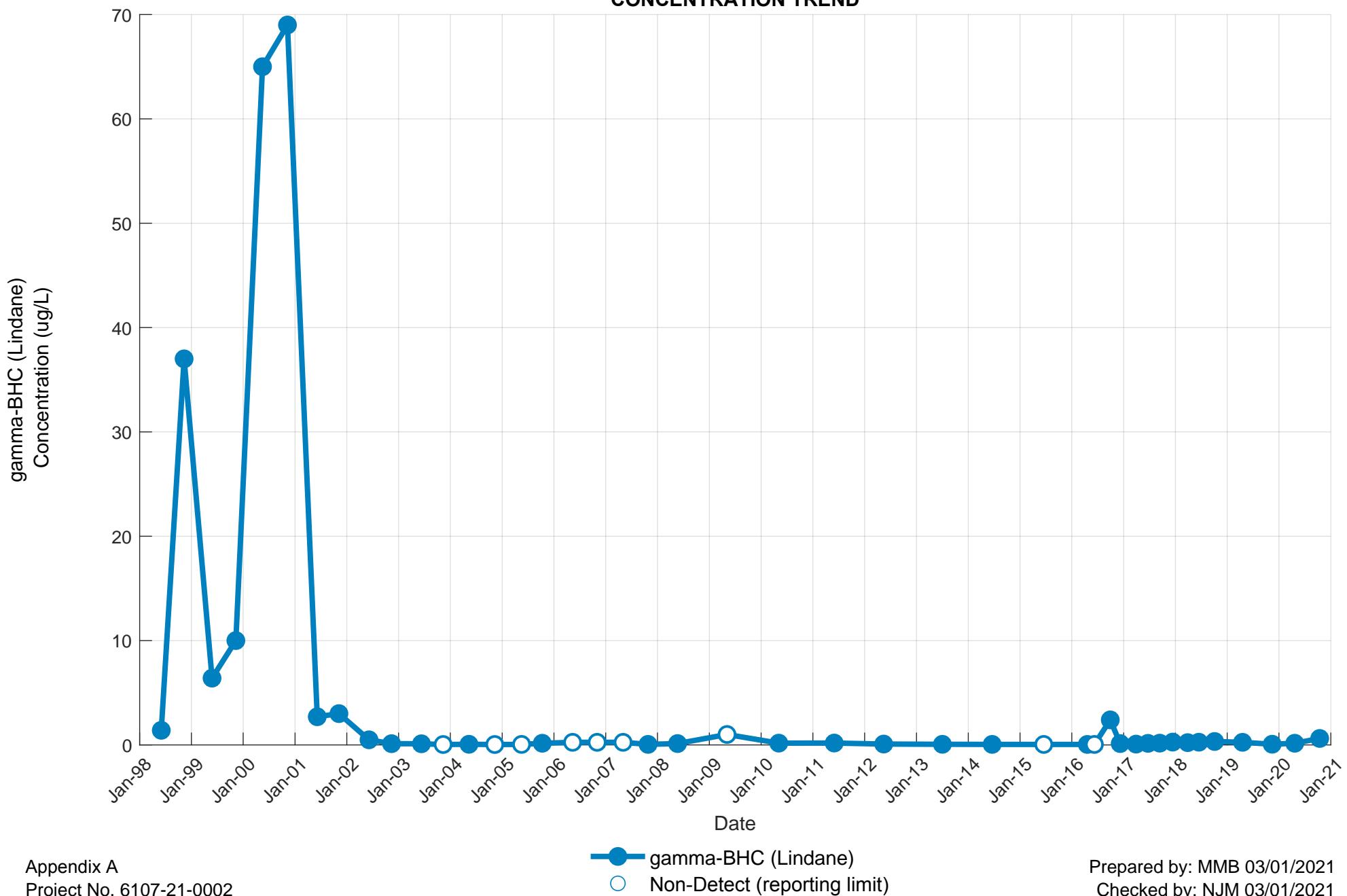
PN-20A
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



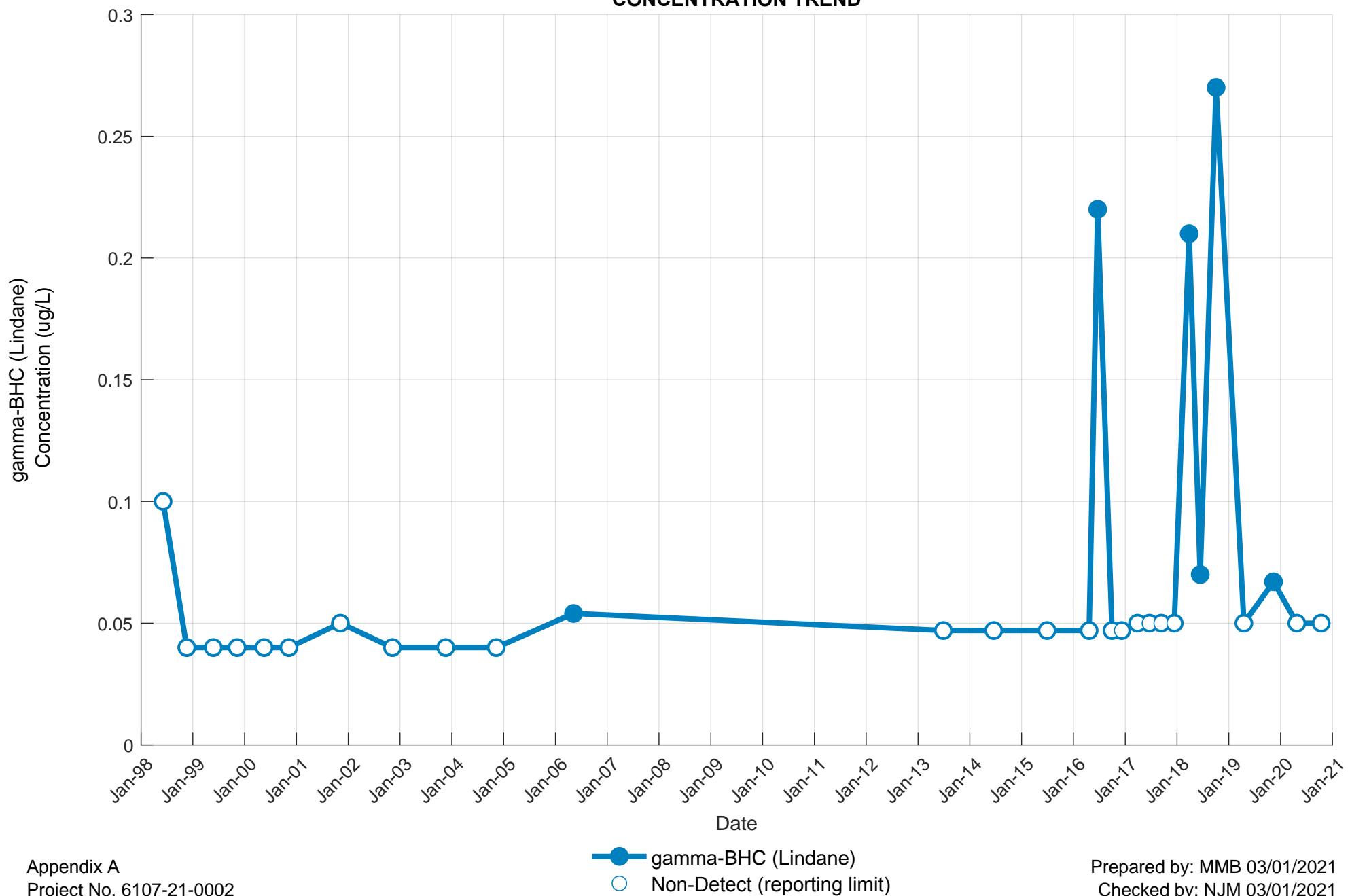
OBA-1B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



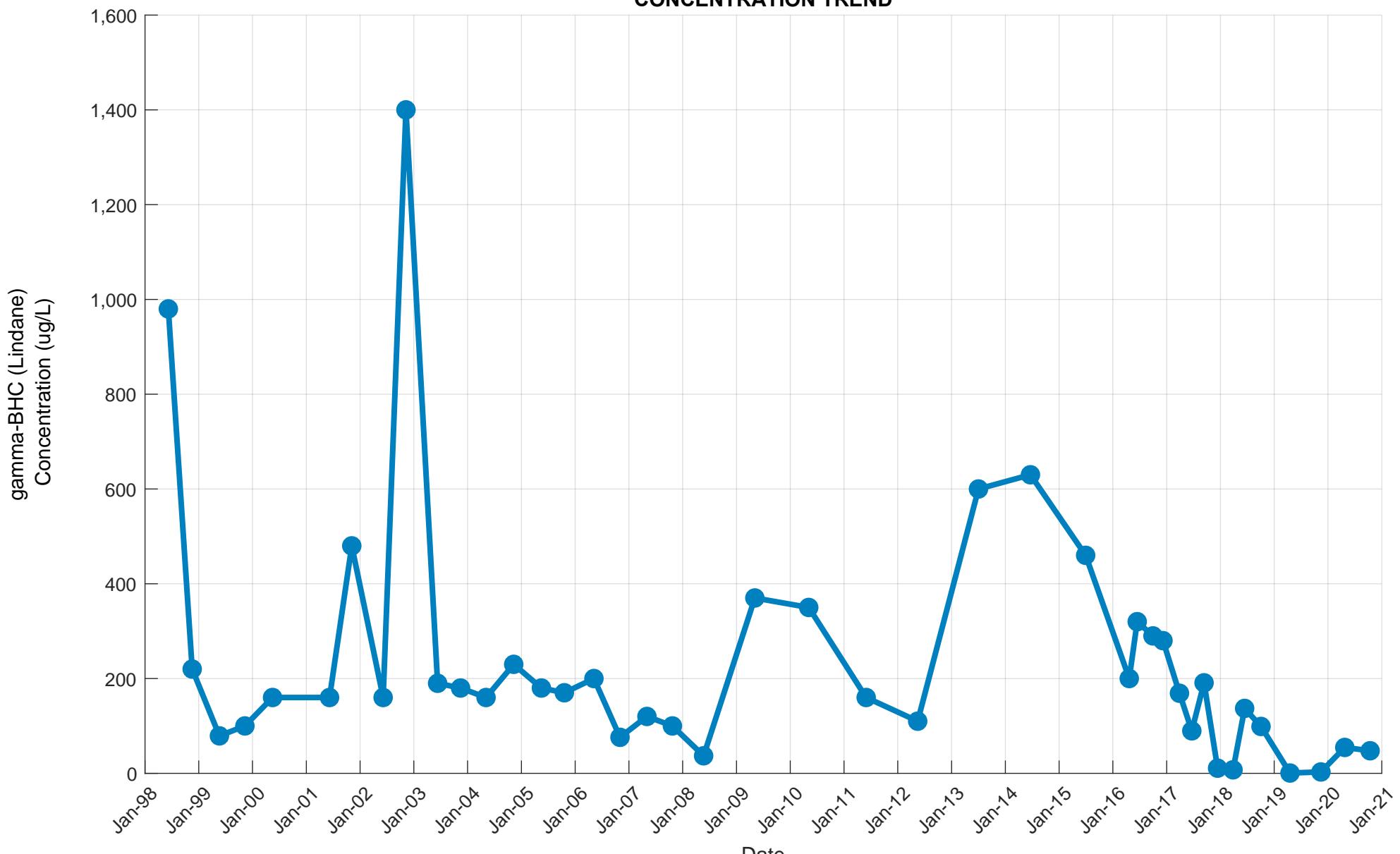
OBA-2B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



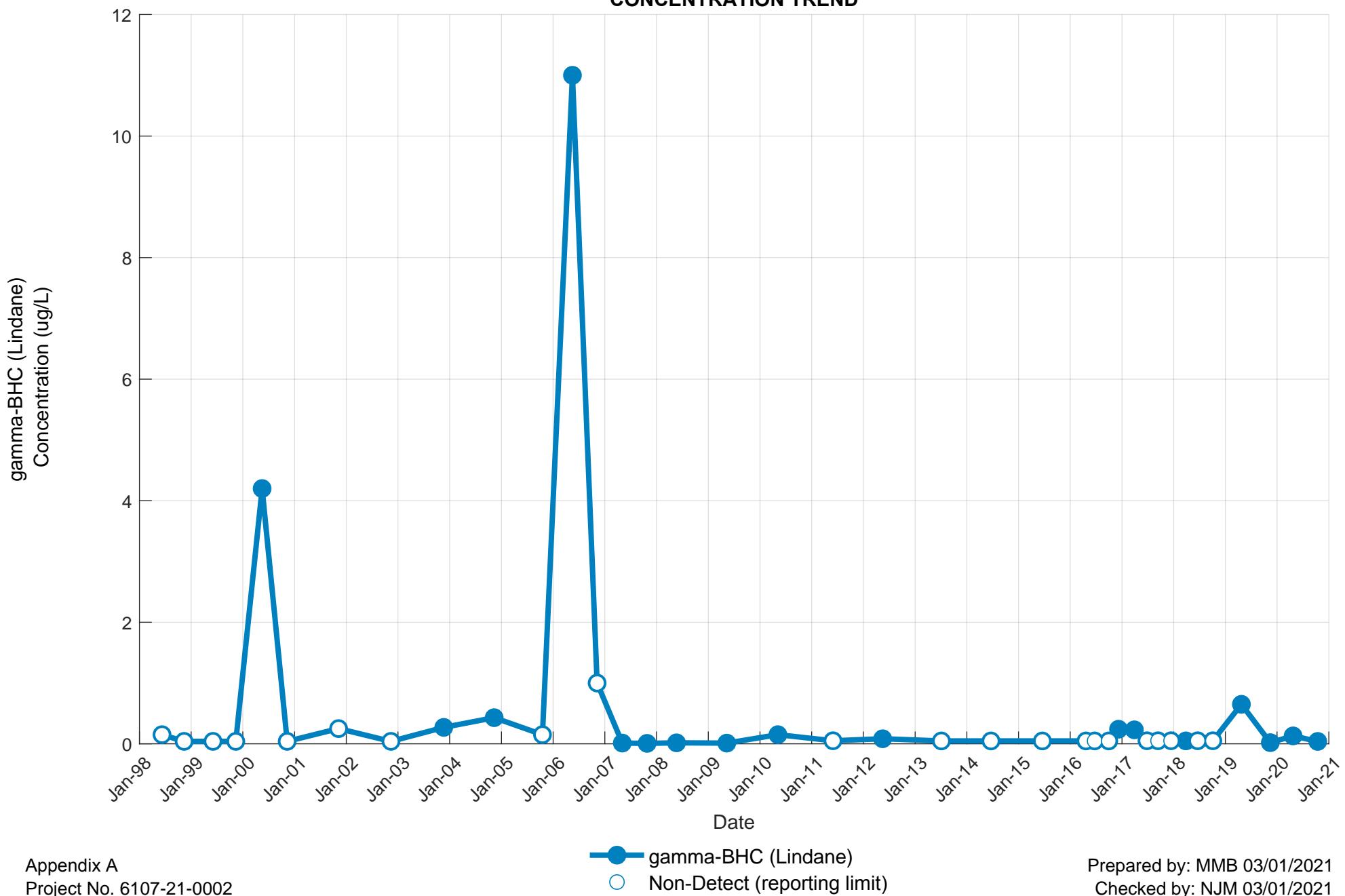
OBA-4B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



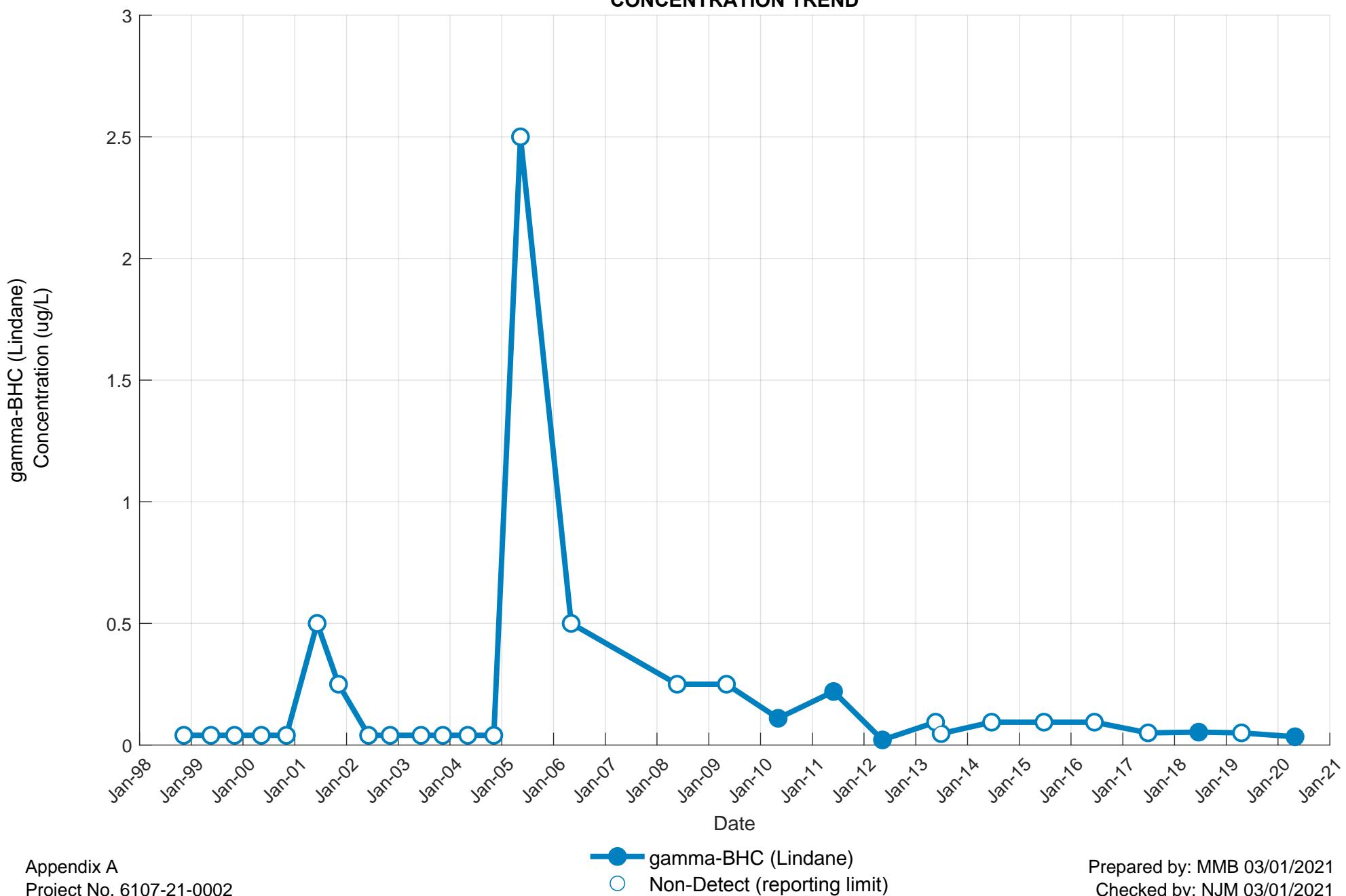
OBA-5B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



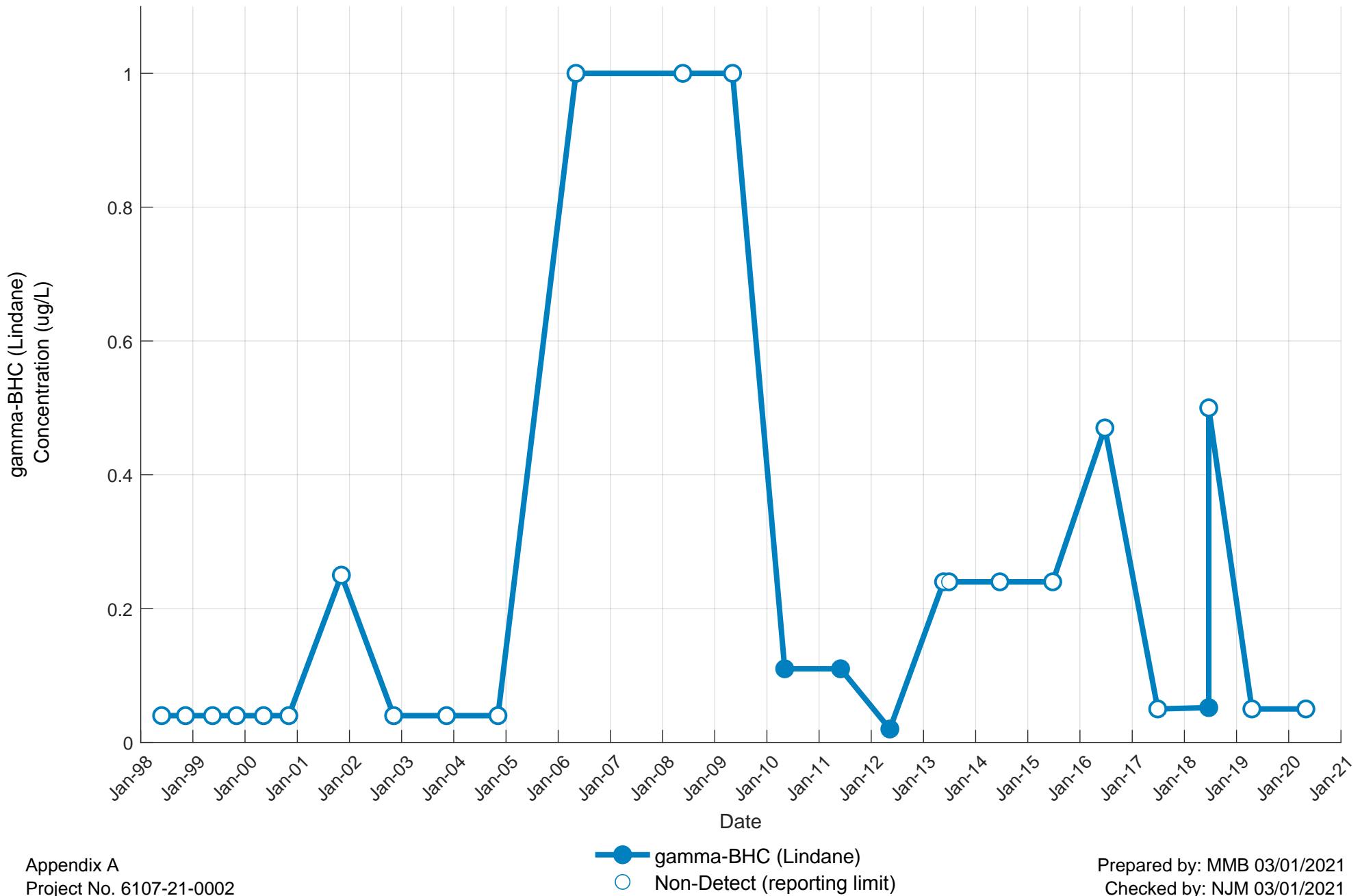
OBA-6B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



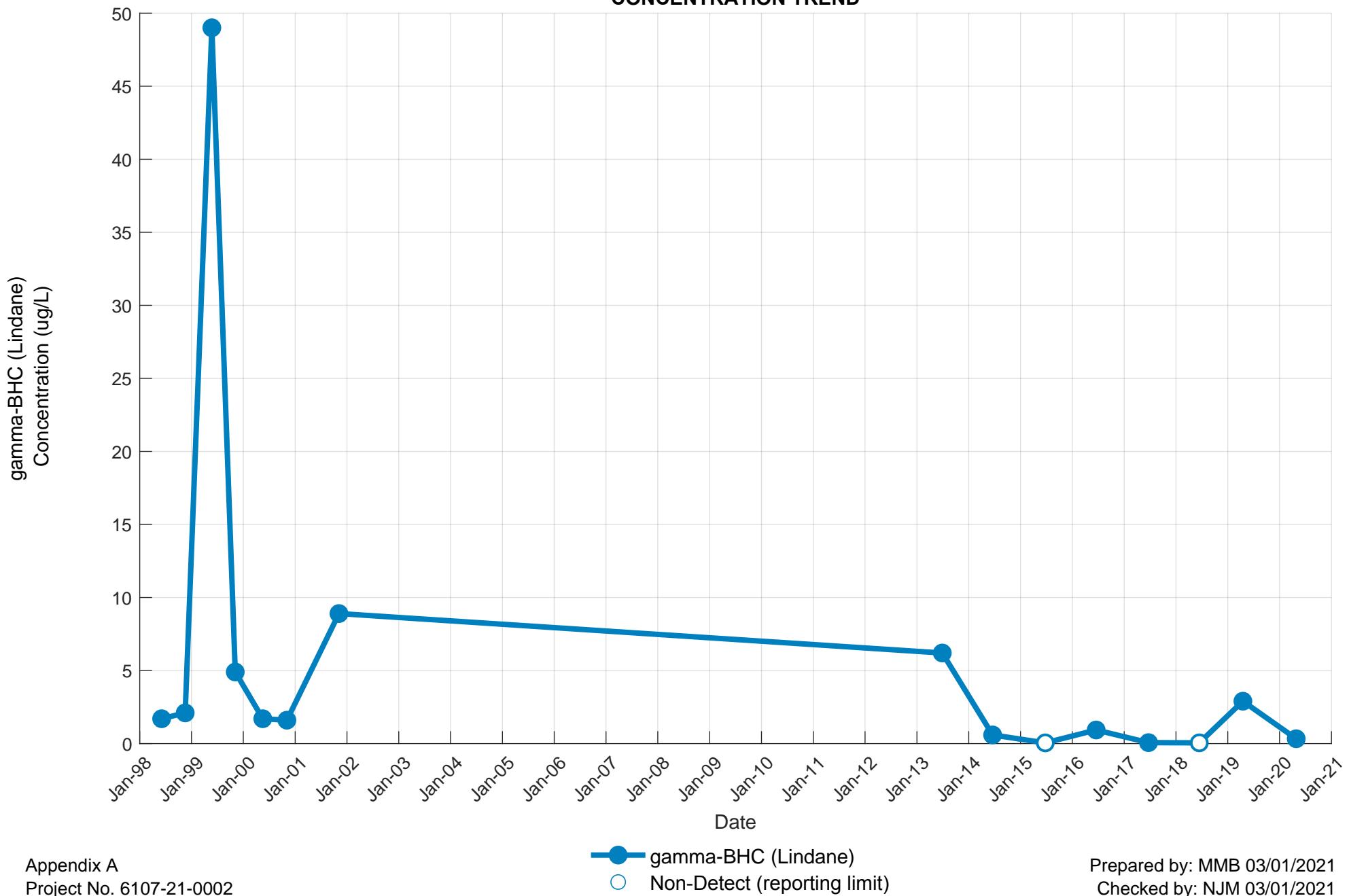
OBA-8B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



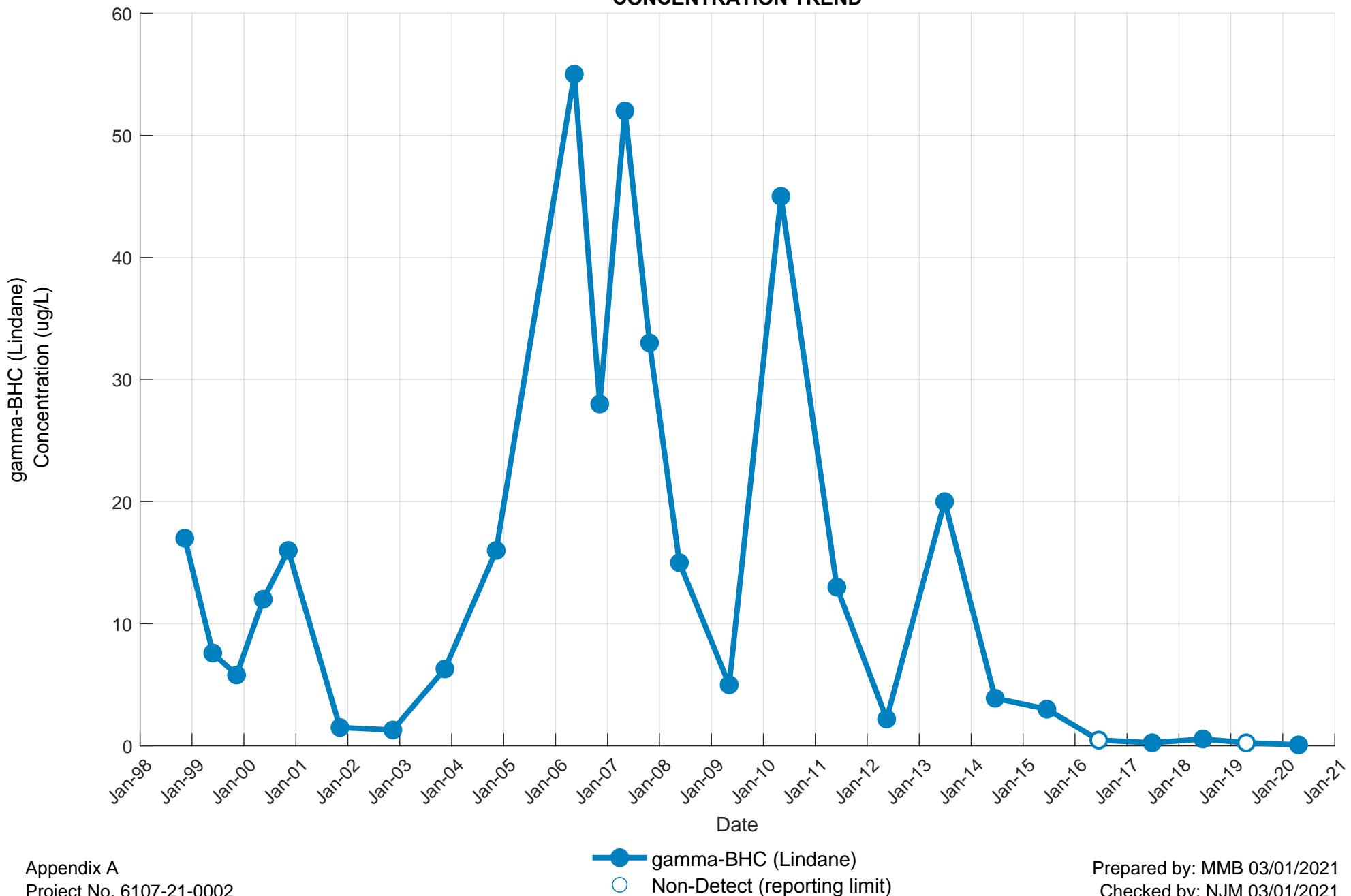
OBA-11B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



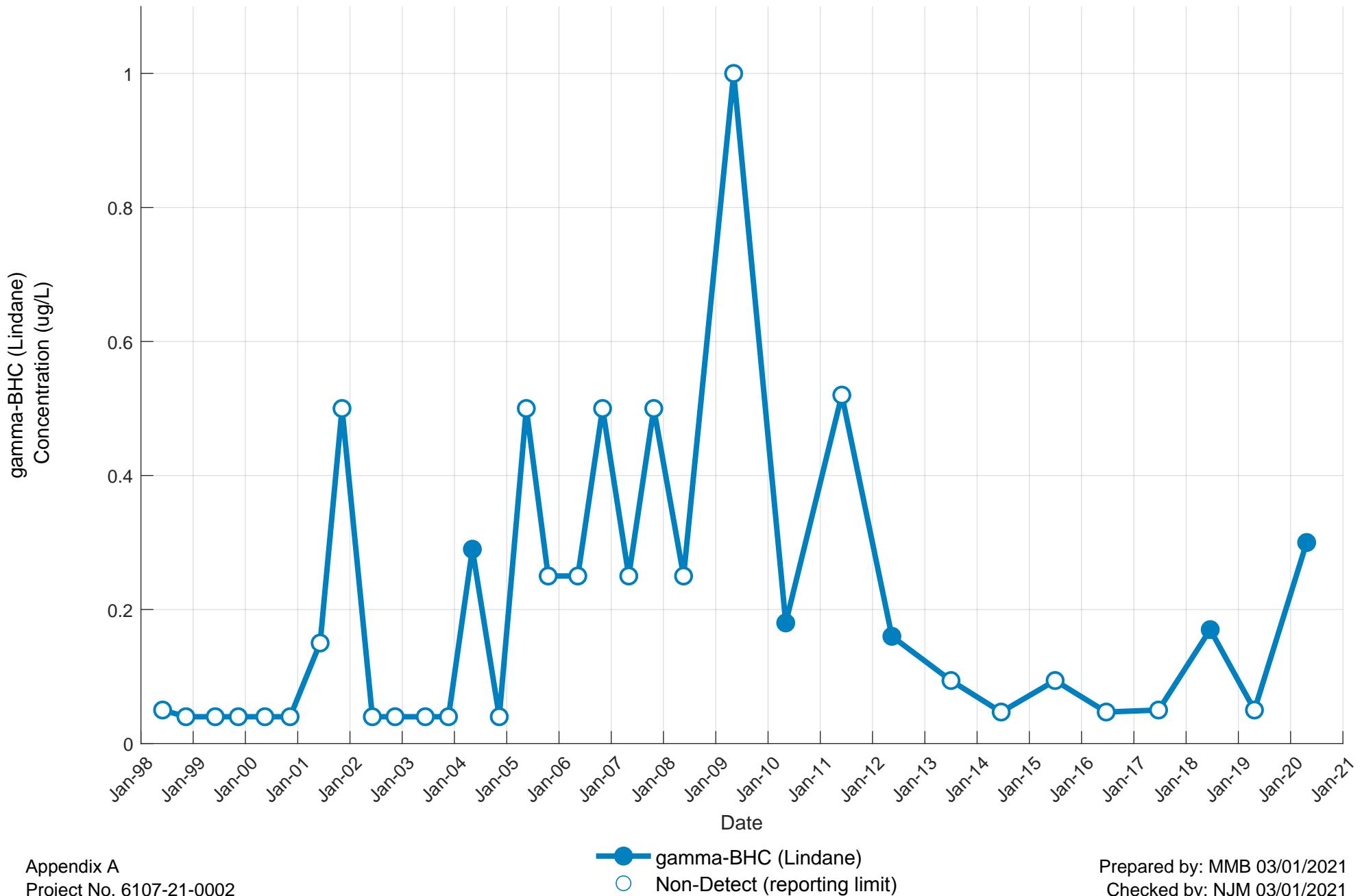
OBA-14B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



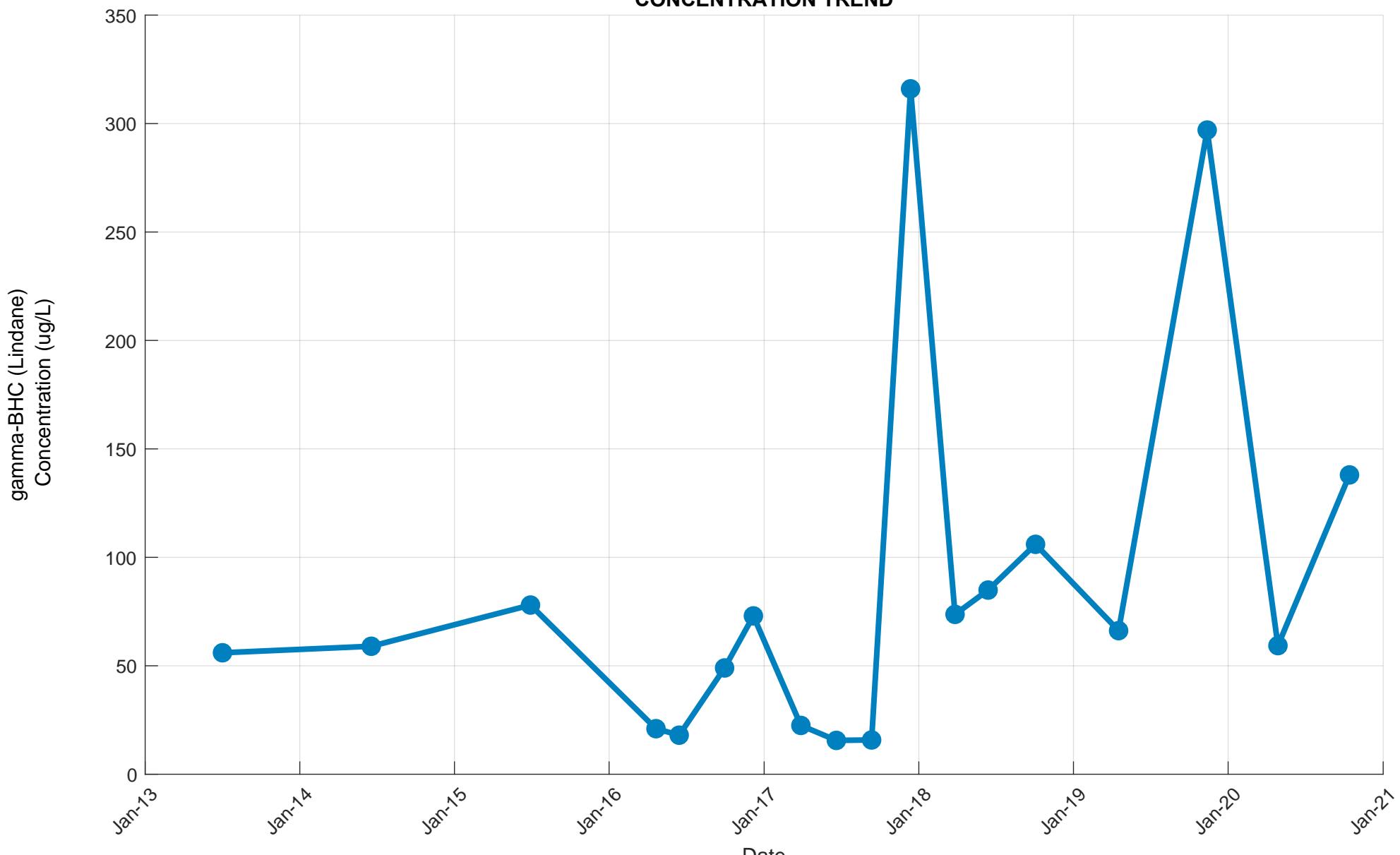
OBA-16B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



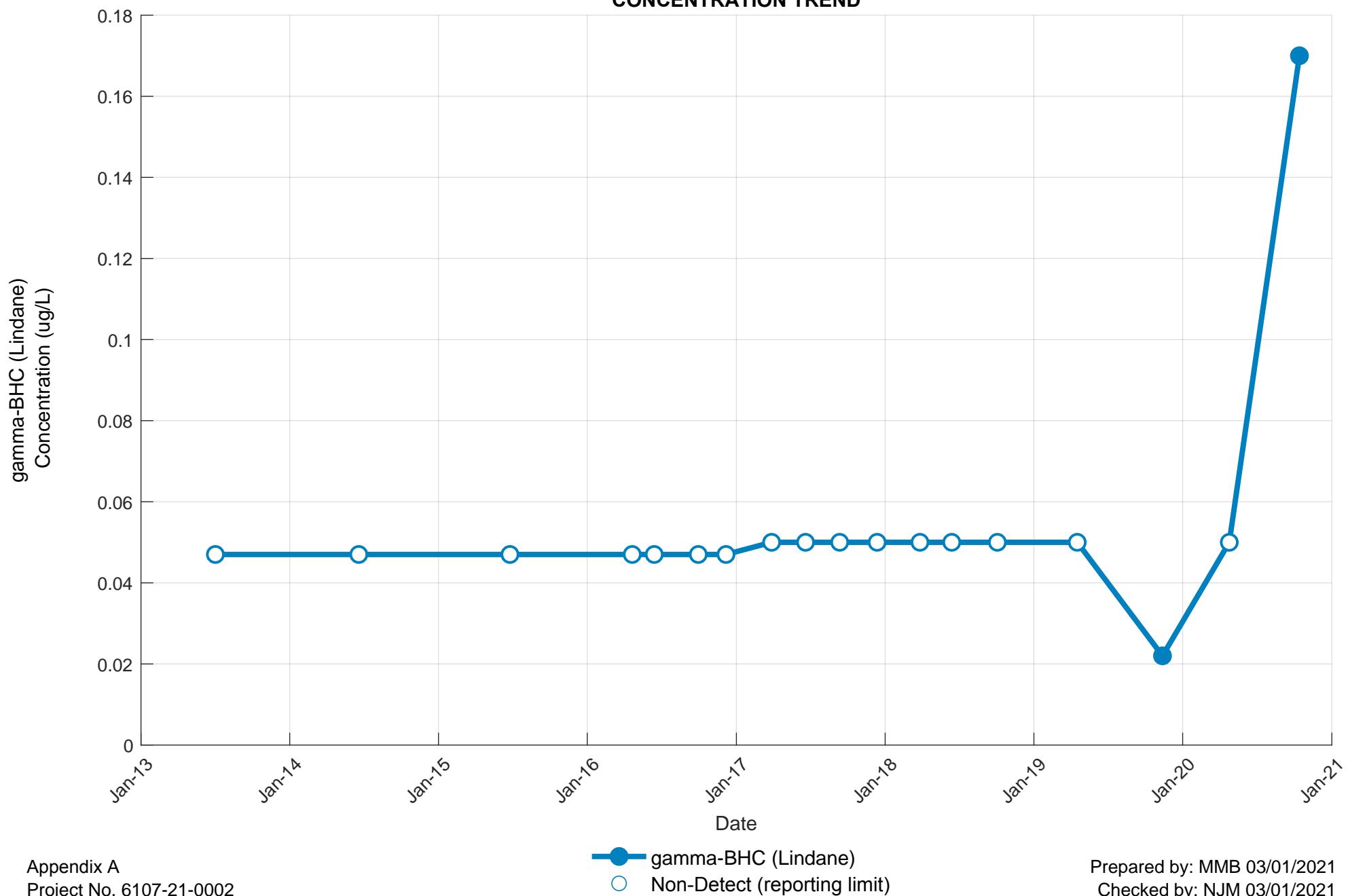
OBA-23B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



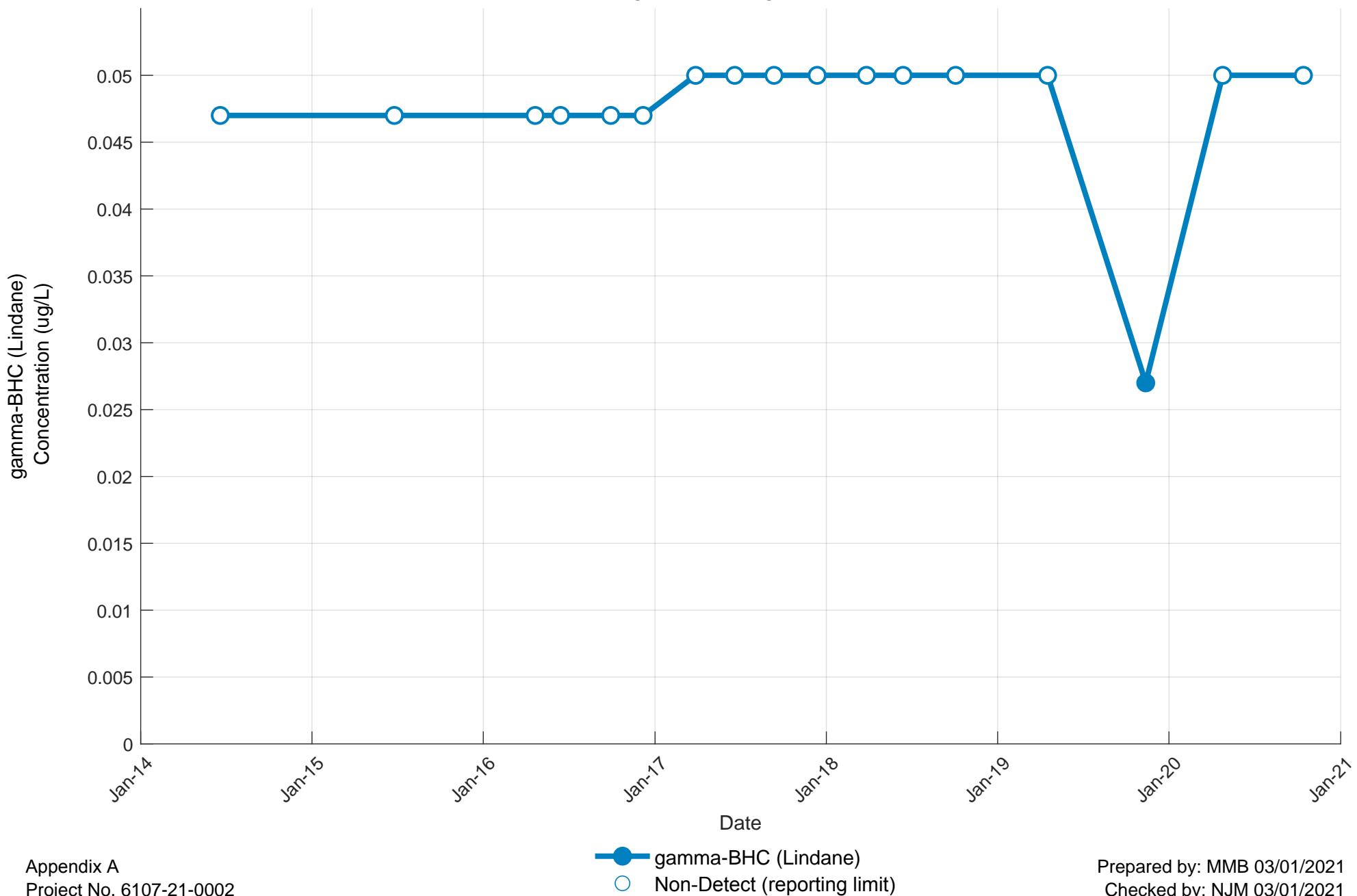
OBA-24B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



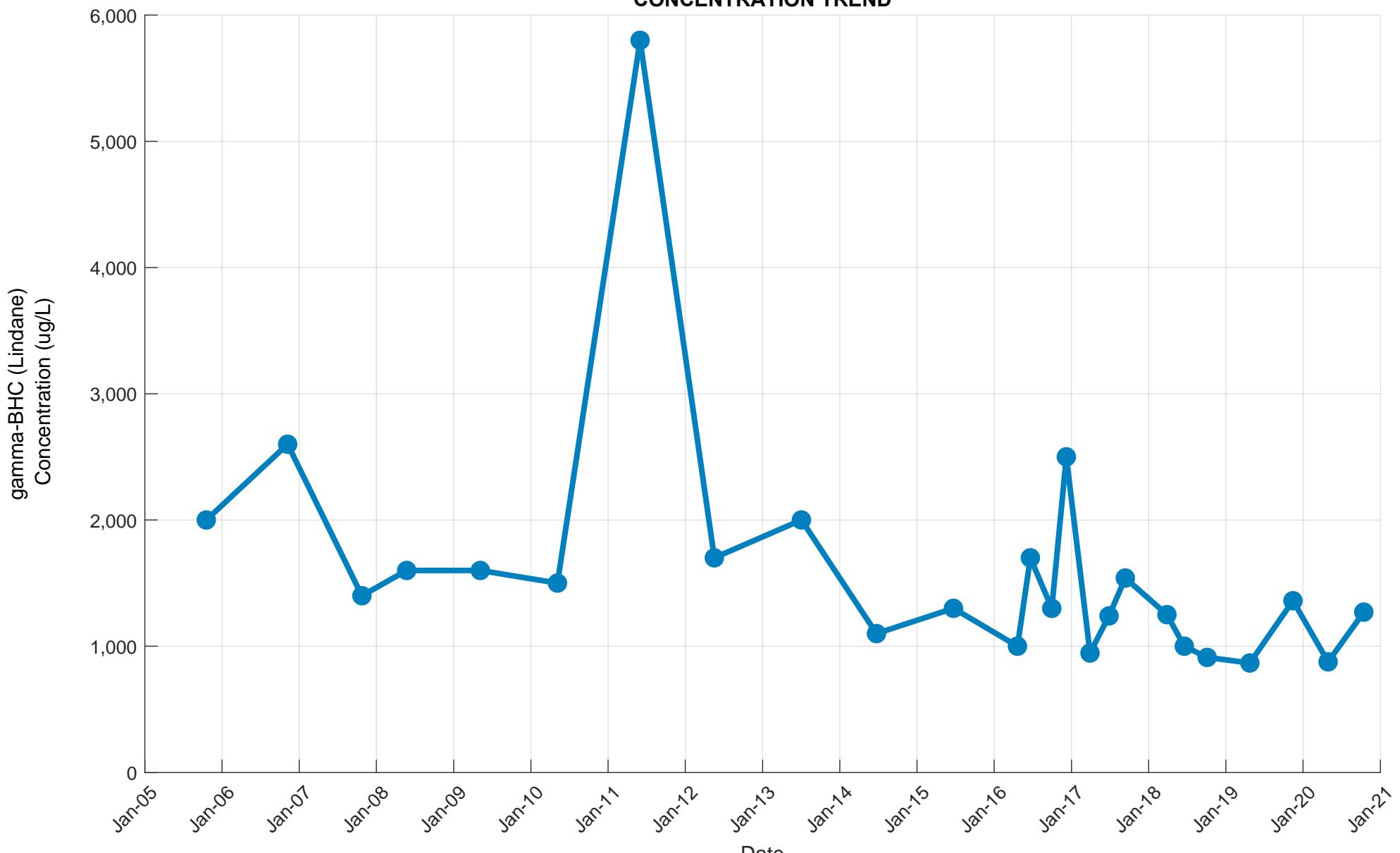
OBA-25B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



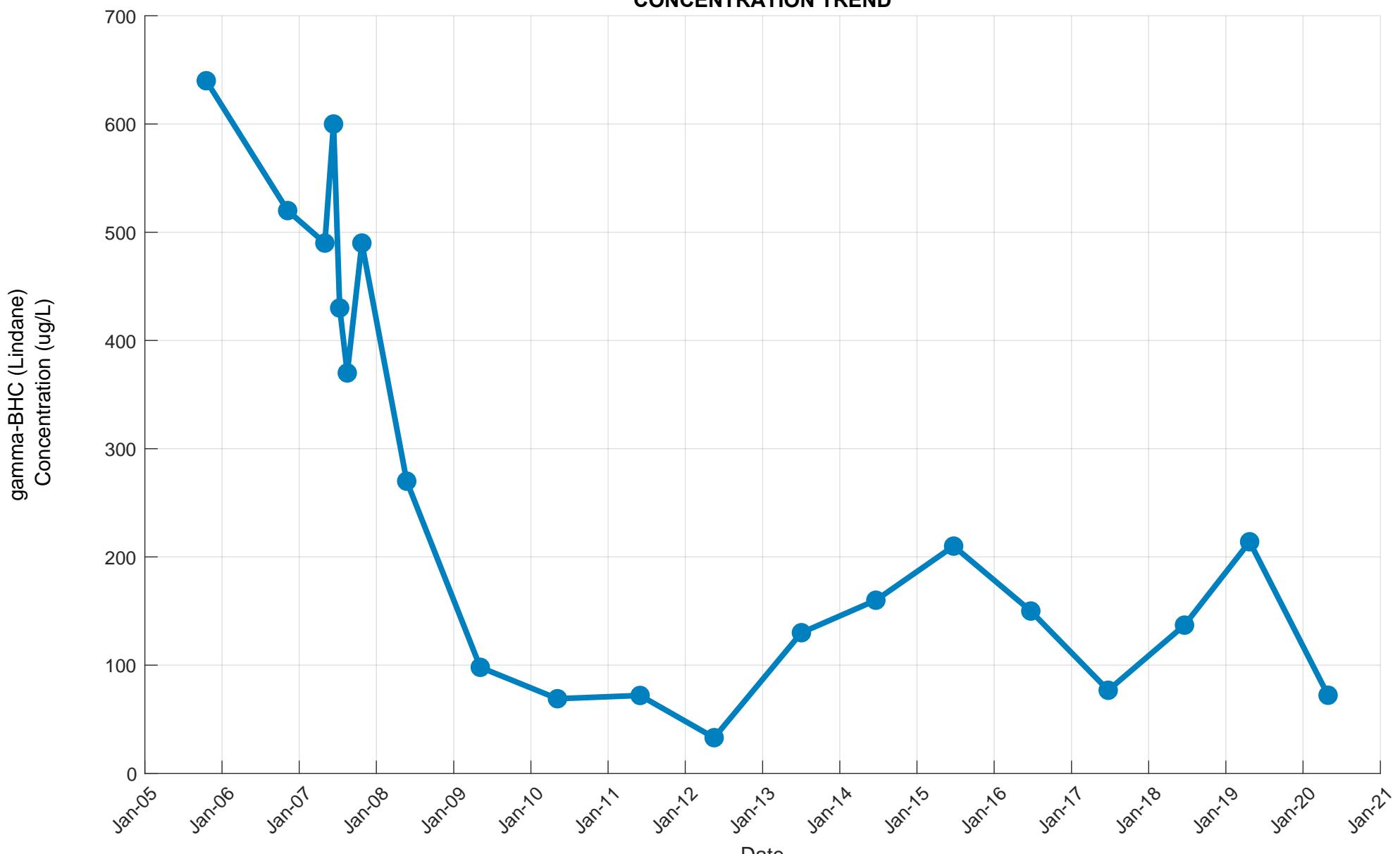
**OBA-26B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND**



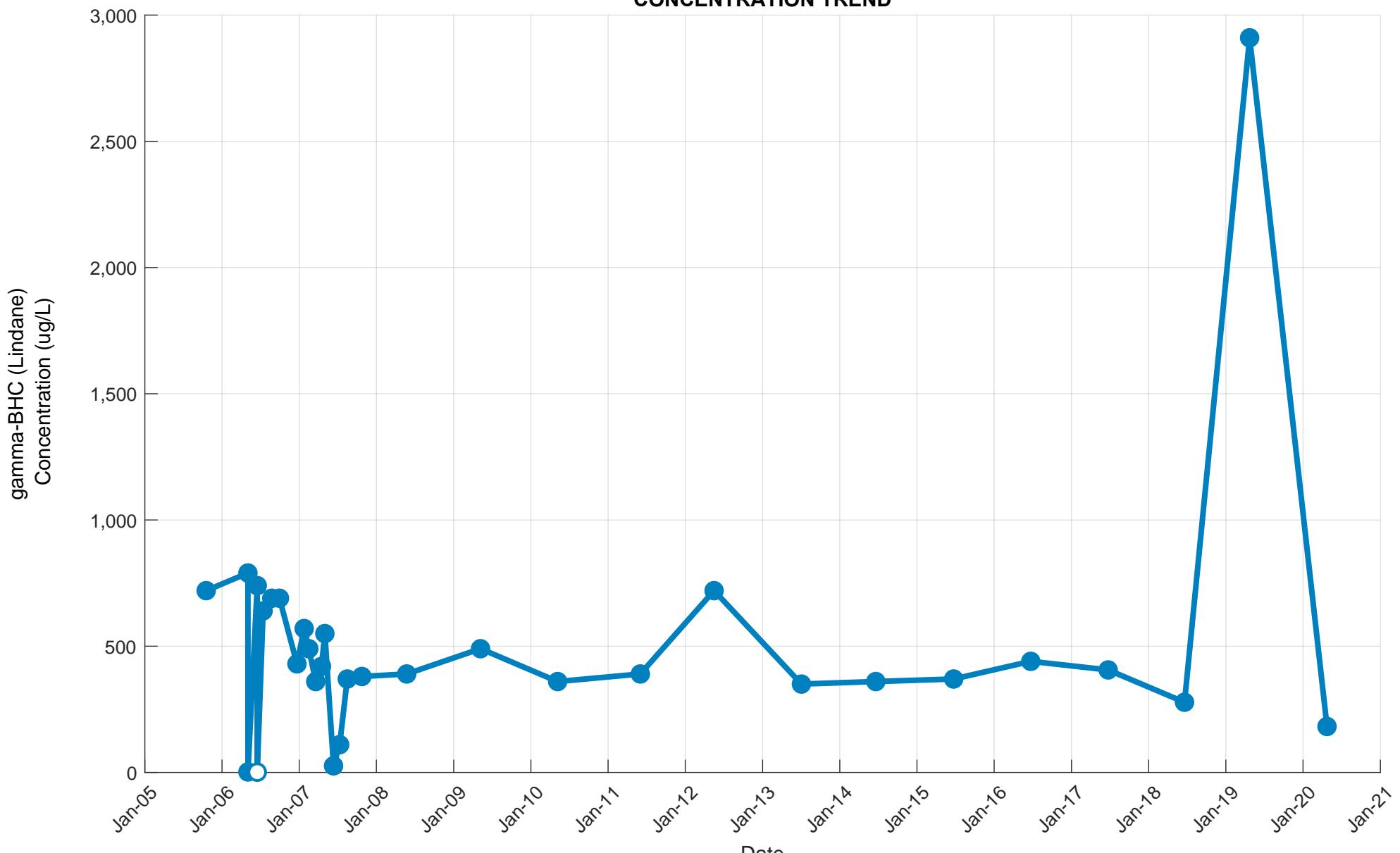
PN-5B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



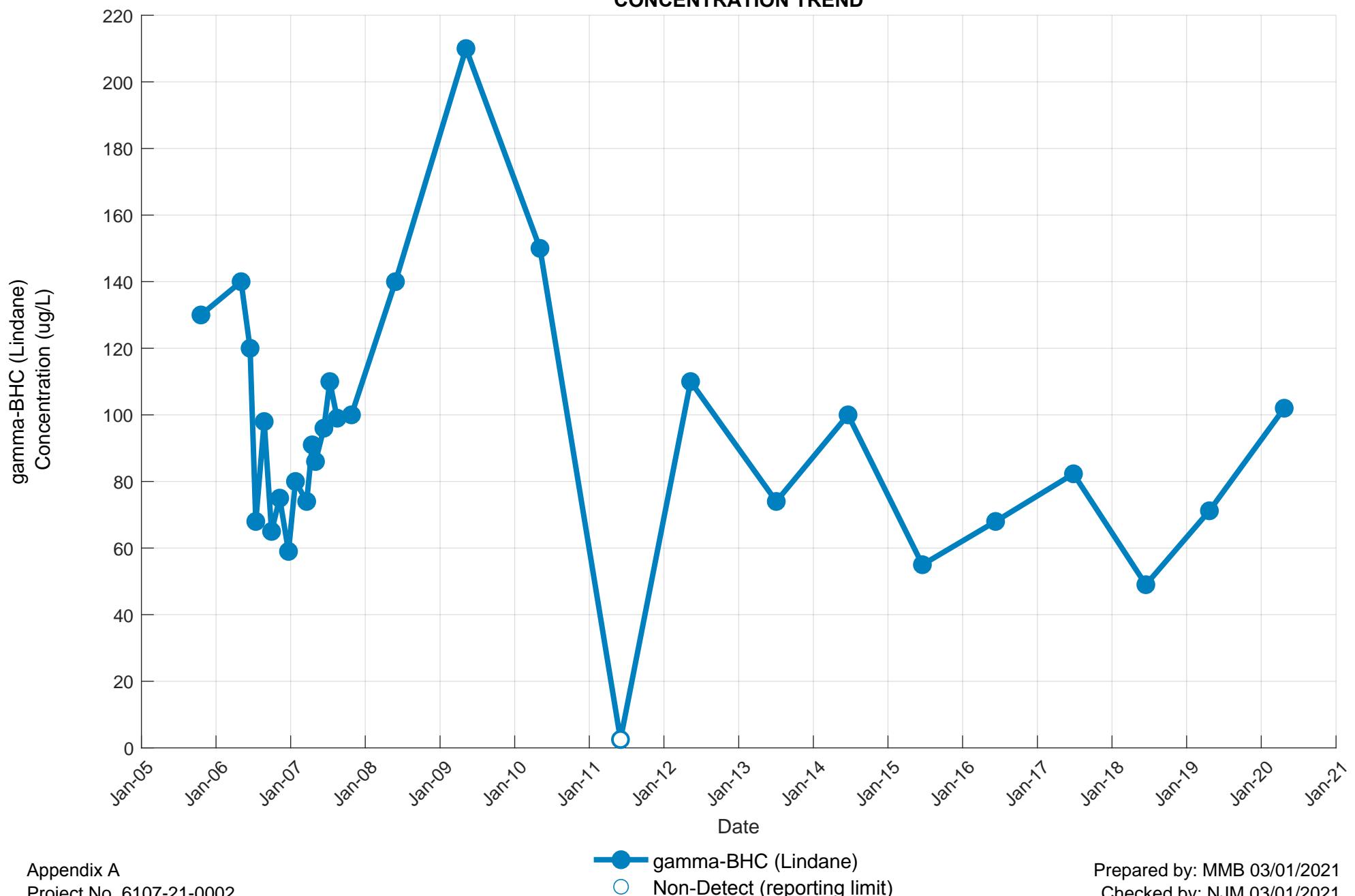
PN-7B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



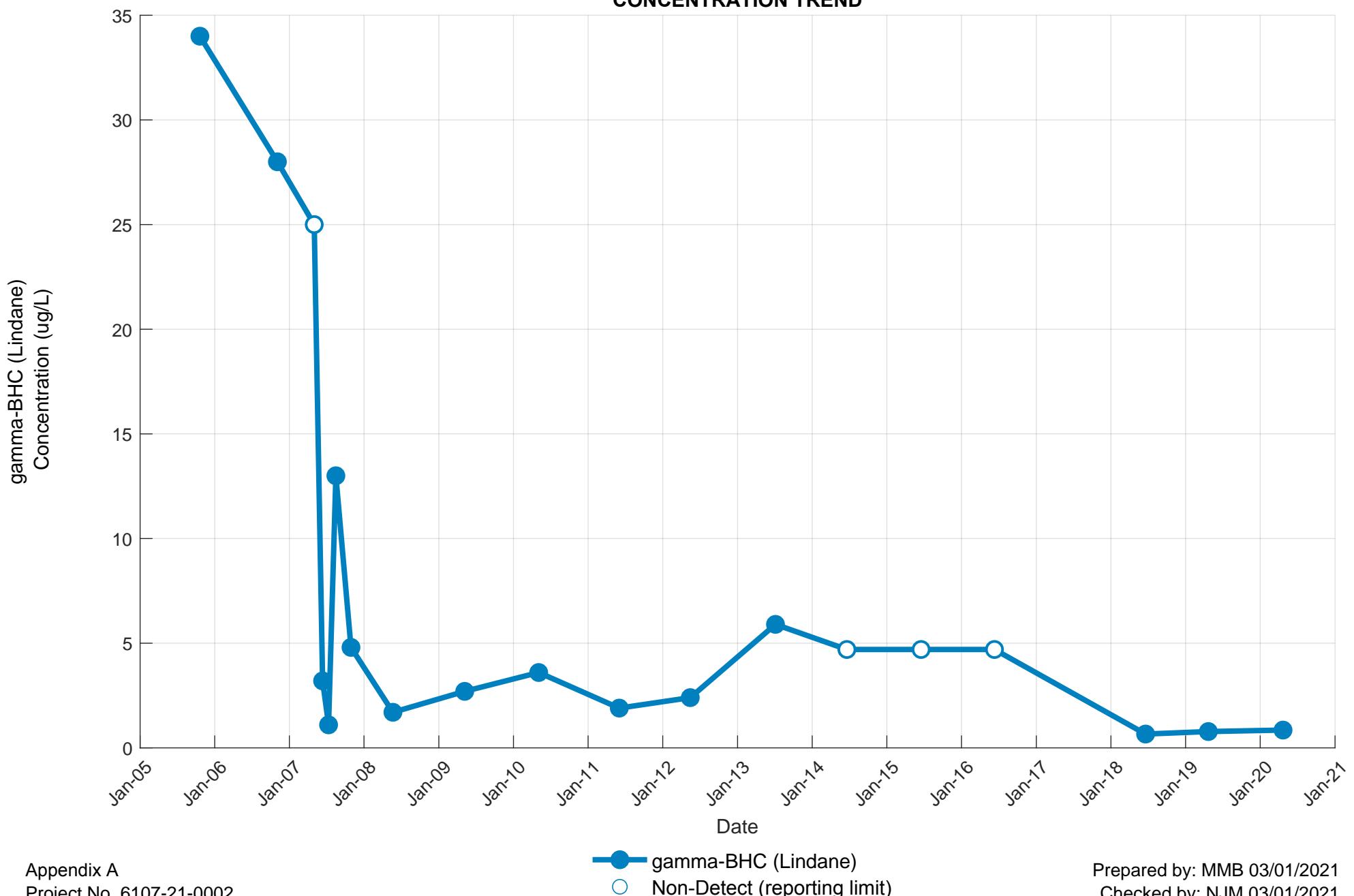
PN-11B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



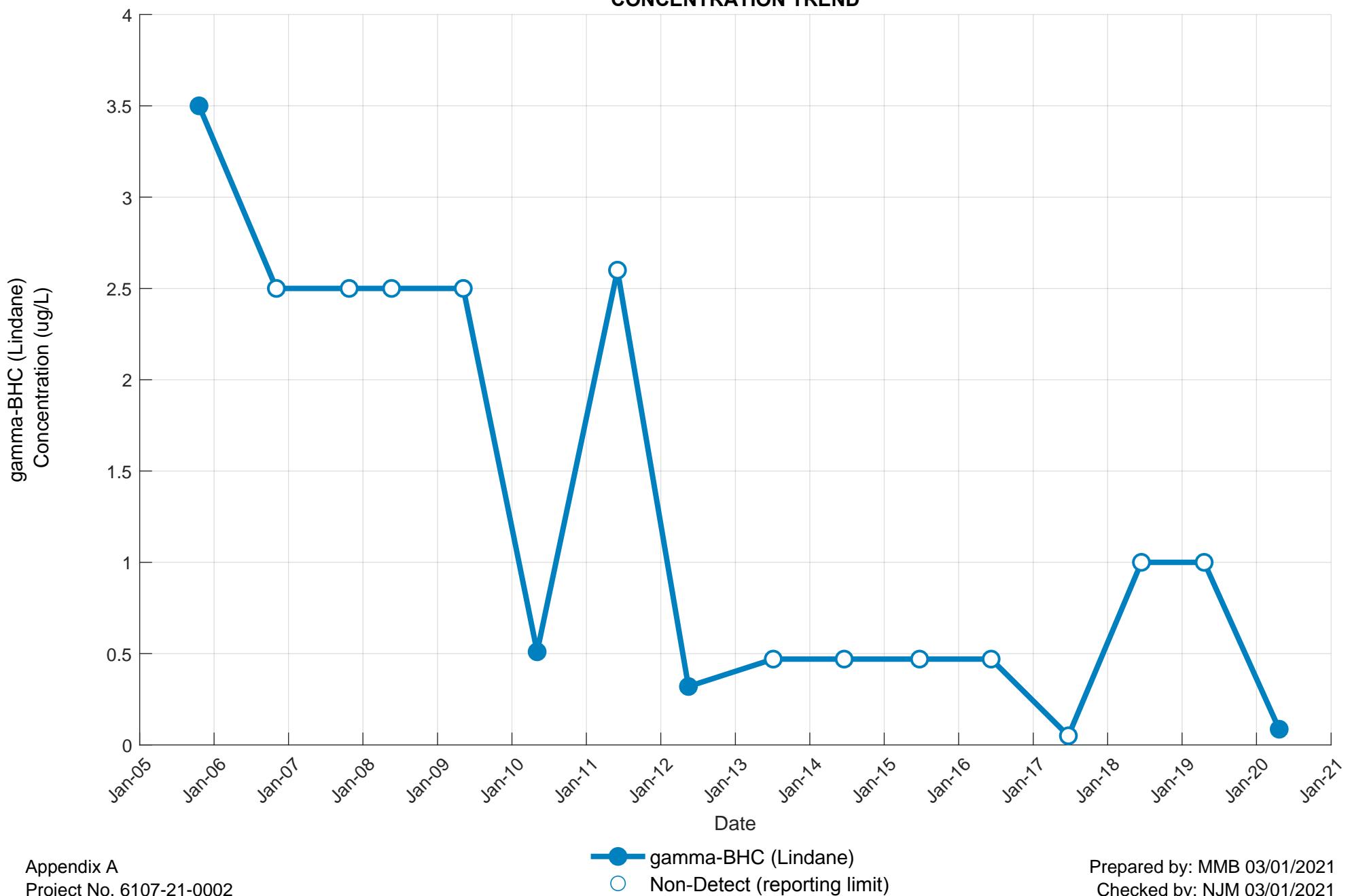
PN-12B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



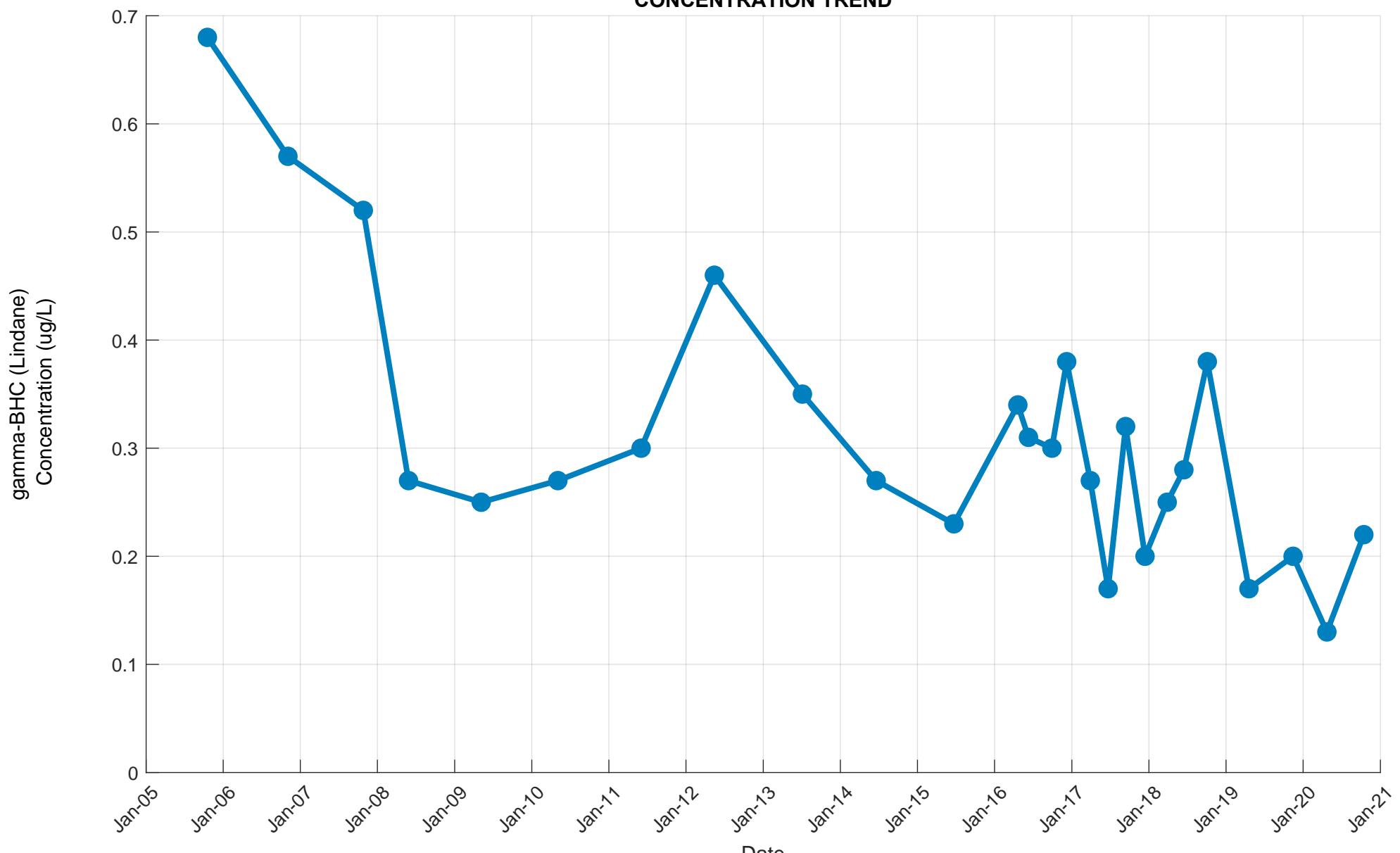
PN-15B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND



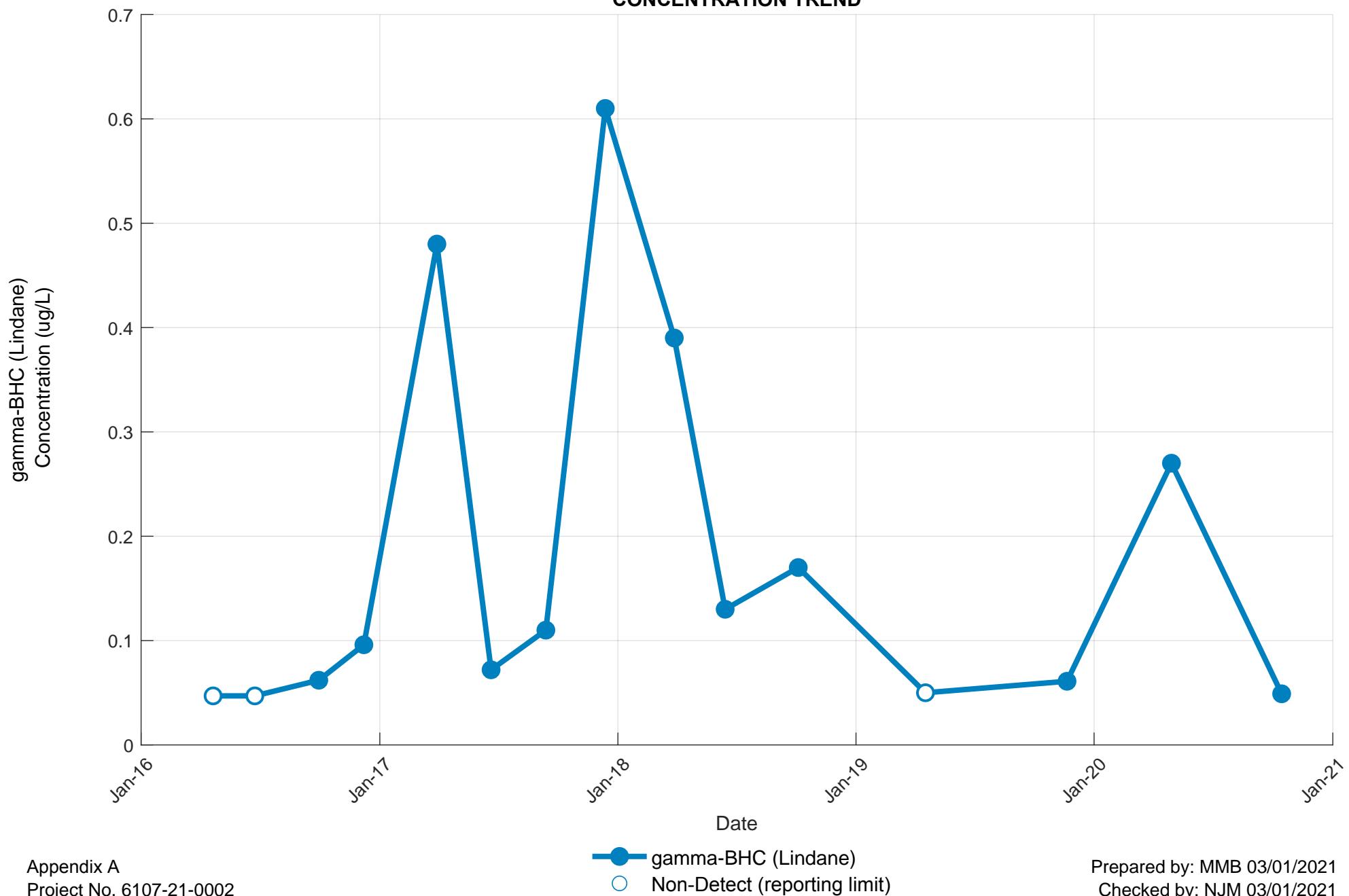
PN-17B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND

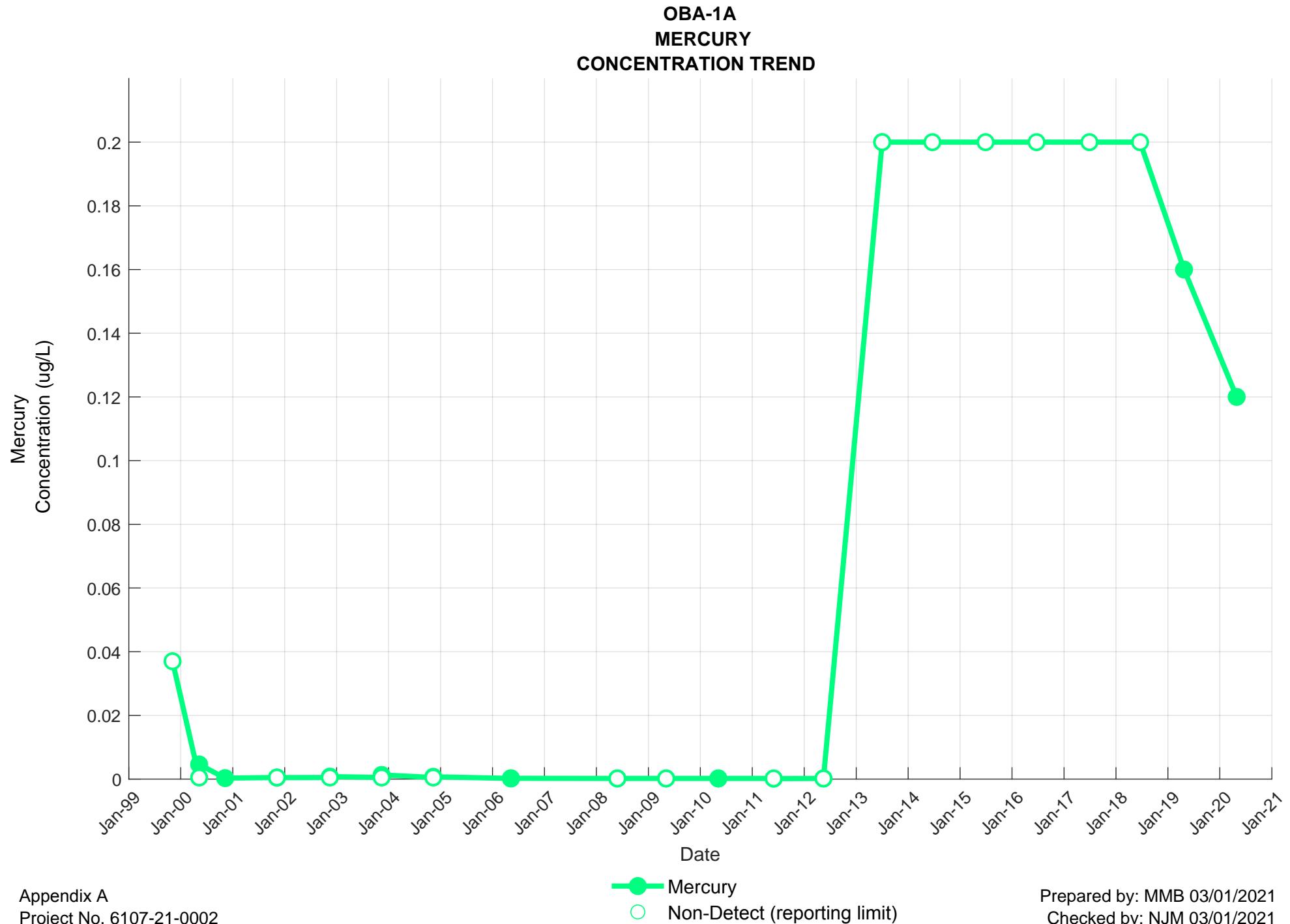


PN-20B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND

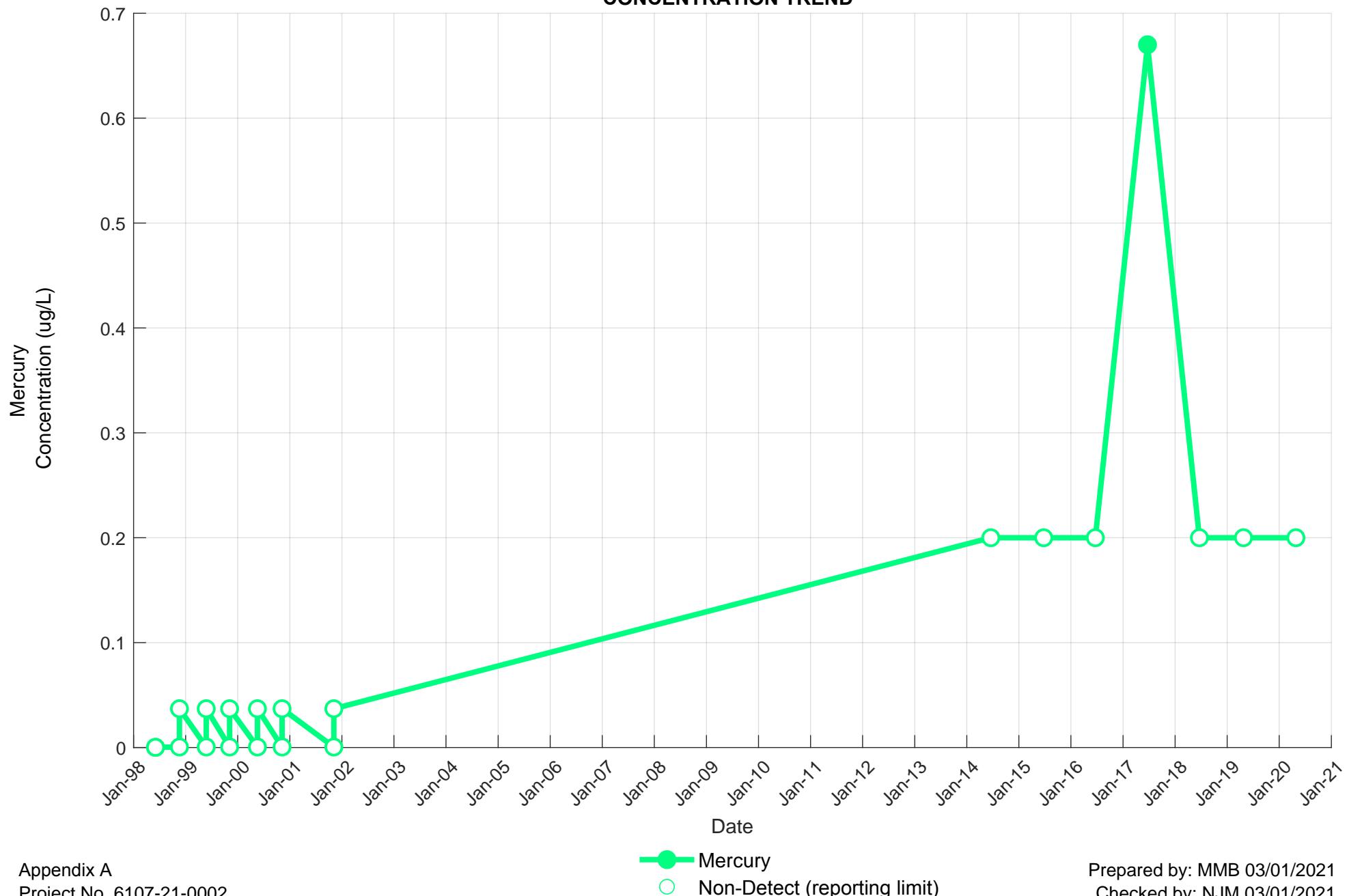


PN-24B
GAMMA-BHC (LINDANE)
CONCENTRATION TREND

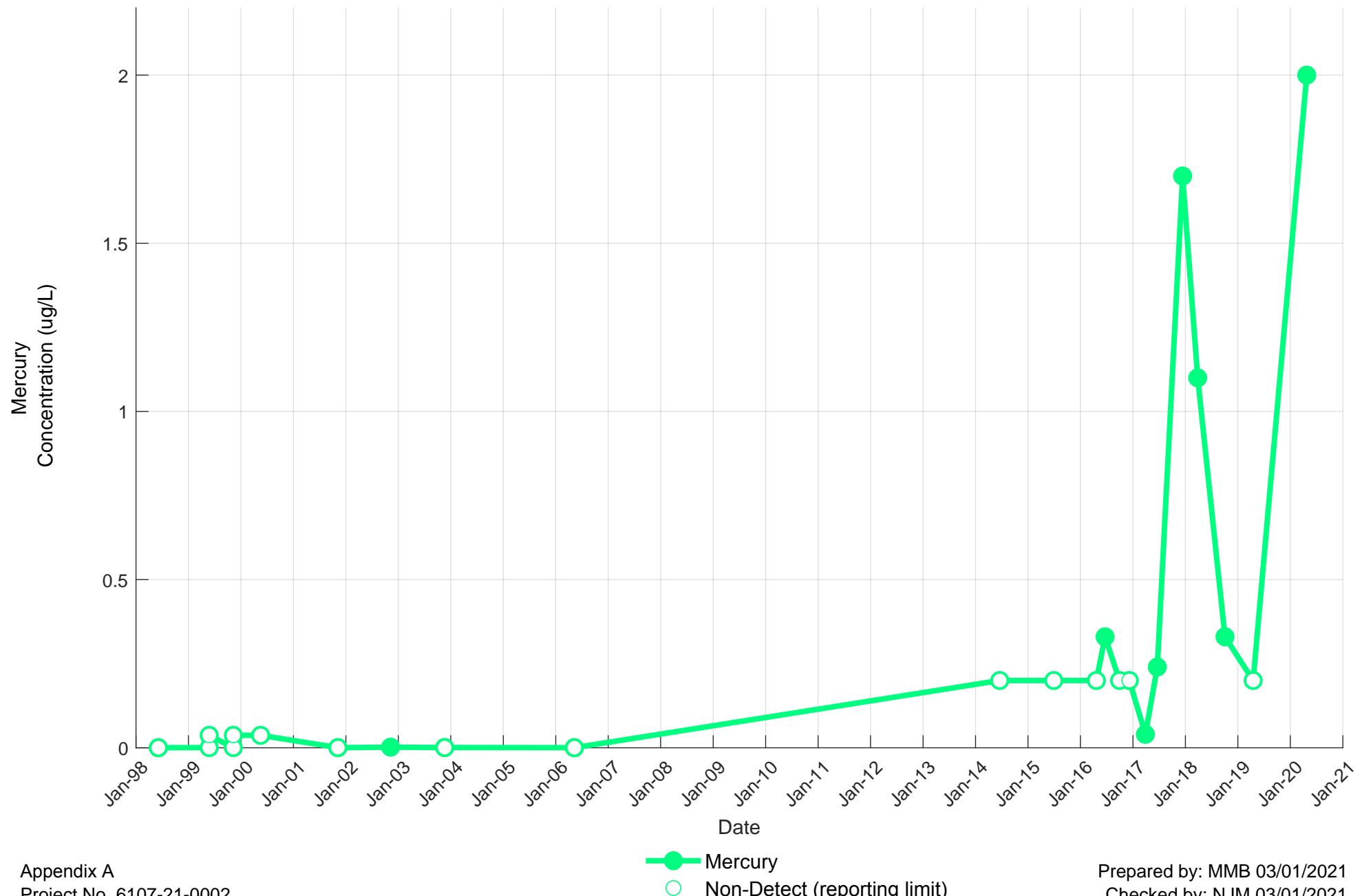




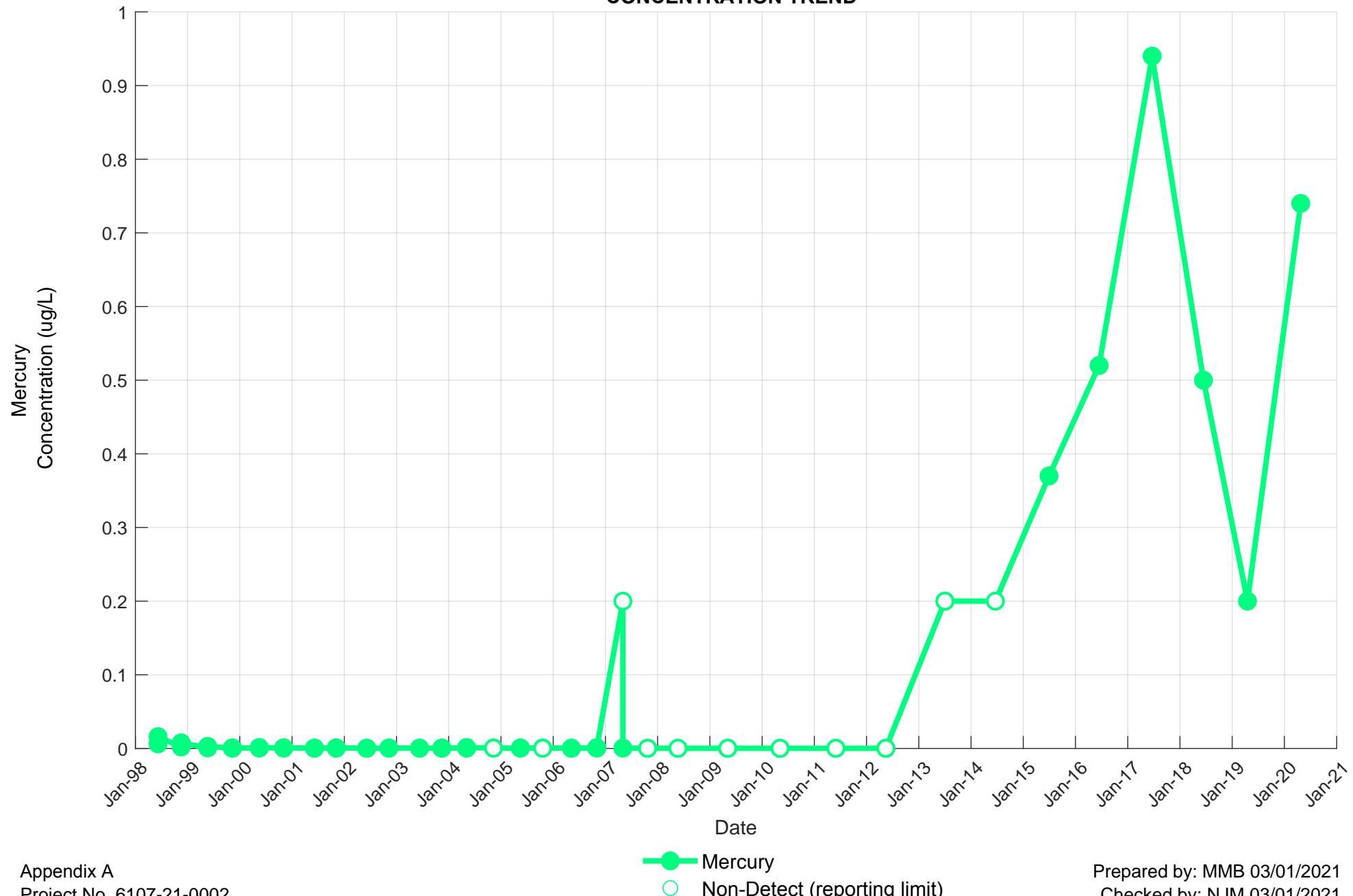
**OBA-3A
MERCURY
CONCENTRATION TREND**



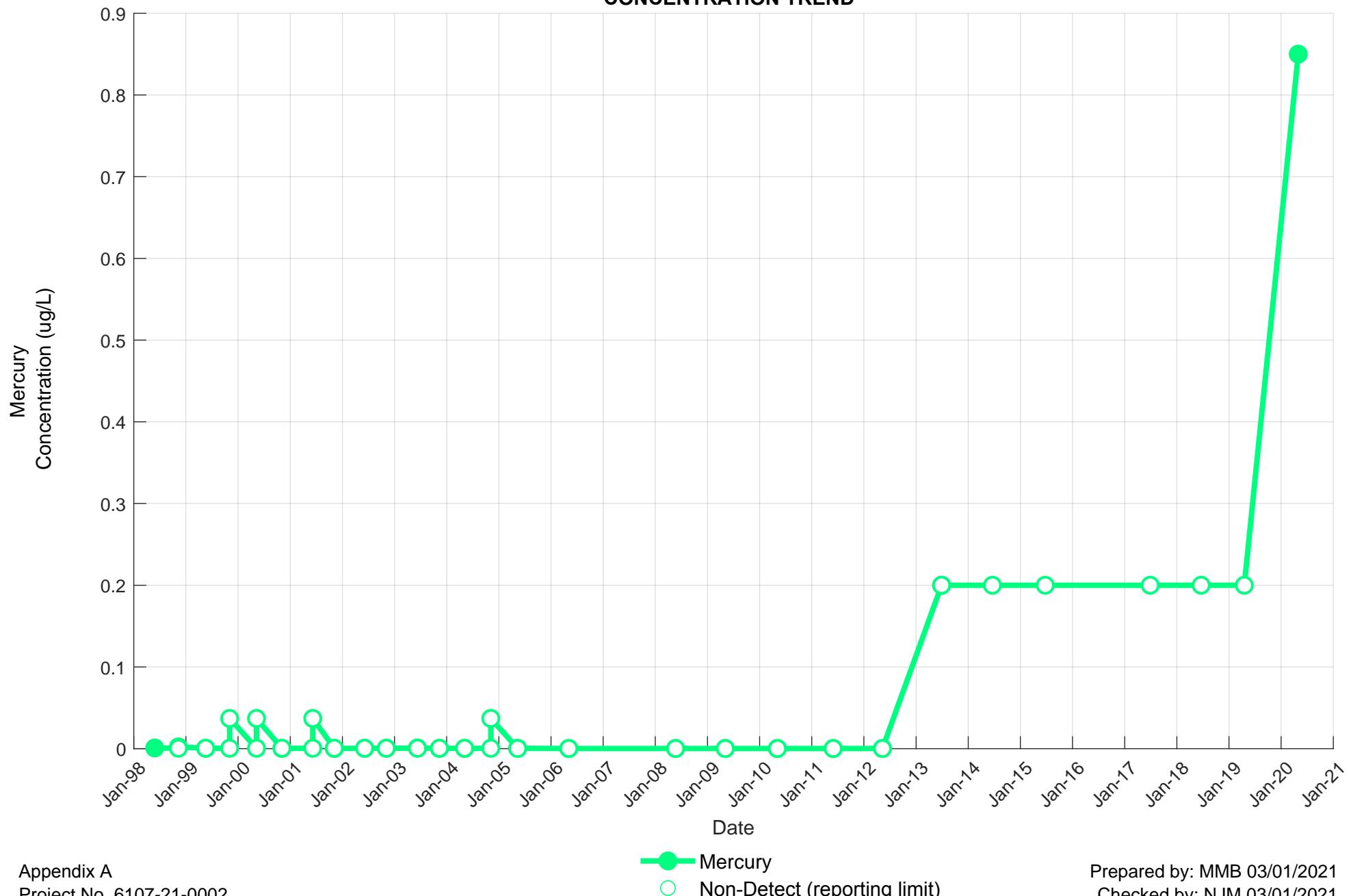
**OBA-4A
MERCURY
CONCENTRATION TREND**



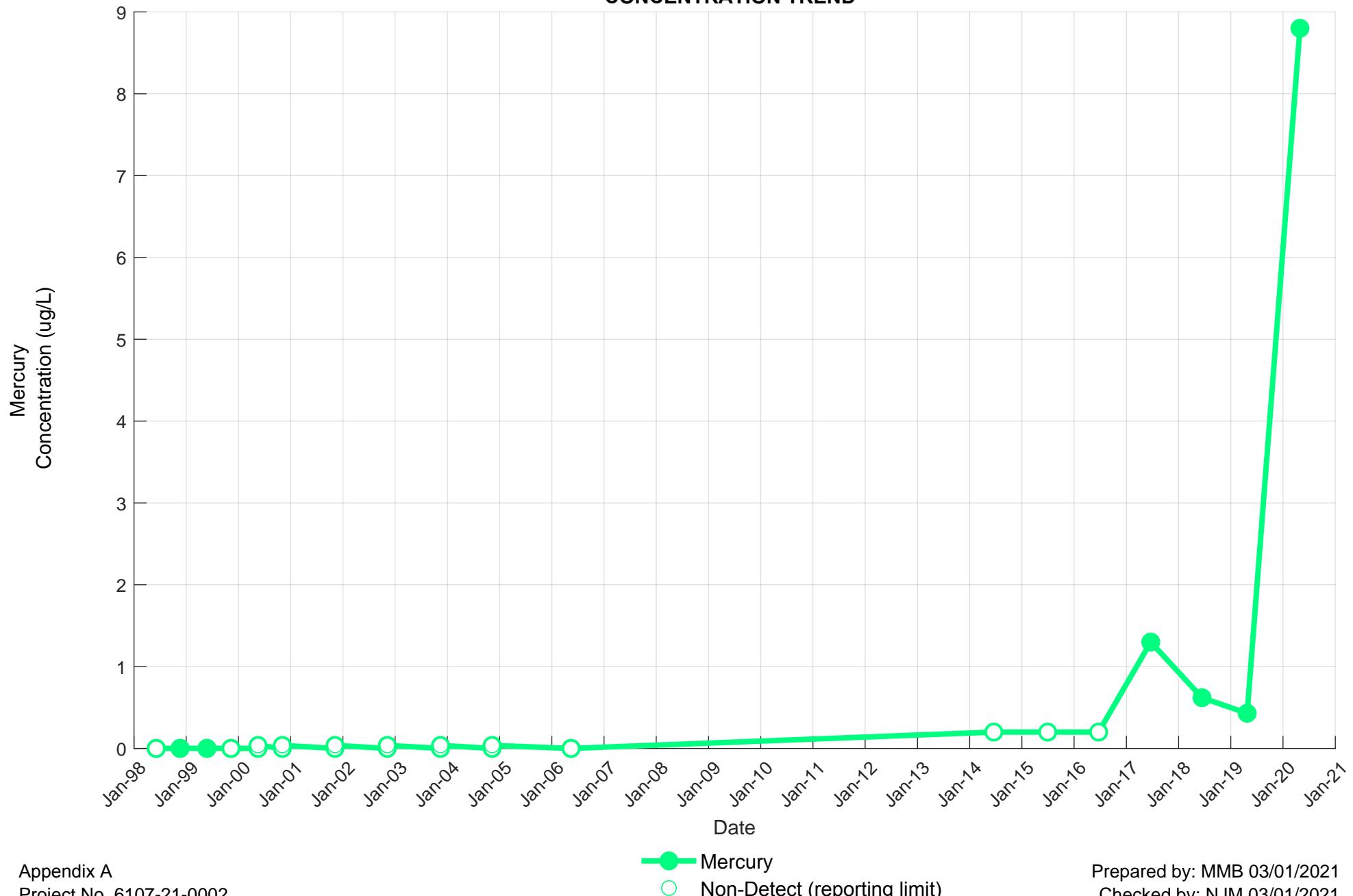
**OBA-5A
MERCURY
CONCENTRATION TREND**

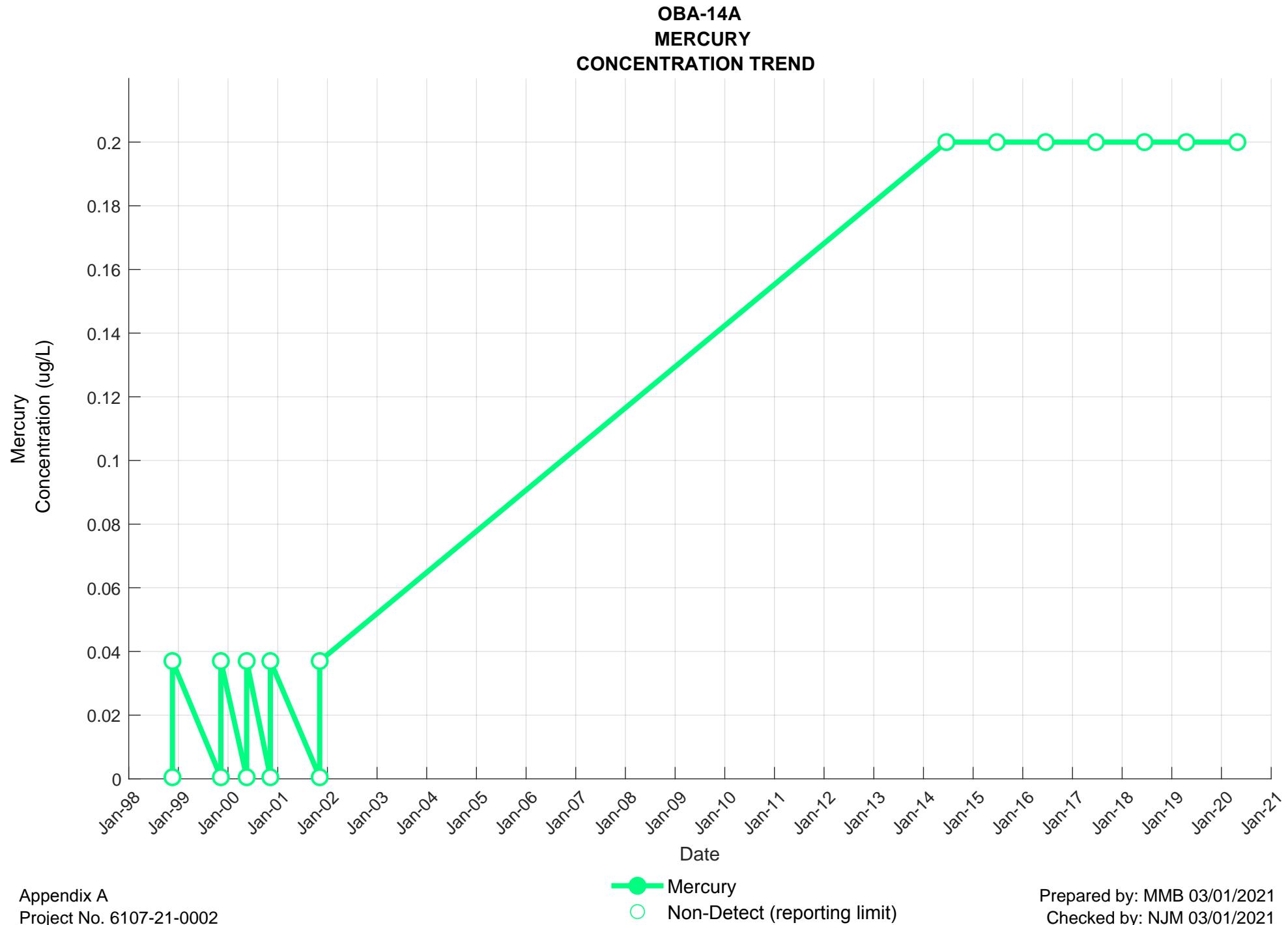


**OBA-8A
MERCURY
CONCENTRATION TREND**

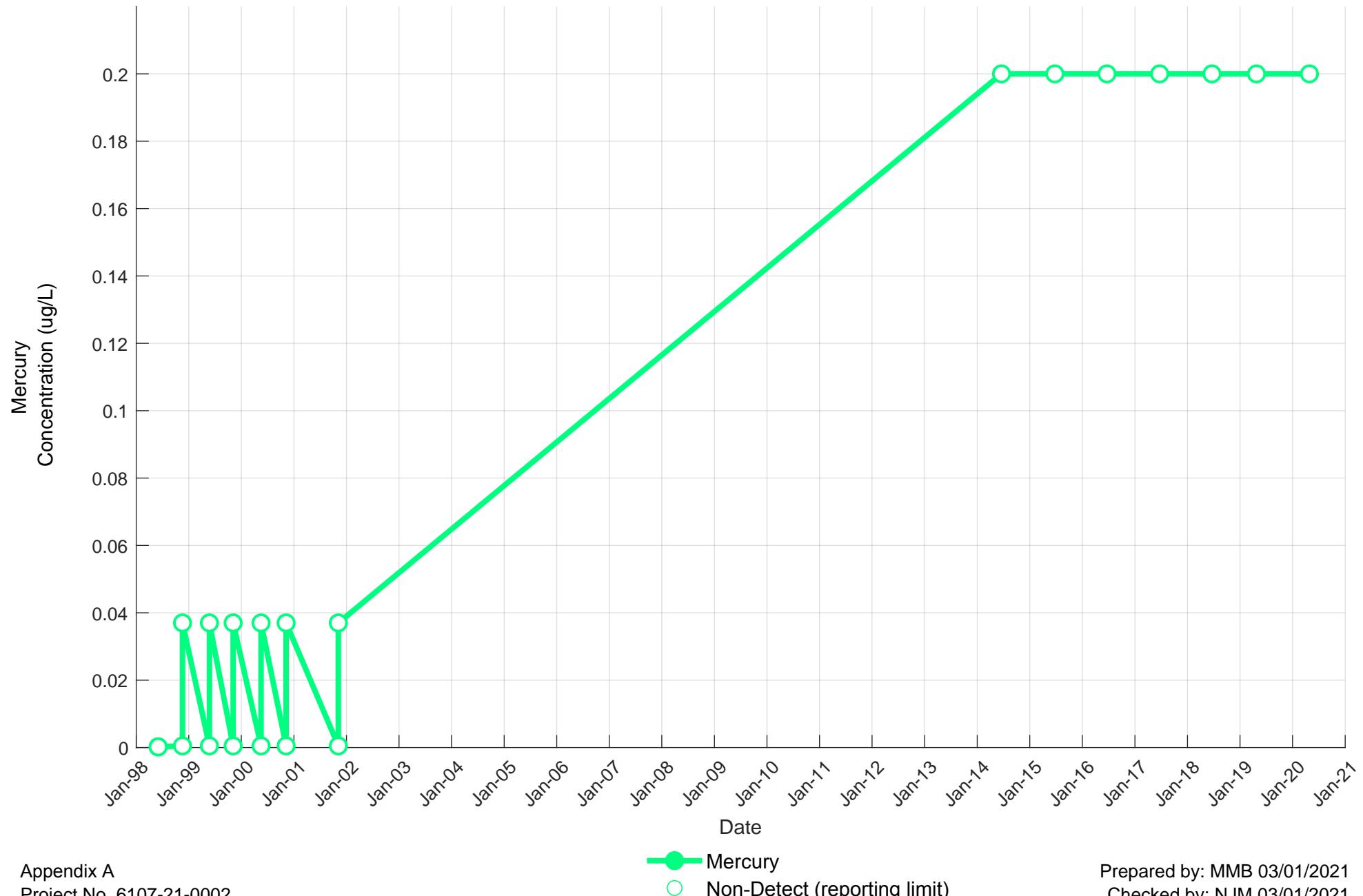


**OBA-10A
MERCURY
CONCENTRATION TREND**

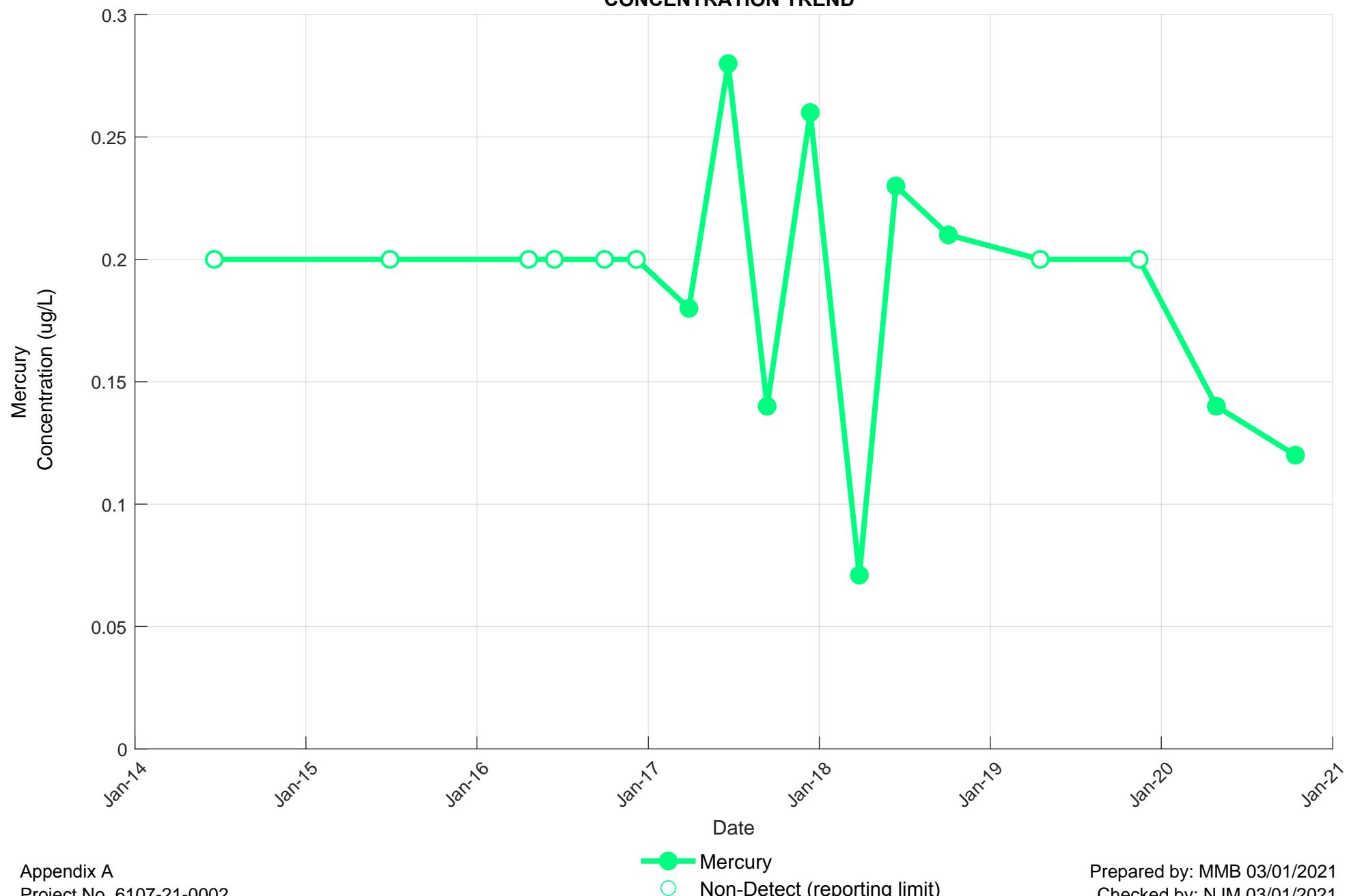




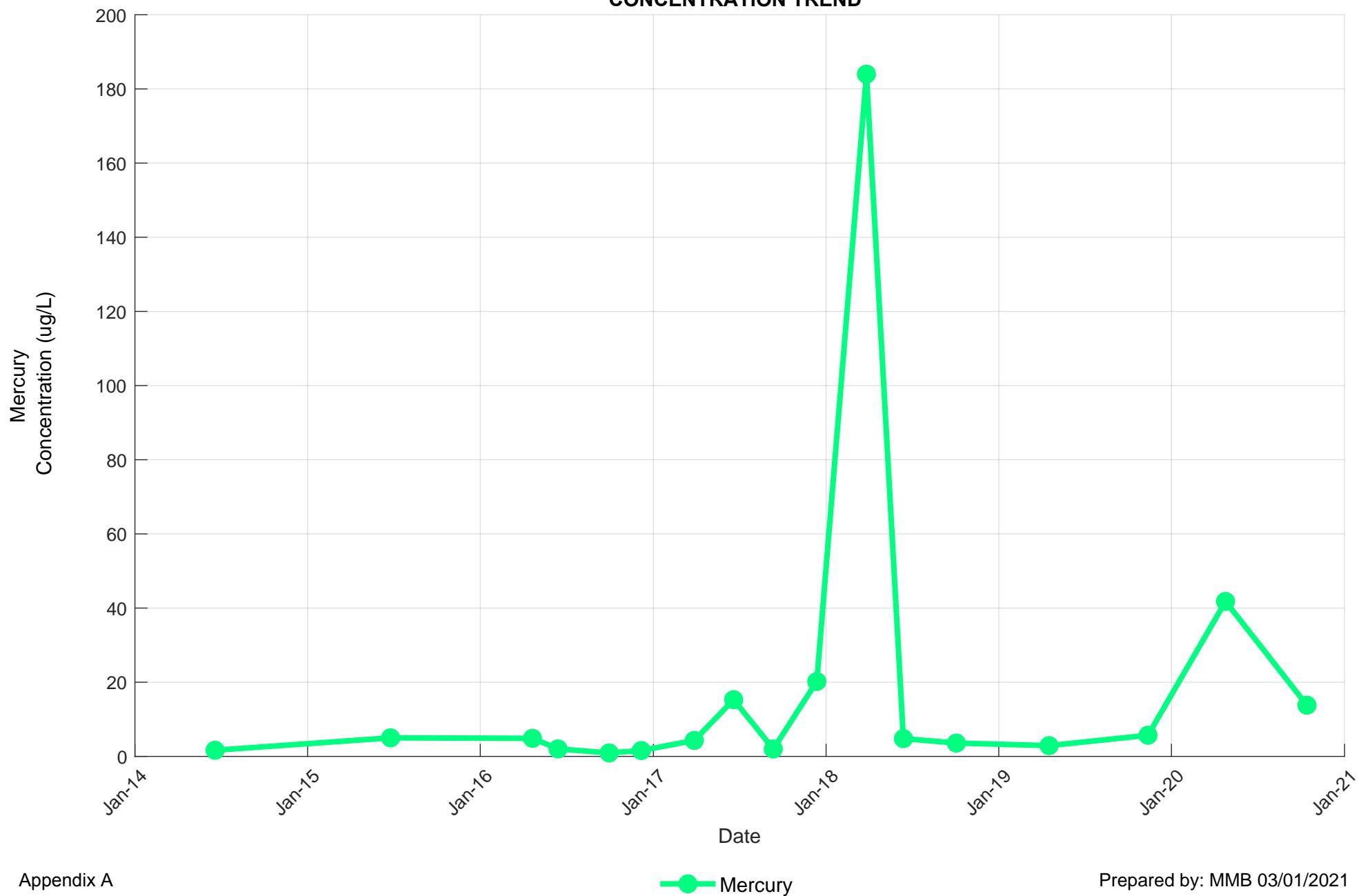
**OBA-15A
MERCURY
CONCENTRATION TREND**



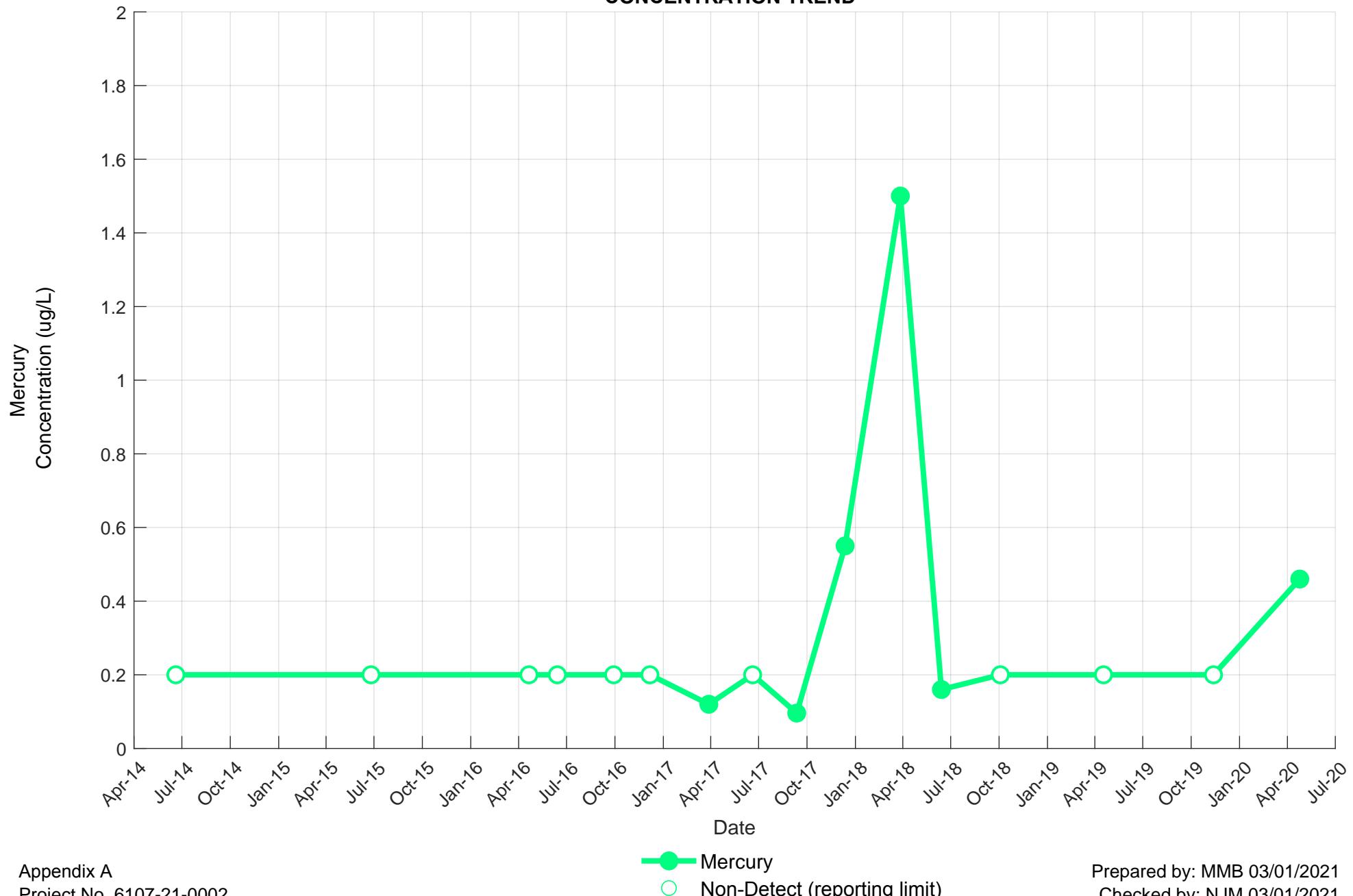
OBA-24A
MERCURY
CONCENTRATION TREND



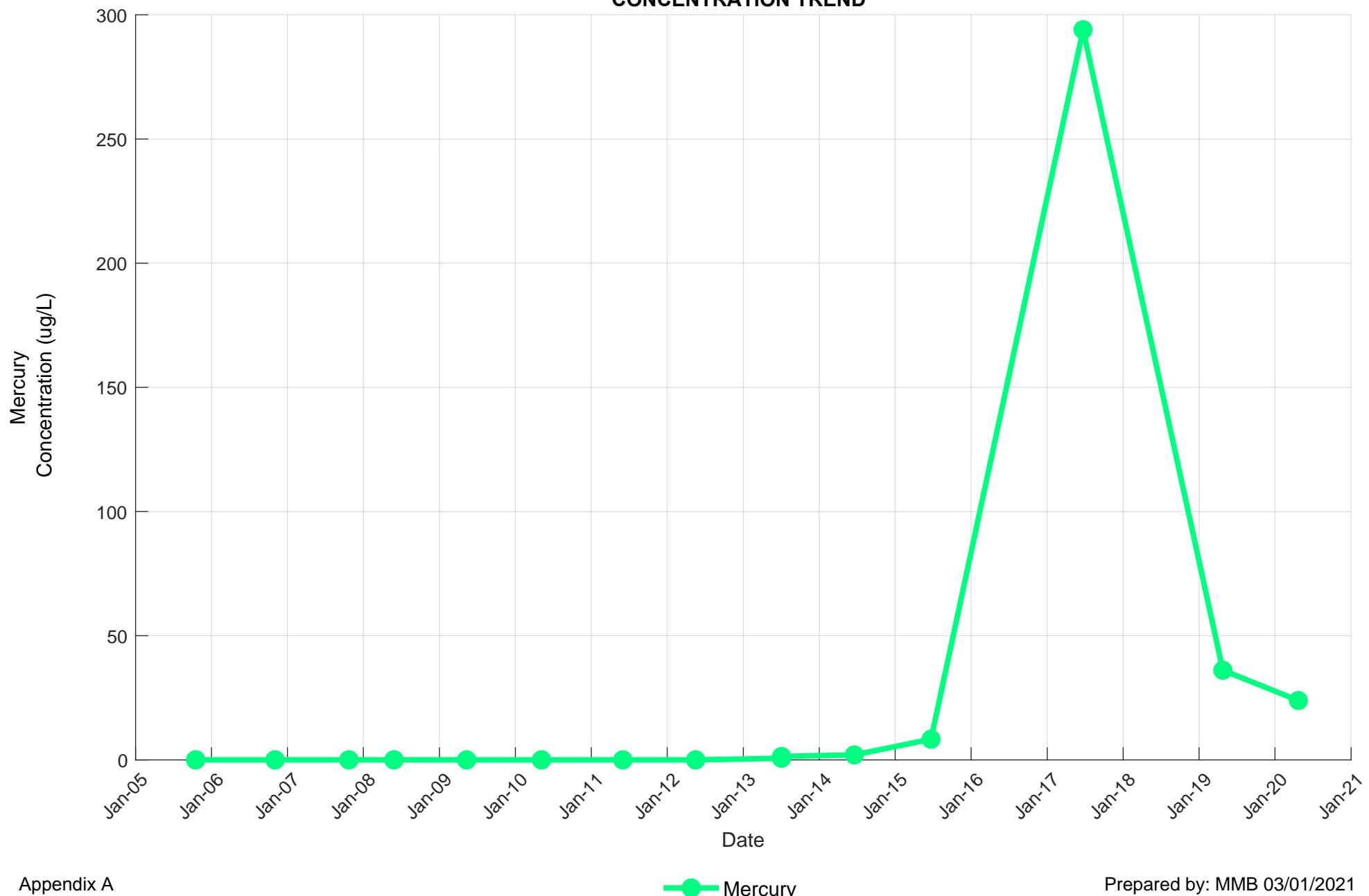
**OBA-25A
MERCURY
CONCENTRATION TREND**

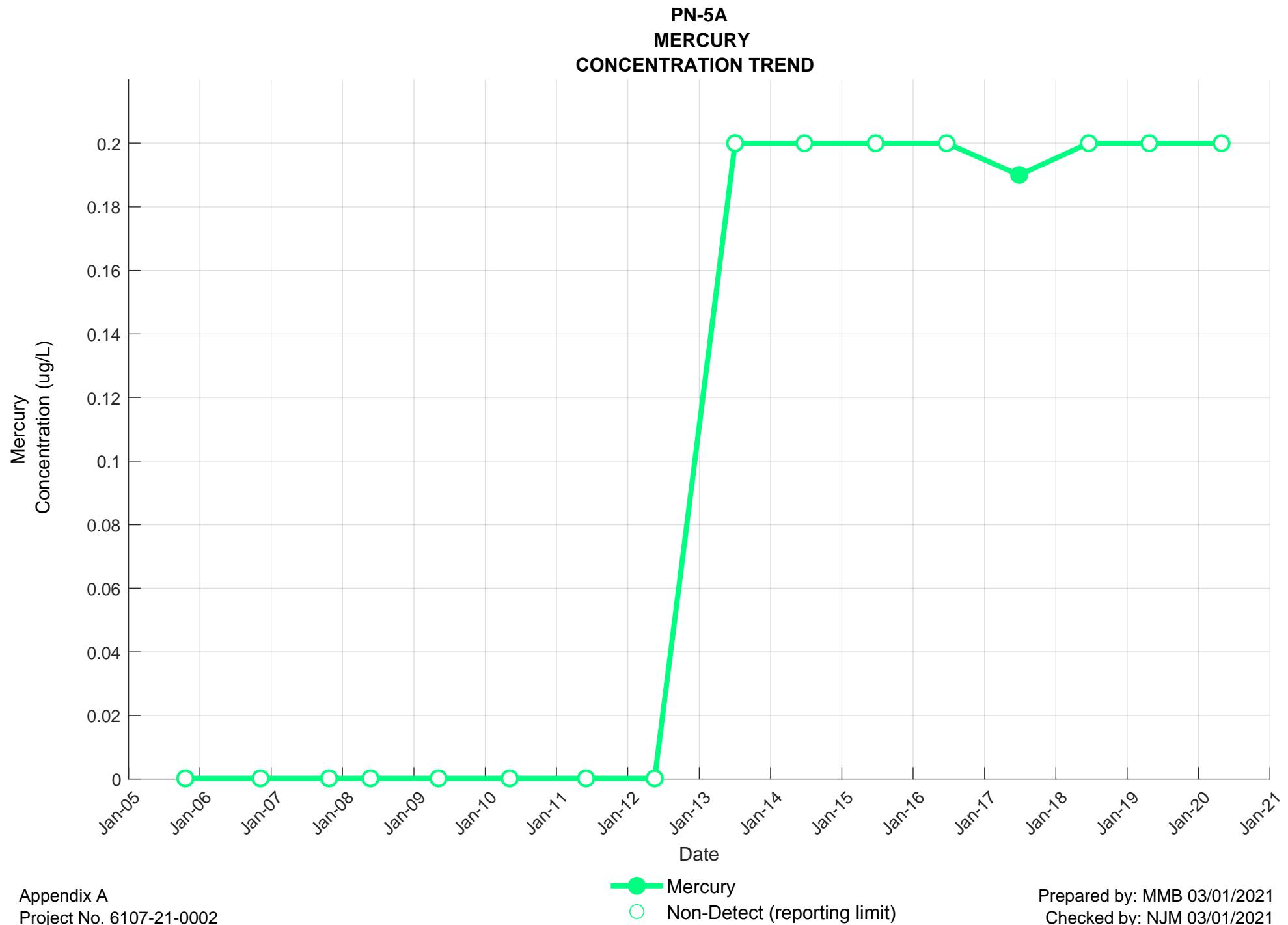


OBA-26A
MERCURY
CONCENTRATION TREND

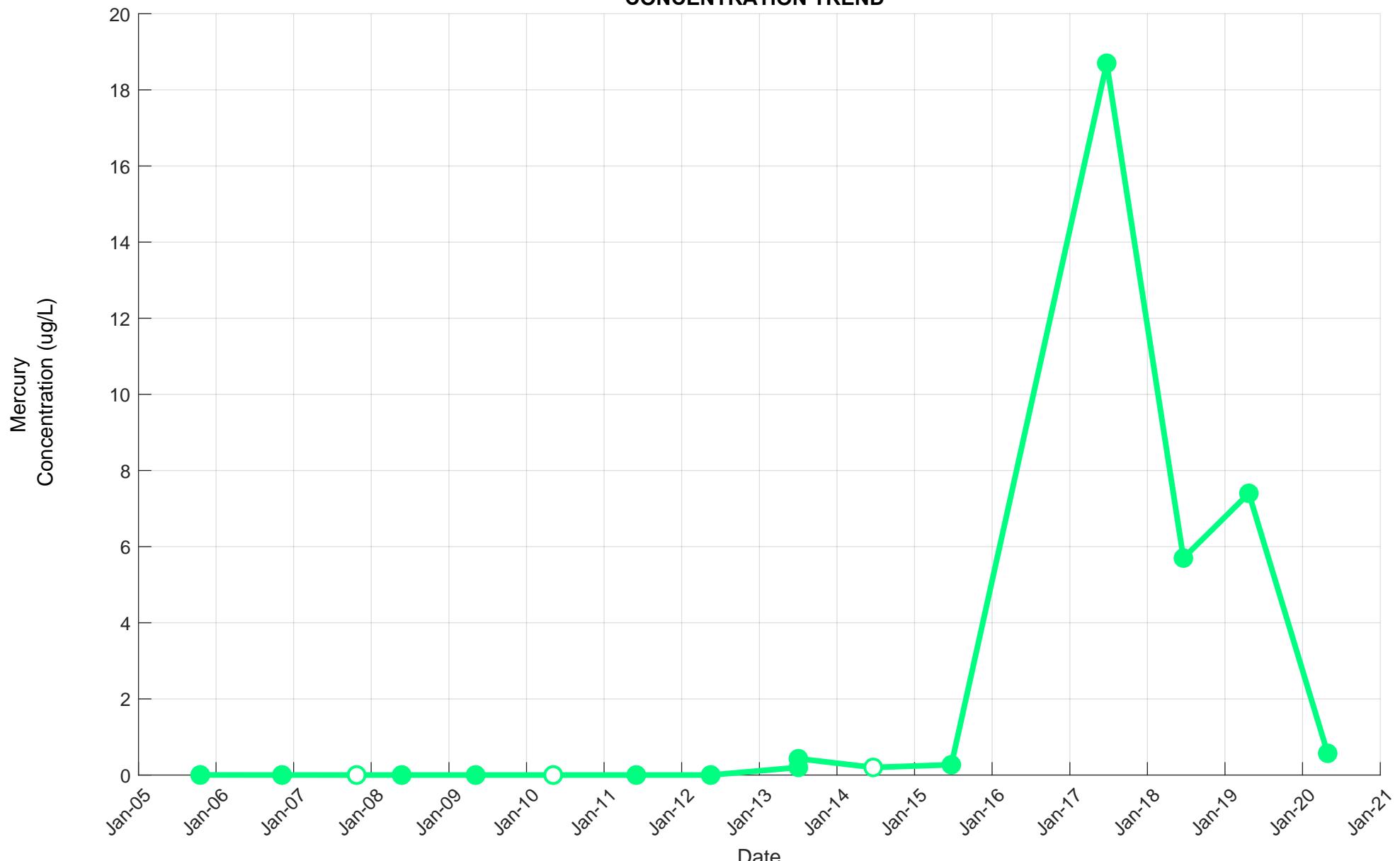


**PN-3A
MERCURY
CONCENTRATION TREND**

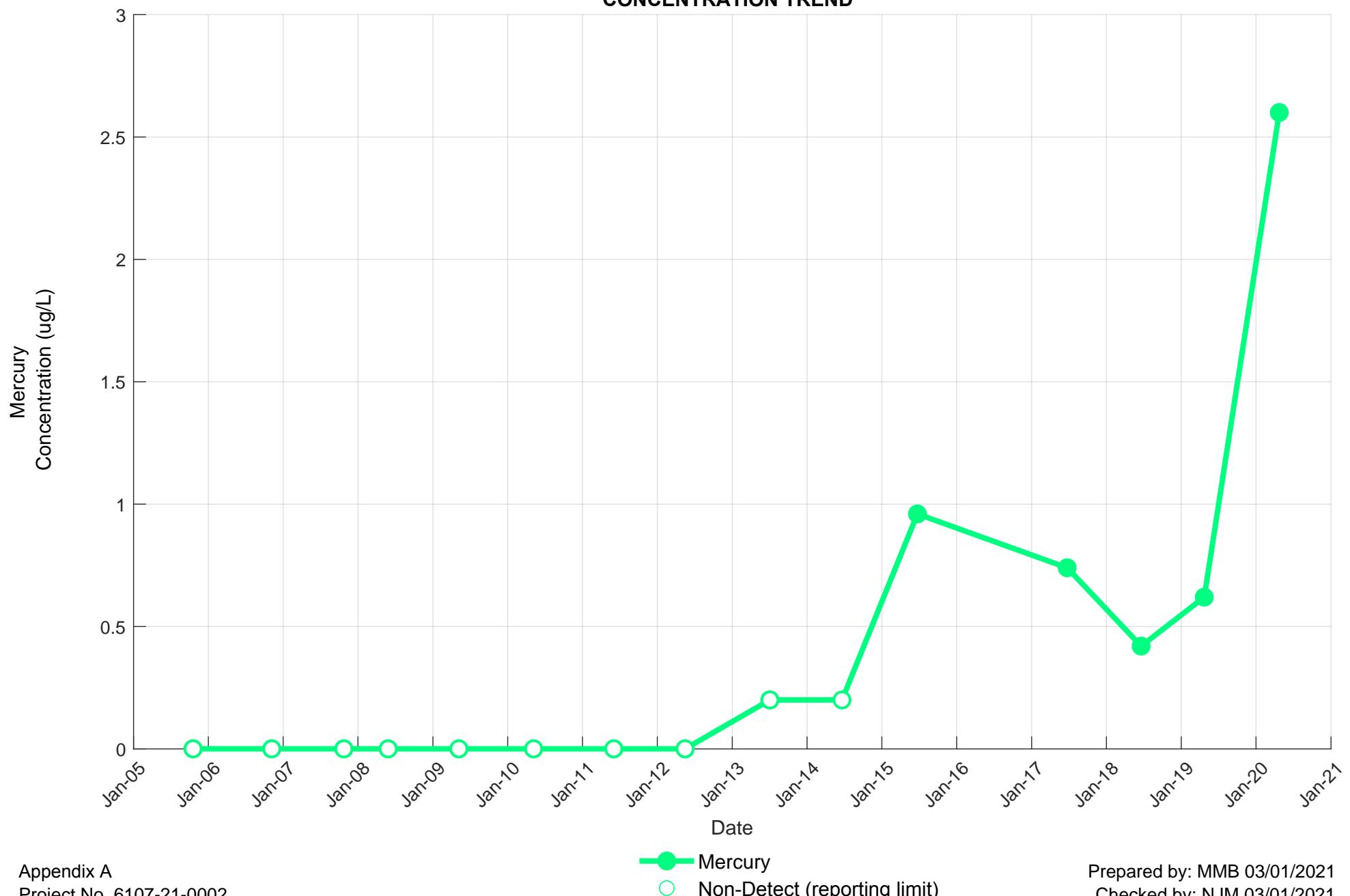




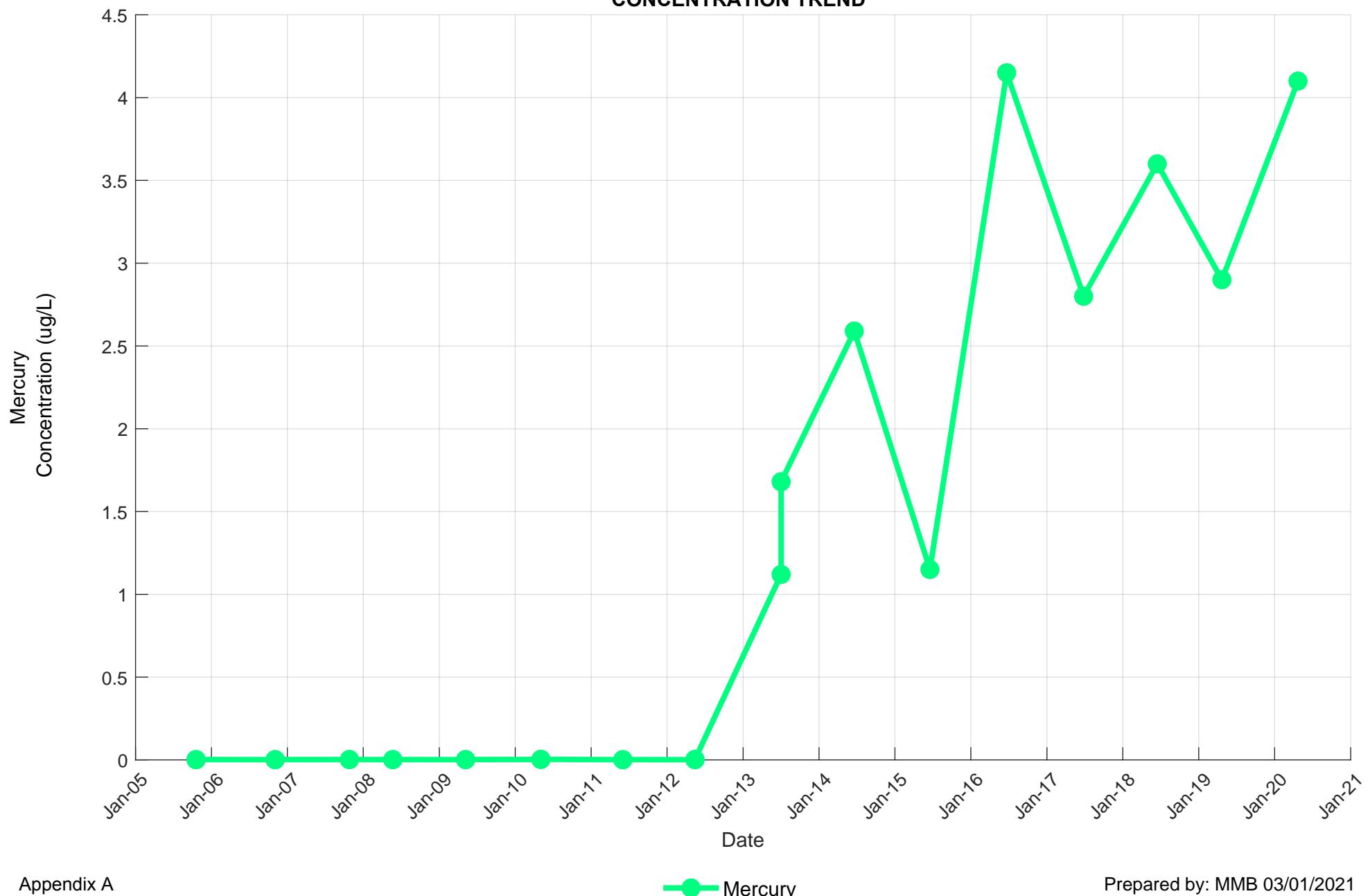
PN-7A
MERCURY
CONCENTRATION TREND

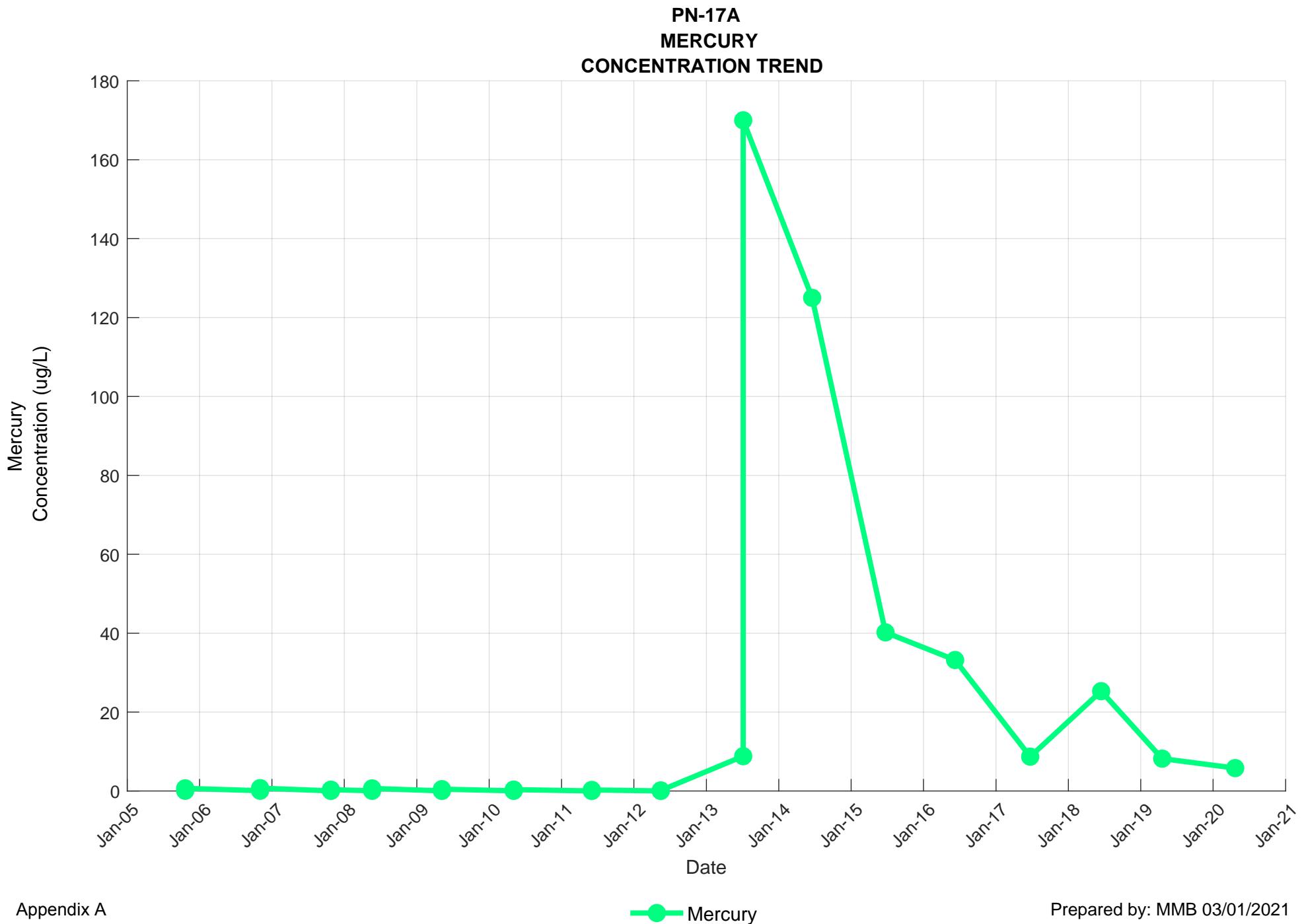


PN-11A
MERCURY
CONCENTRATION TREND

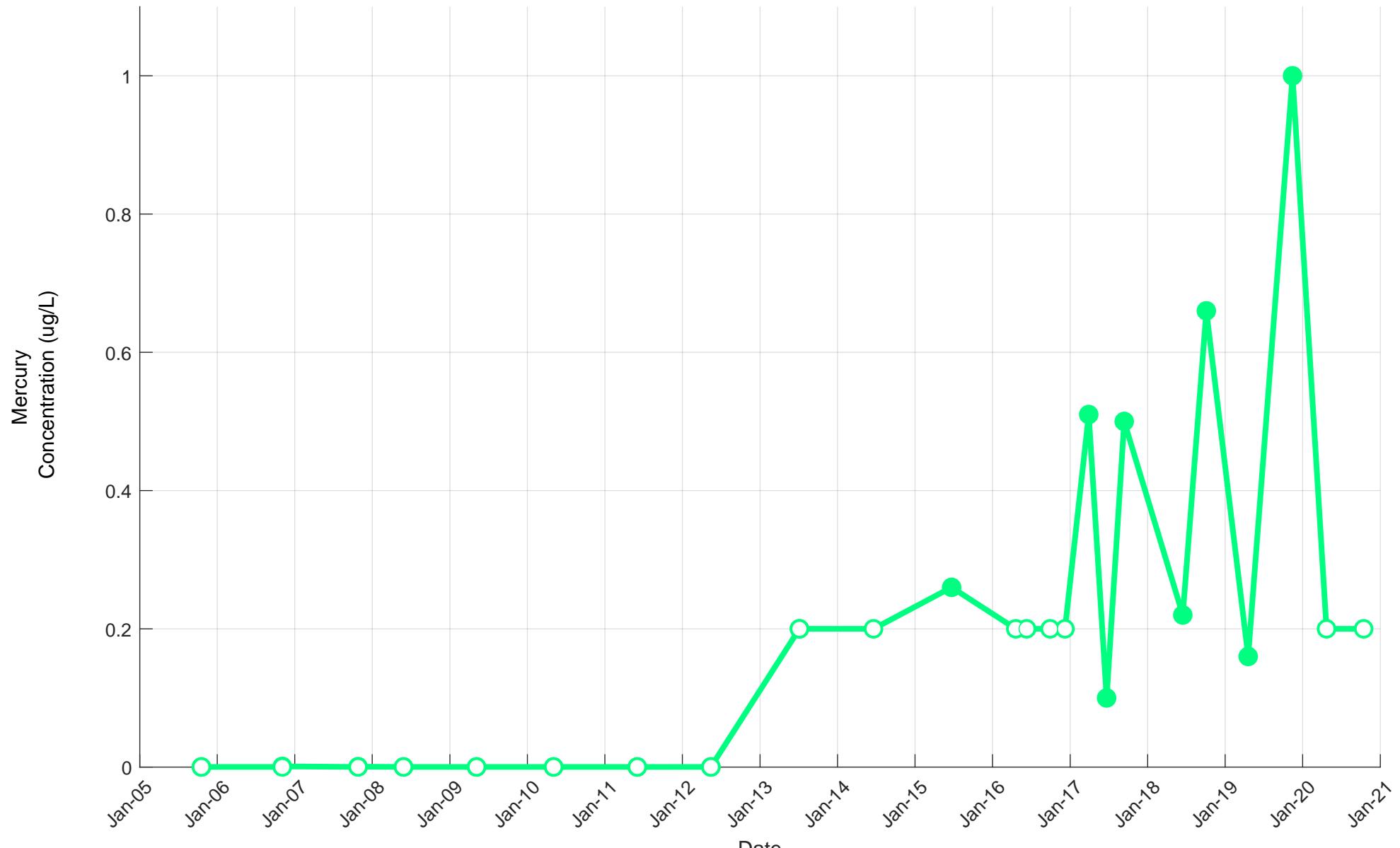


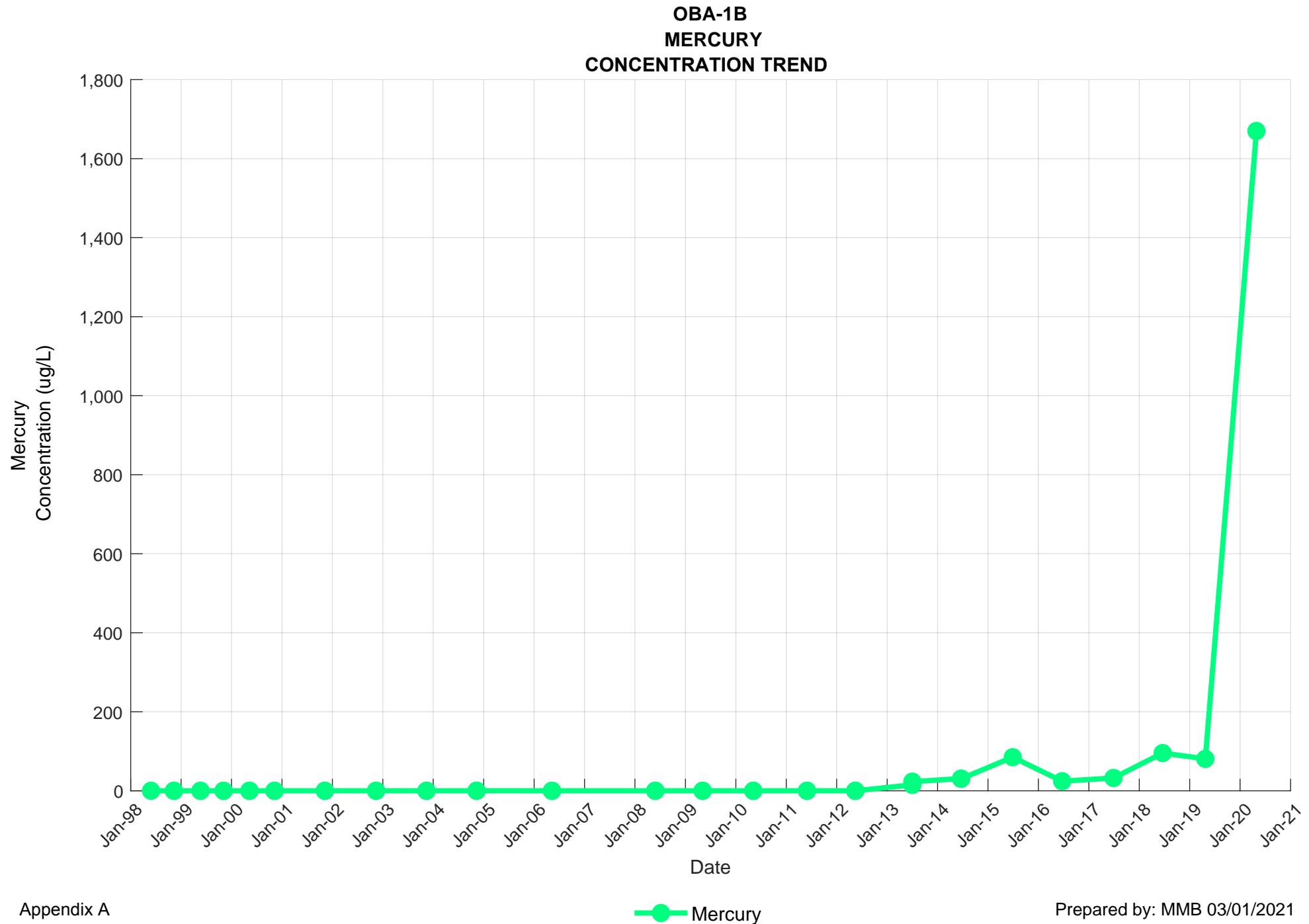
PN-14A
MERCURY
CONCENTRATION TREND



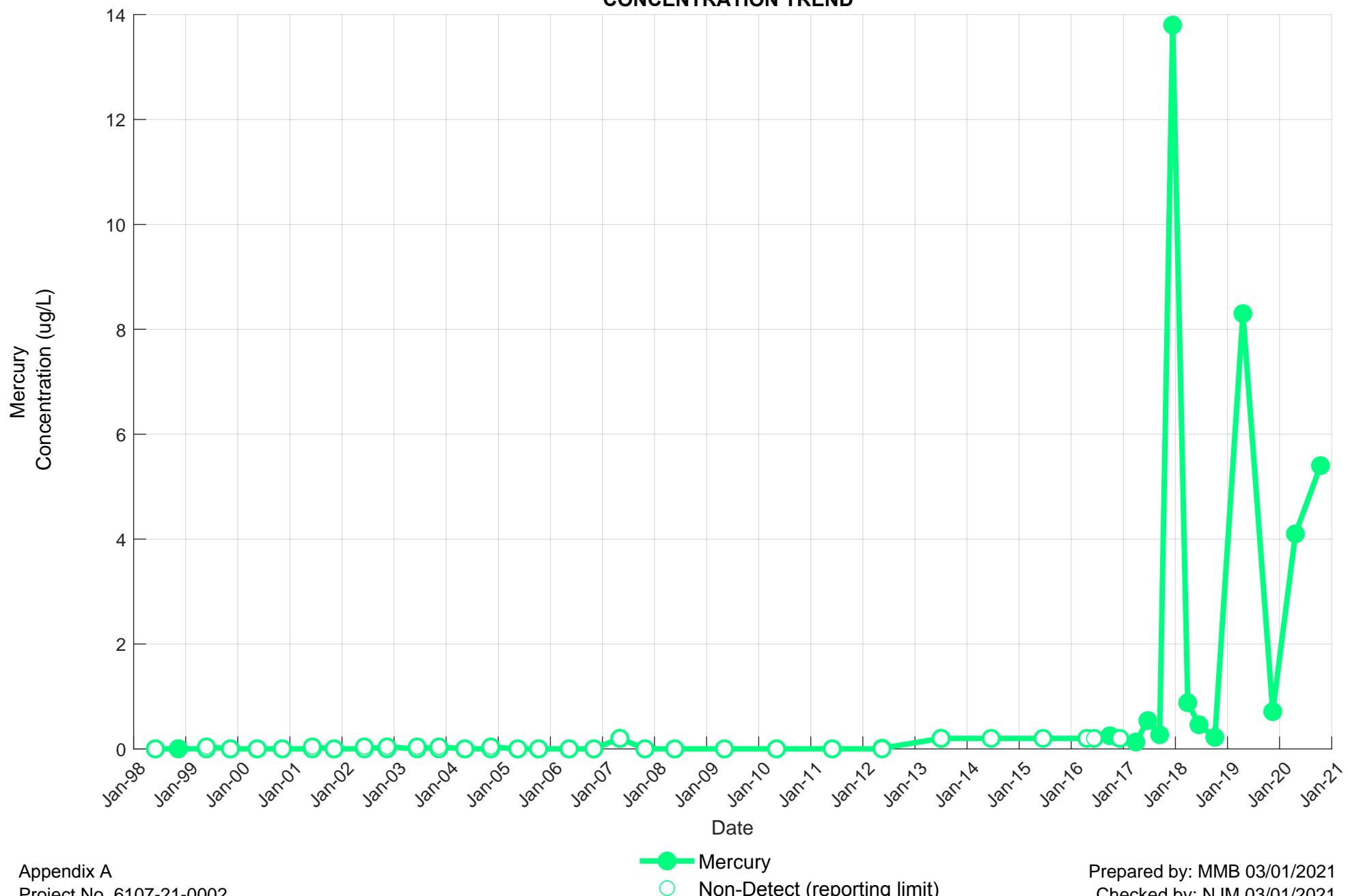


PN-20A
MERCURY
CONCENTRATION TREND

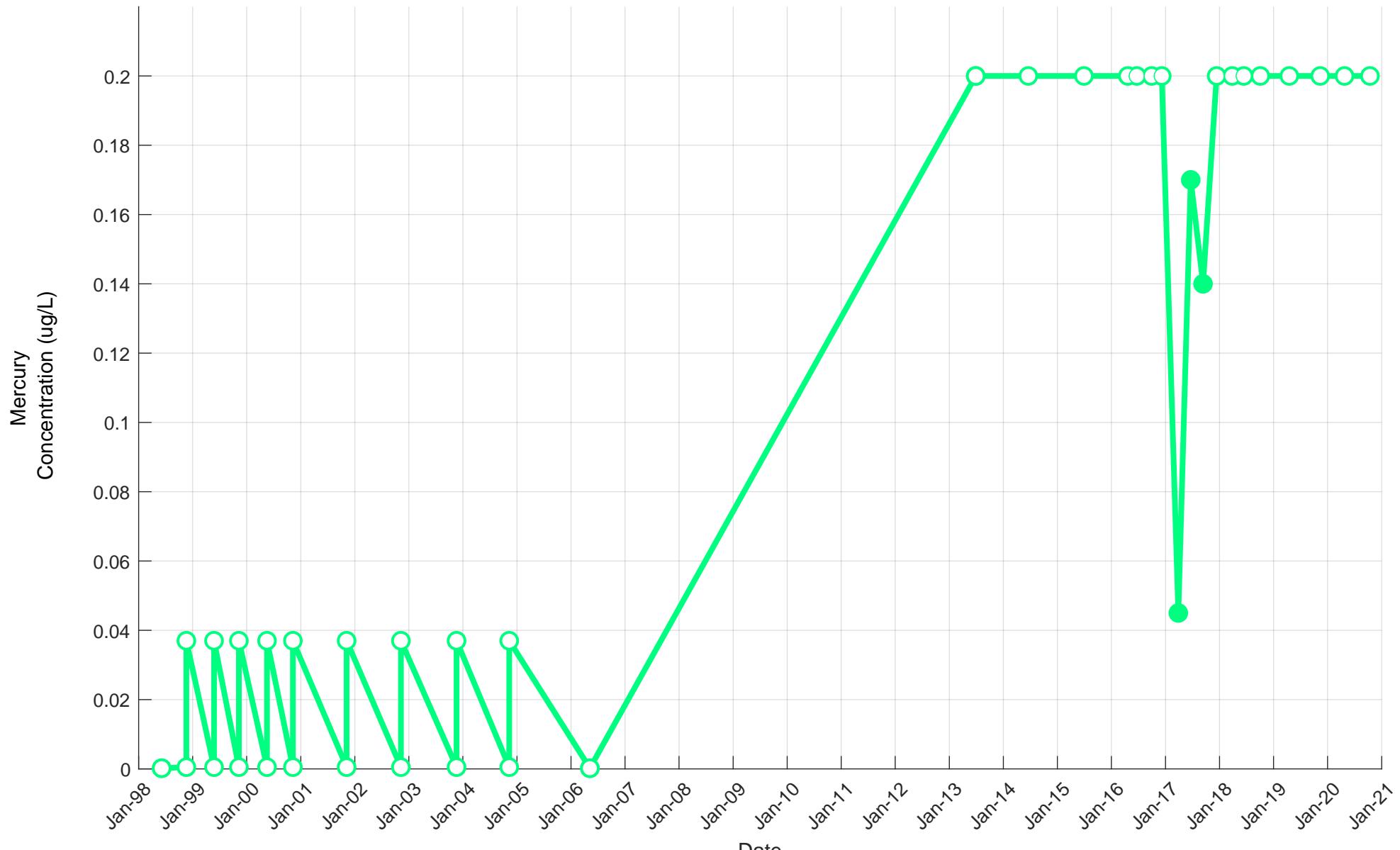




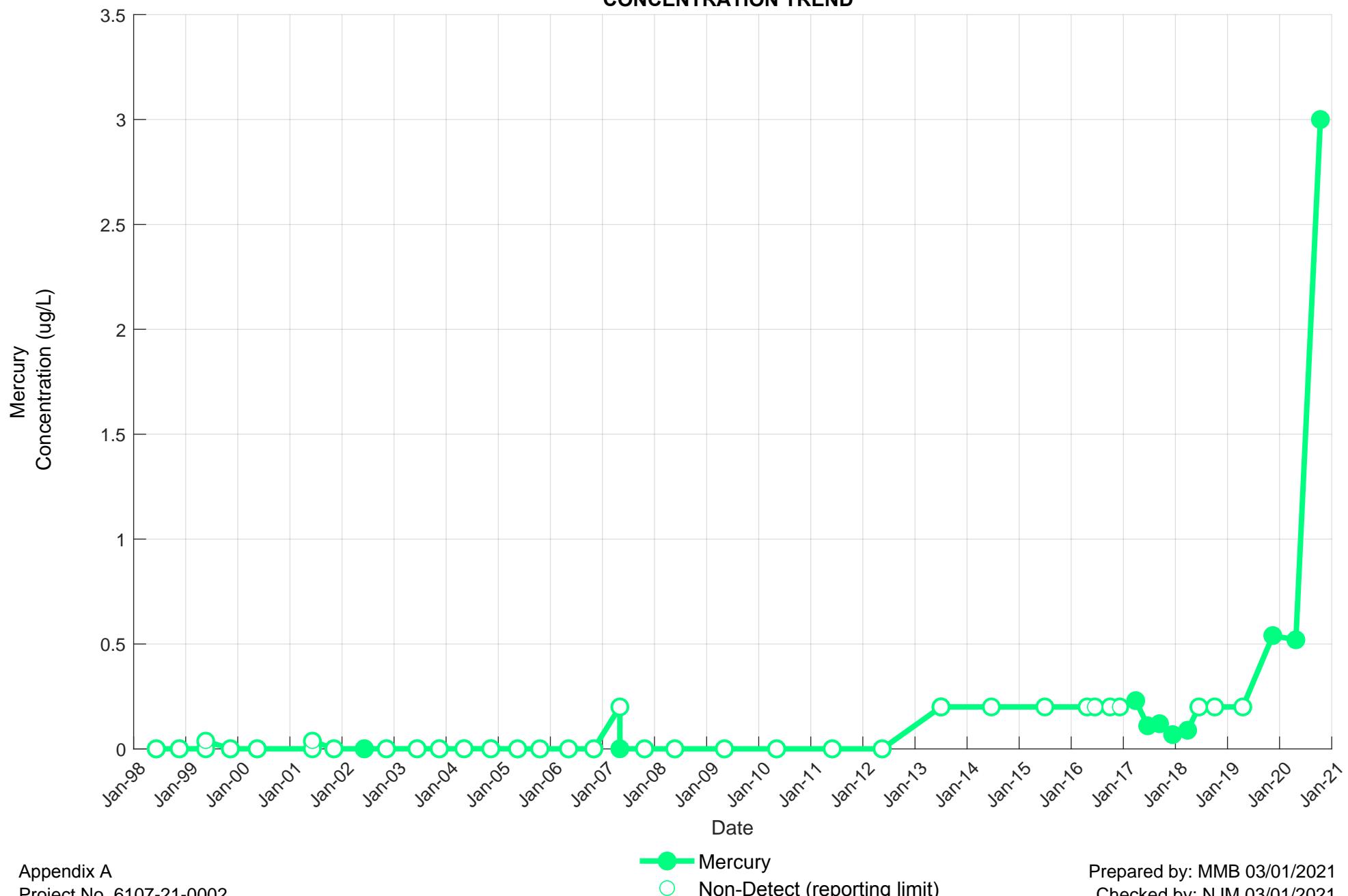
OBA-2B
MERCURY
CONCENTRATION TREND



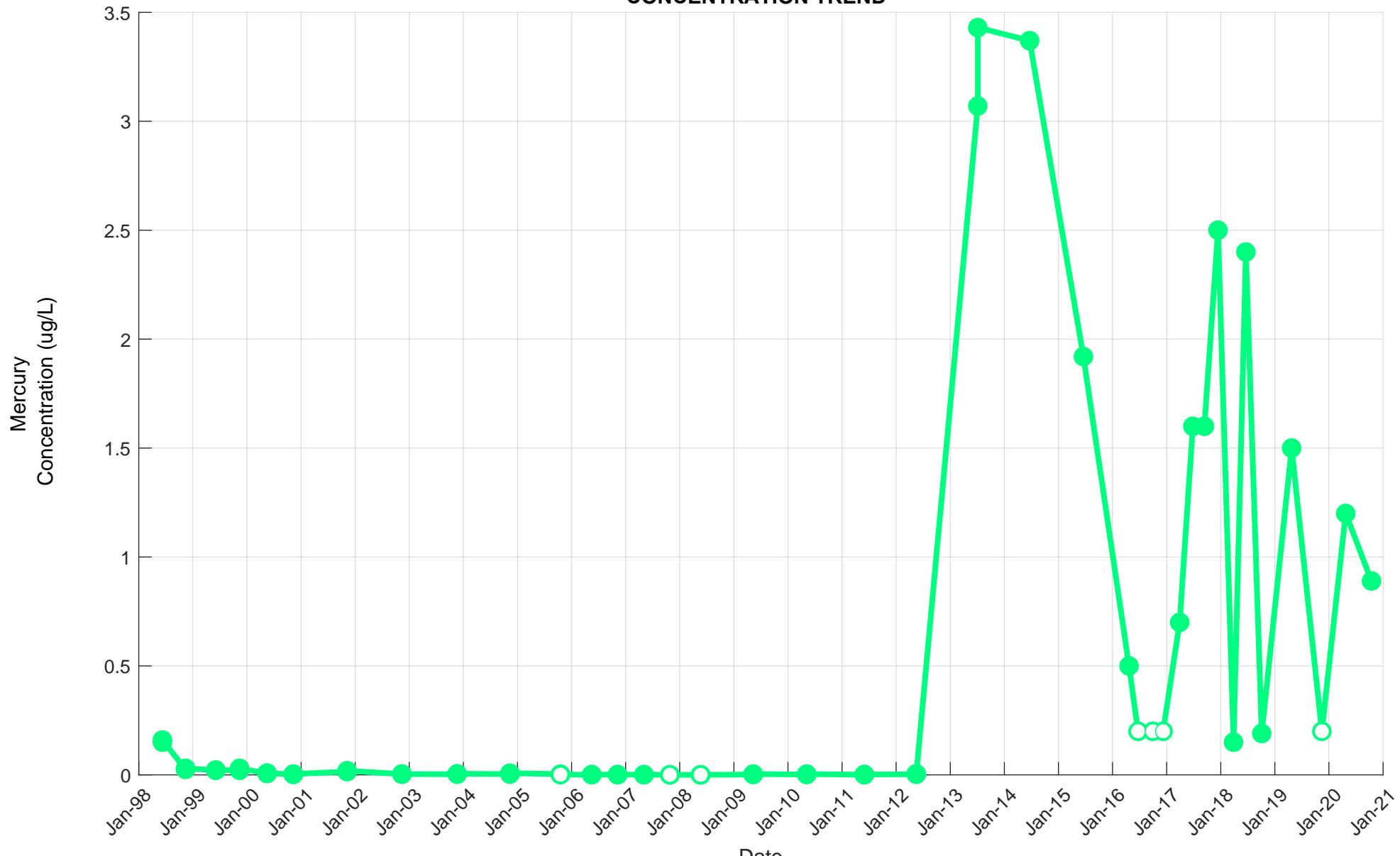
**OBA-4B
MERCURY
CONCENTRATION TREND**

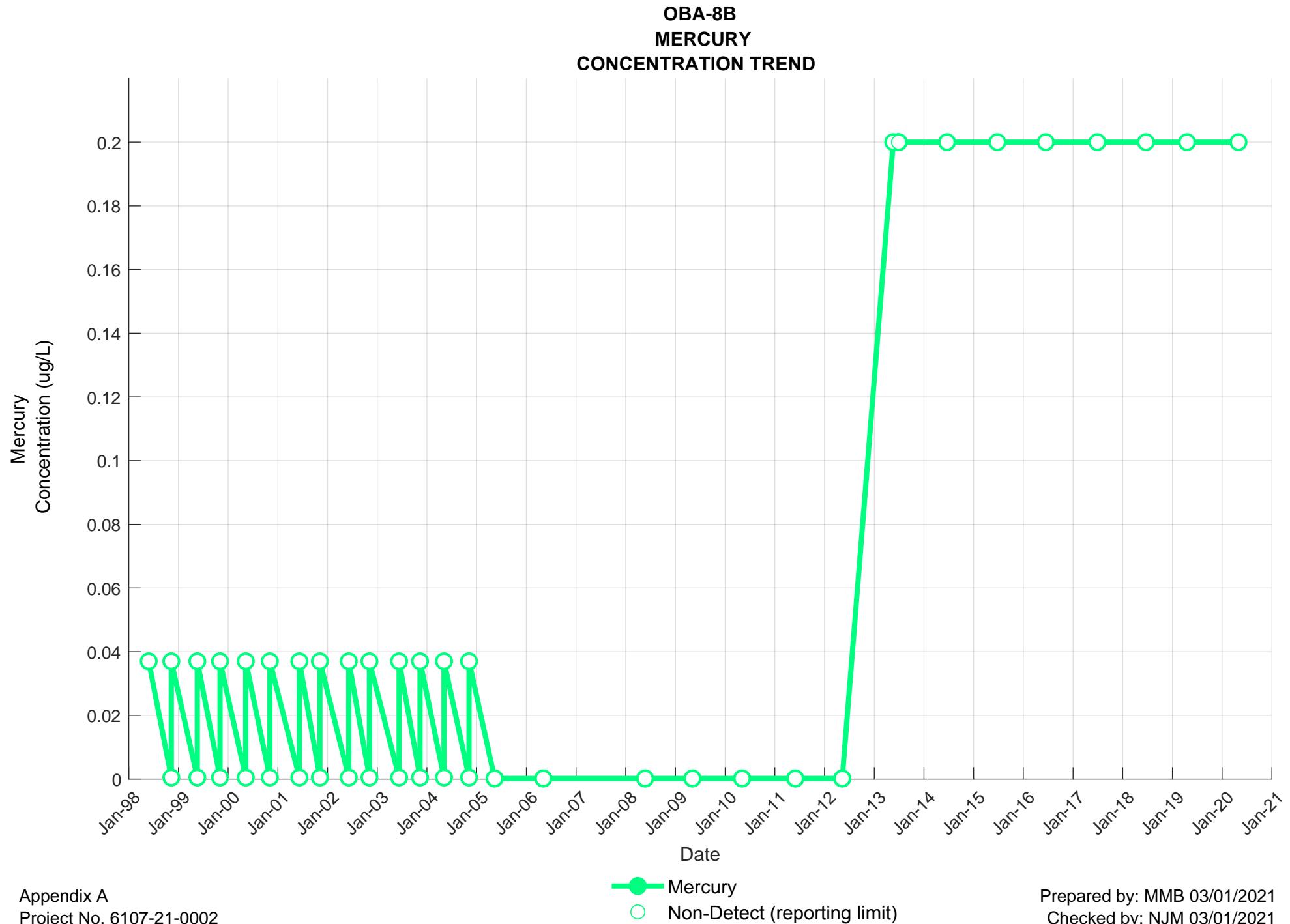


**OBA-5B
MERCURY
CONCENTRATION TREND**

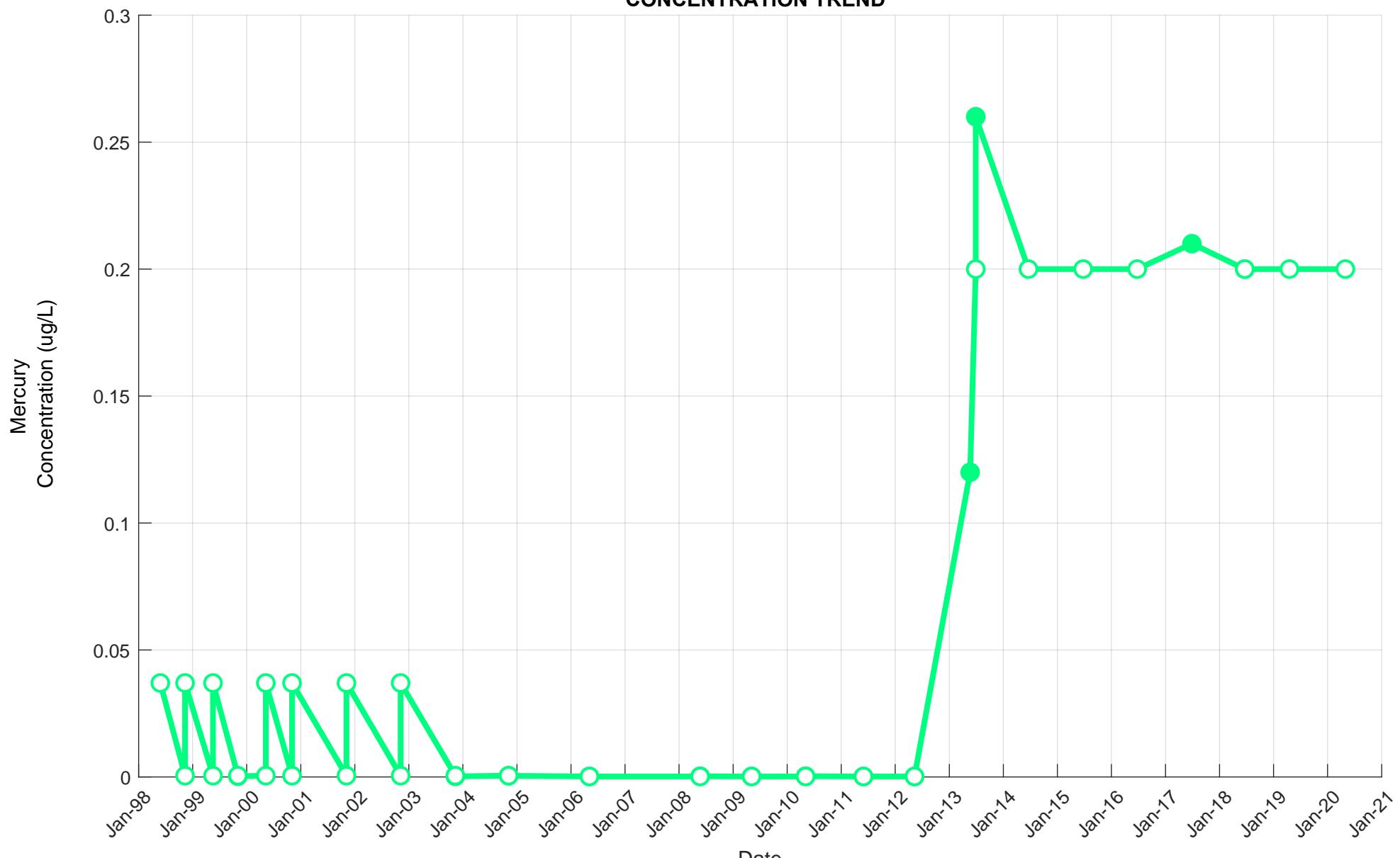


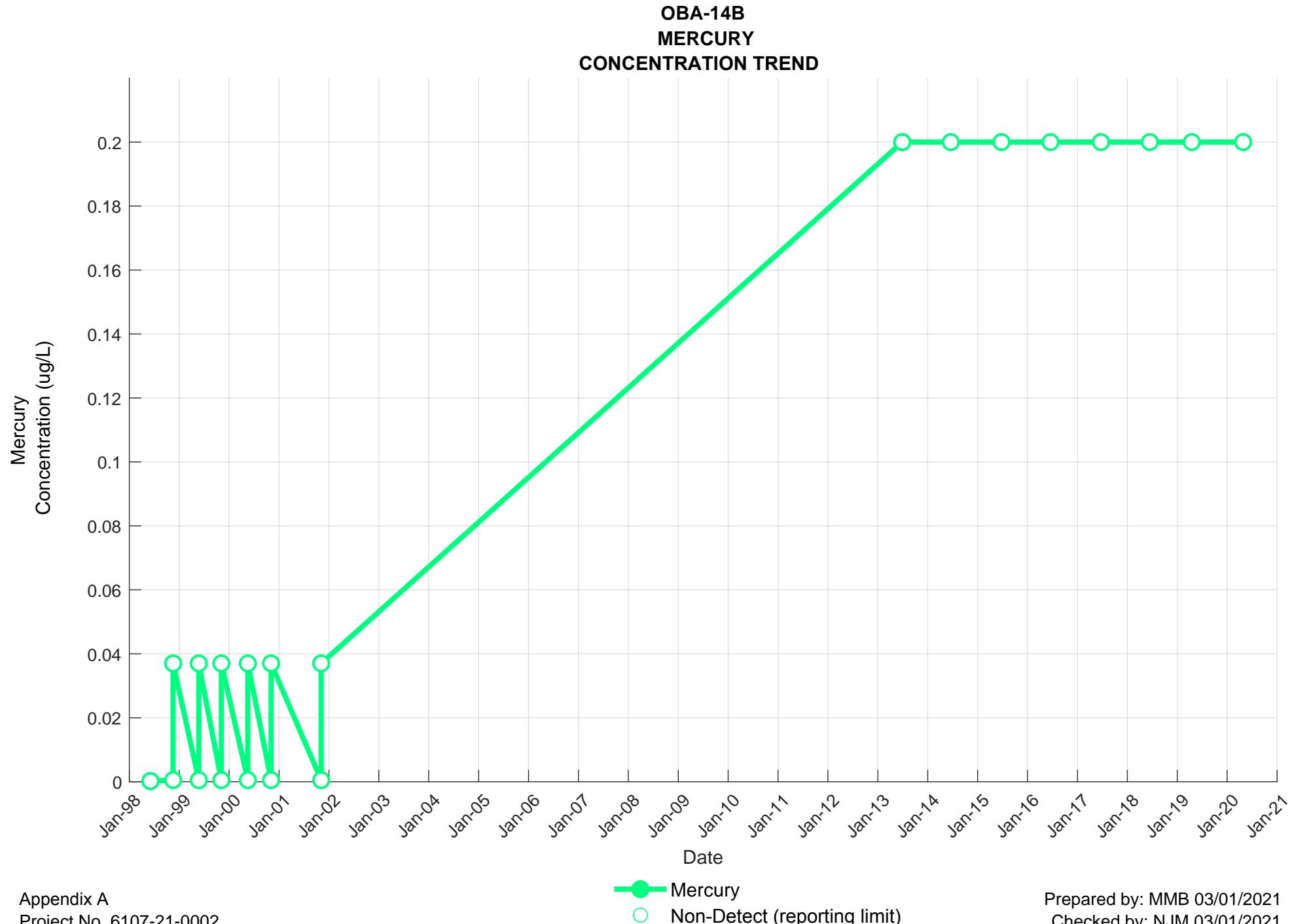
**OBA-6B
MERCURY
CONCENTRATION TREND**



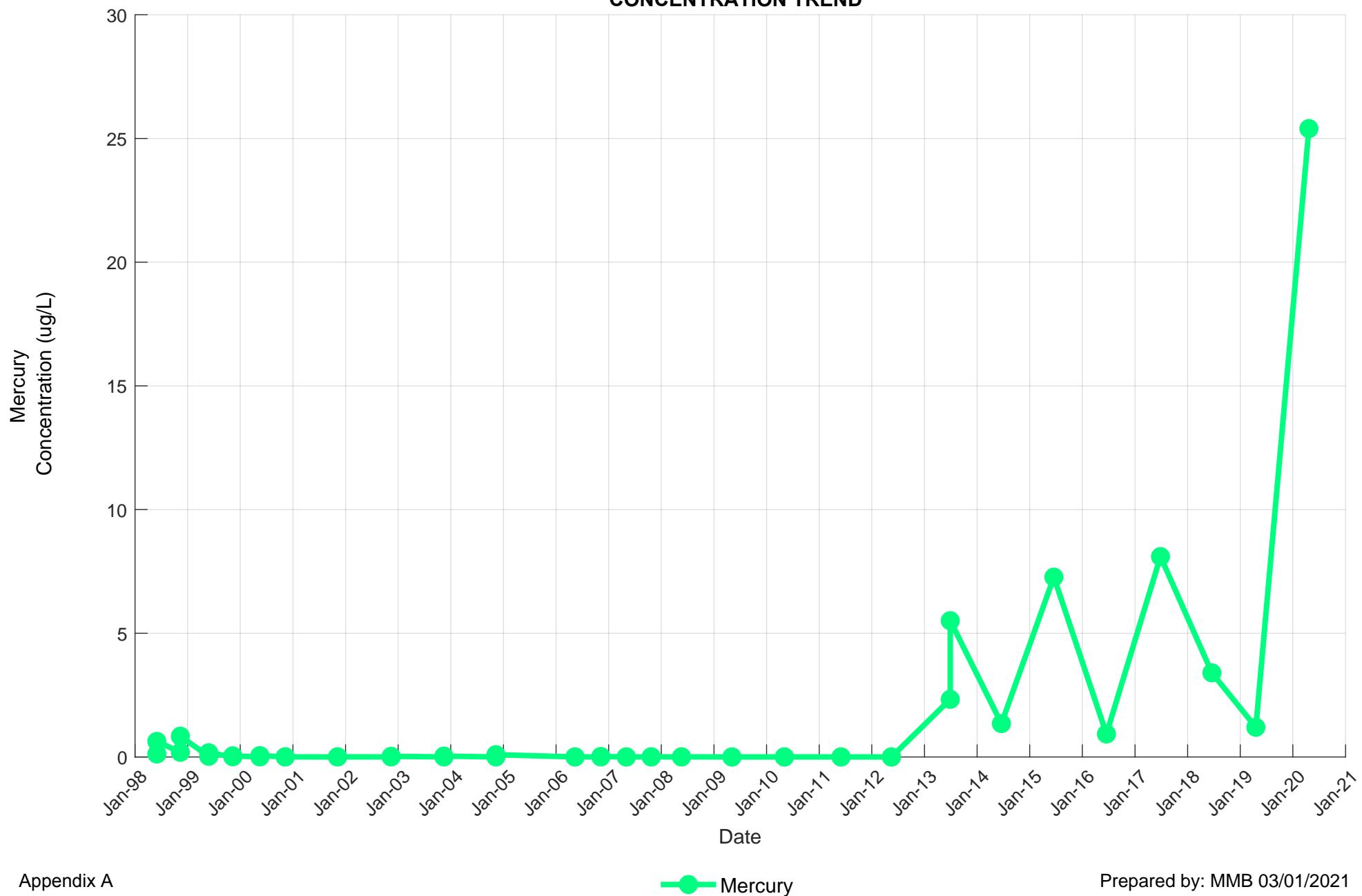


OBA-11B
MERCURY
CONCENTRATION TREND

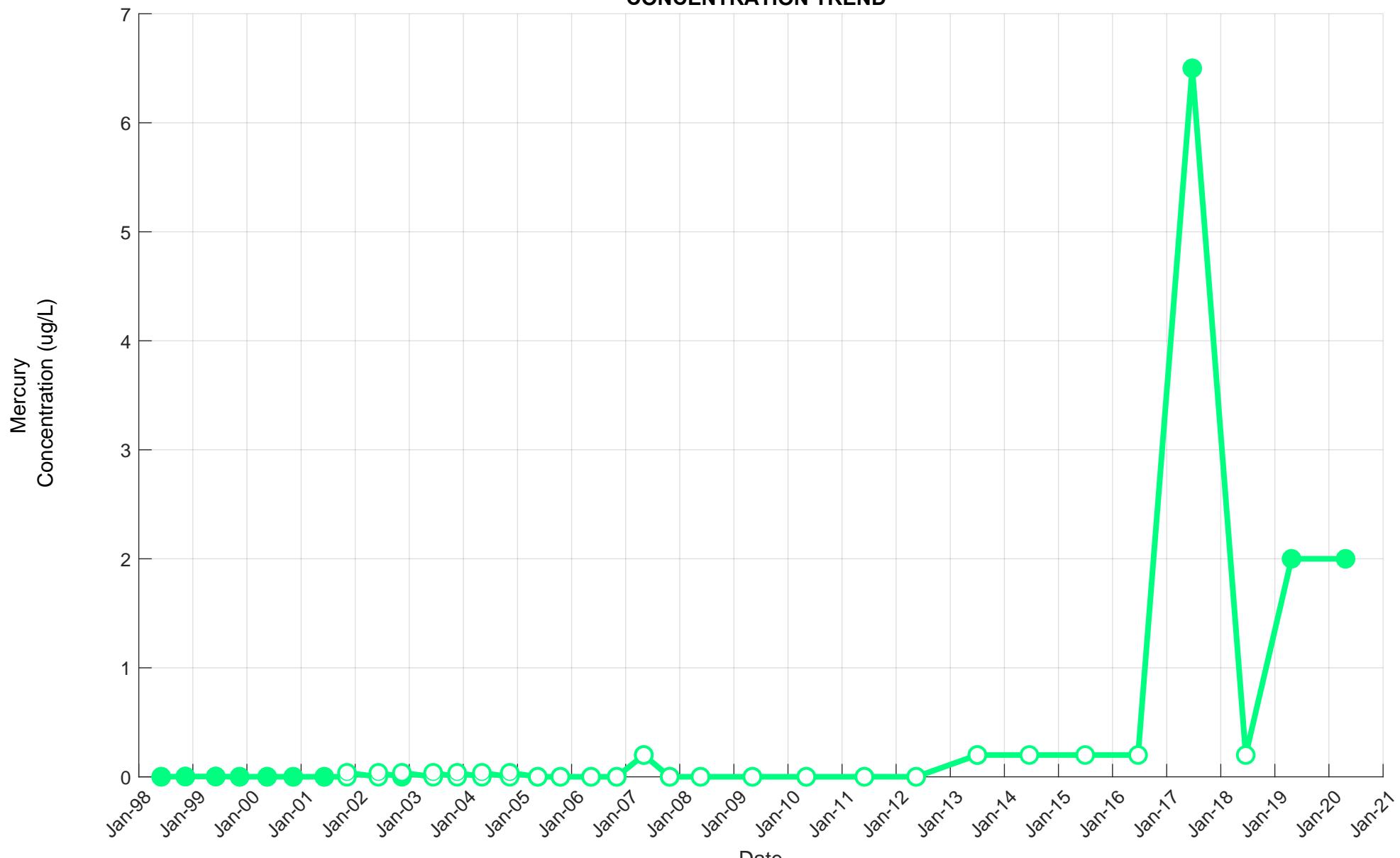




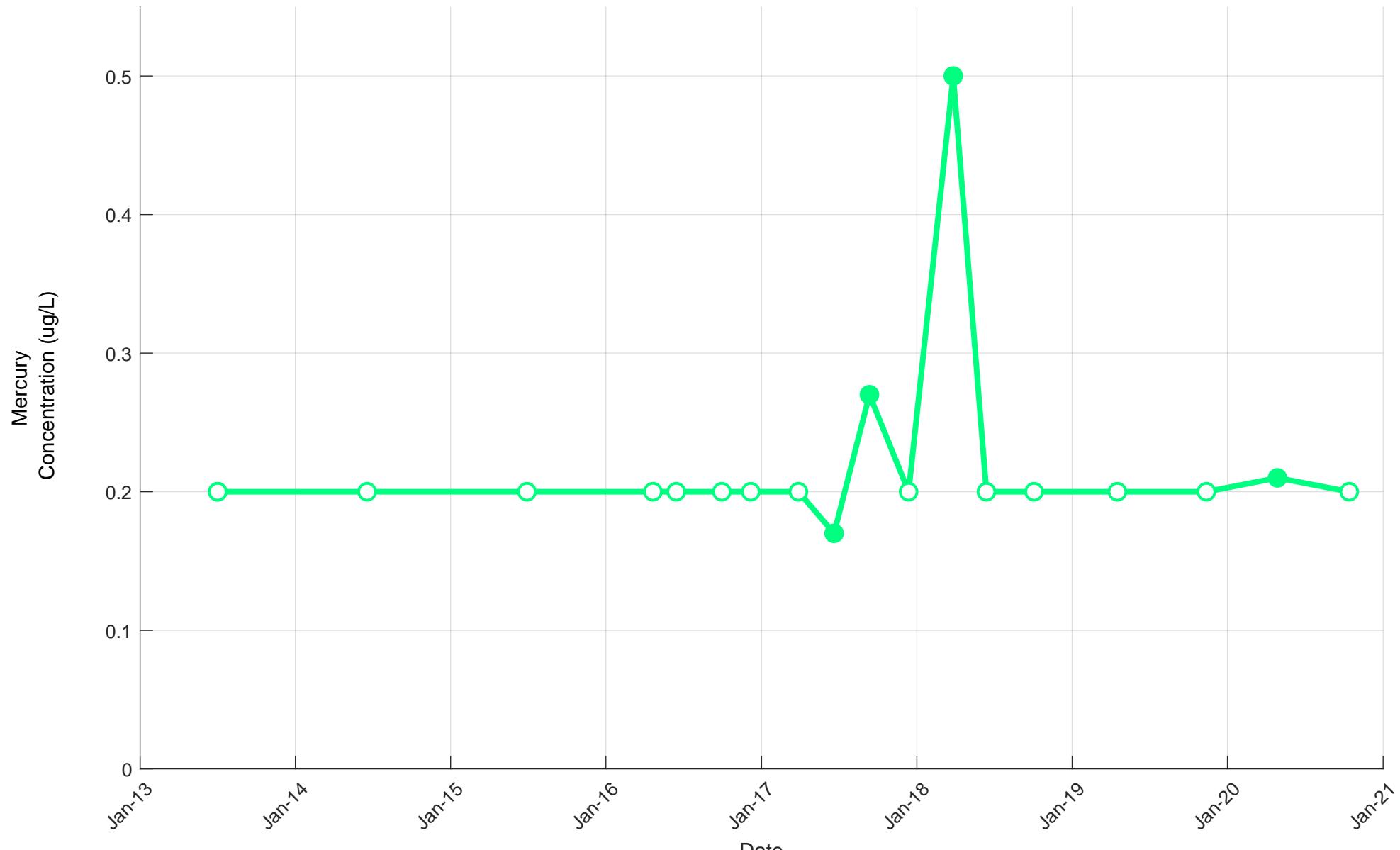
**OBA-16B
MERCURY
CONCENTRATION TREND**



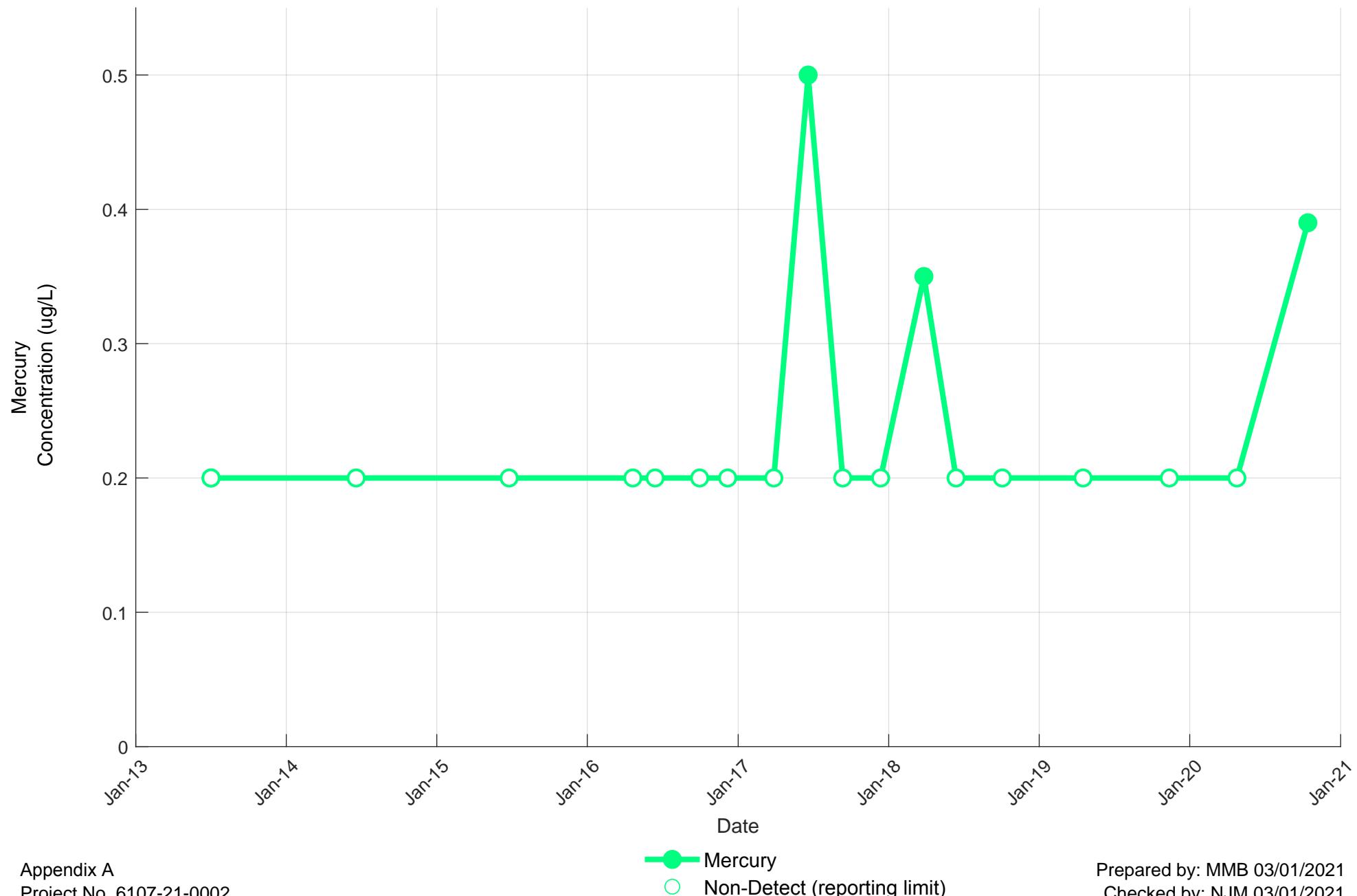
OBA-23B
MERCURY
CONCENTRATION TREND

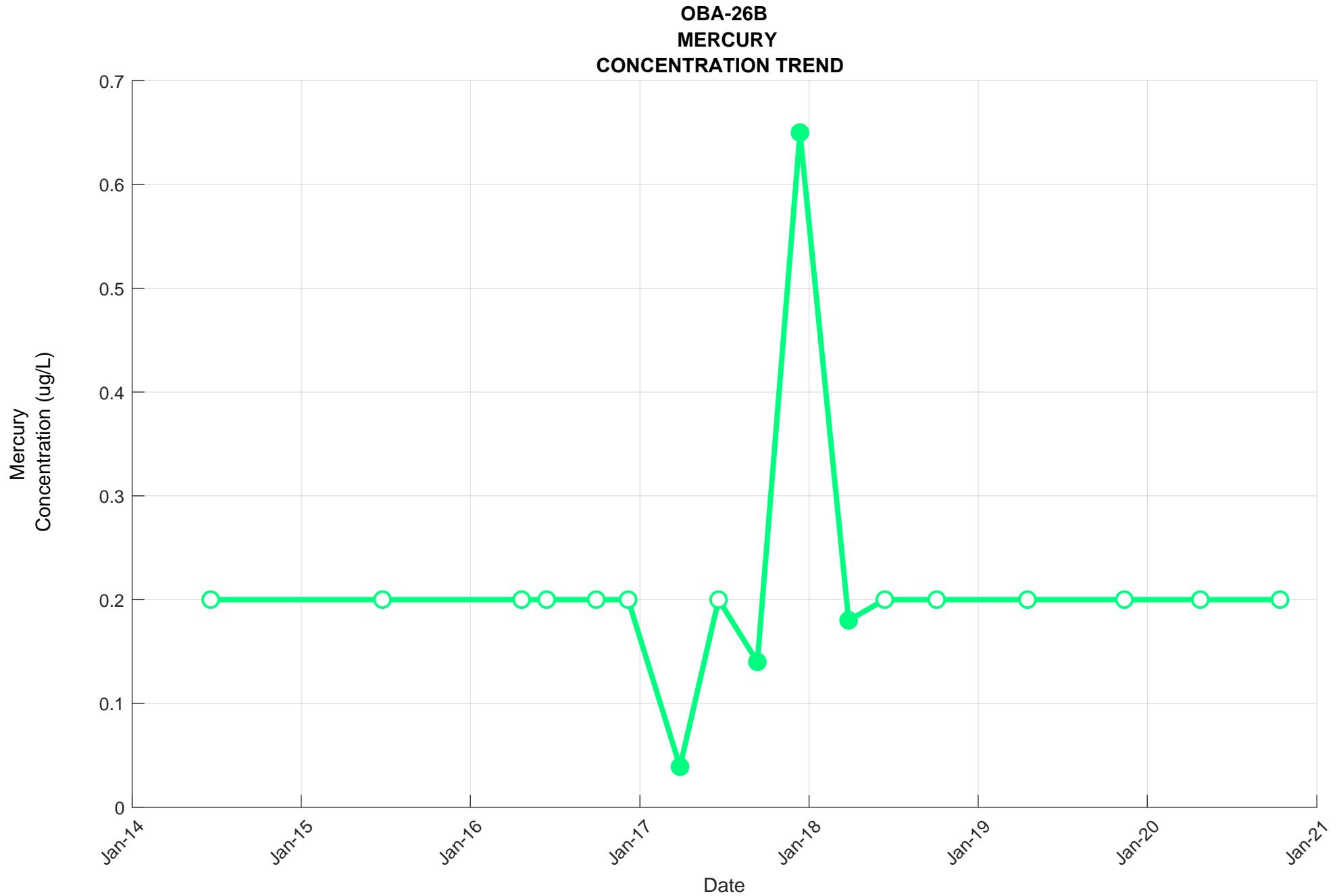


OBA-24B
MERCURY
CONCENTRATION TREND

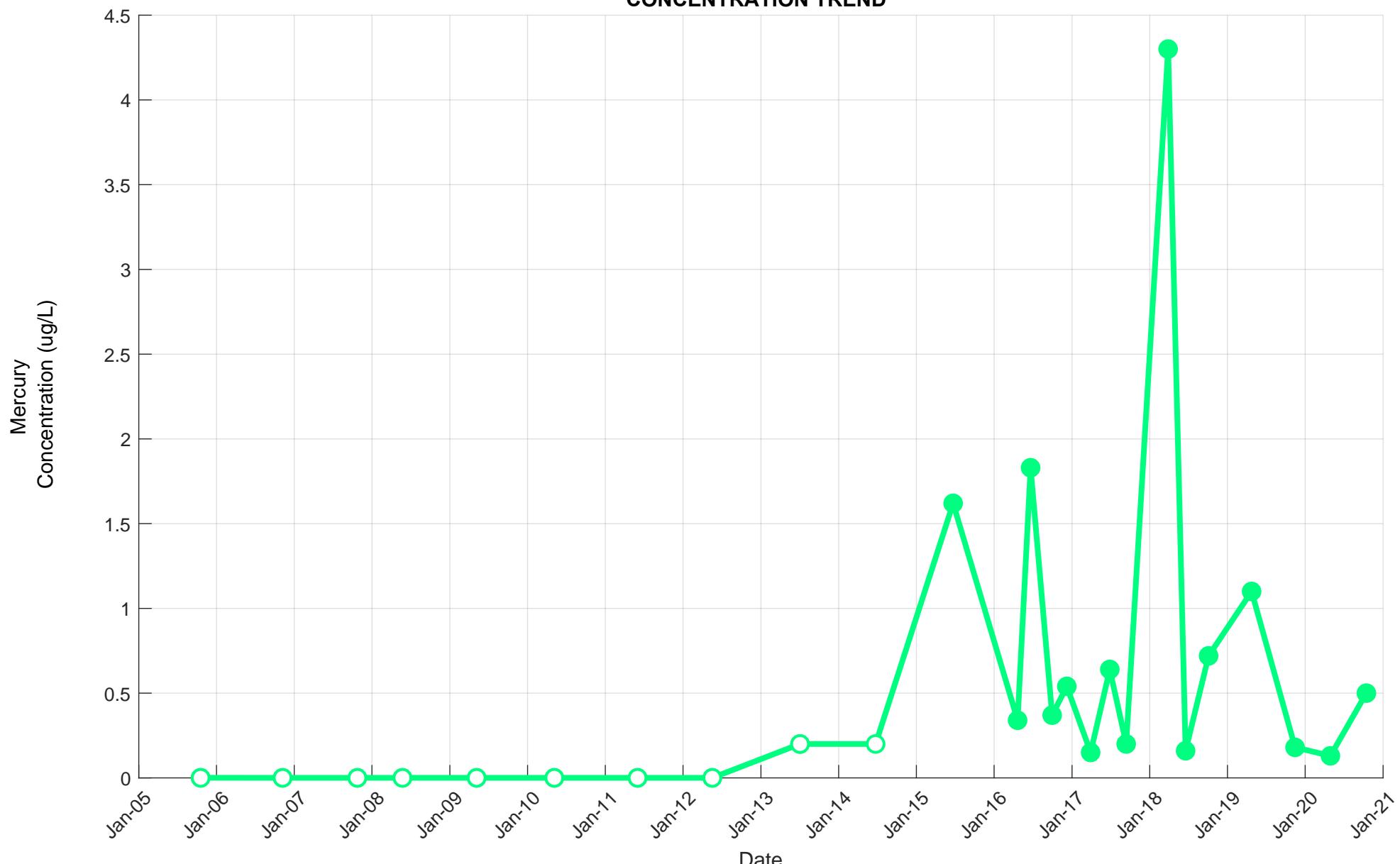


OBA-25B
MERCURY
CONCENTRATION TREND

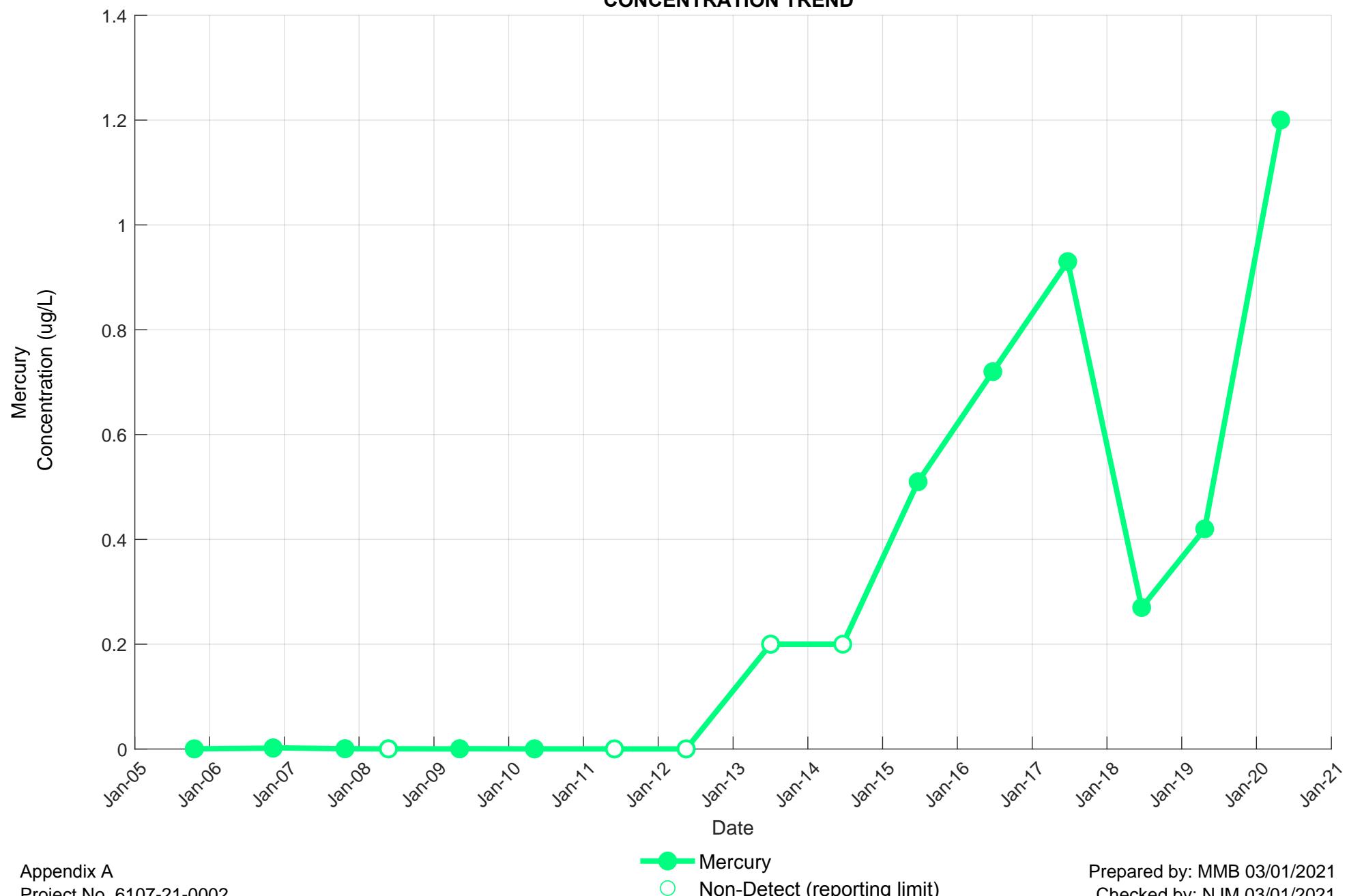




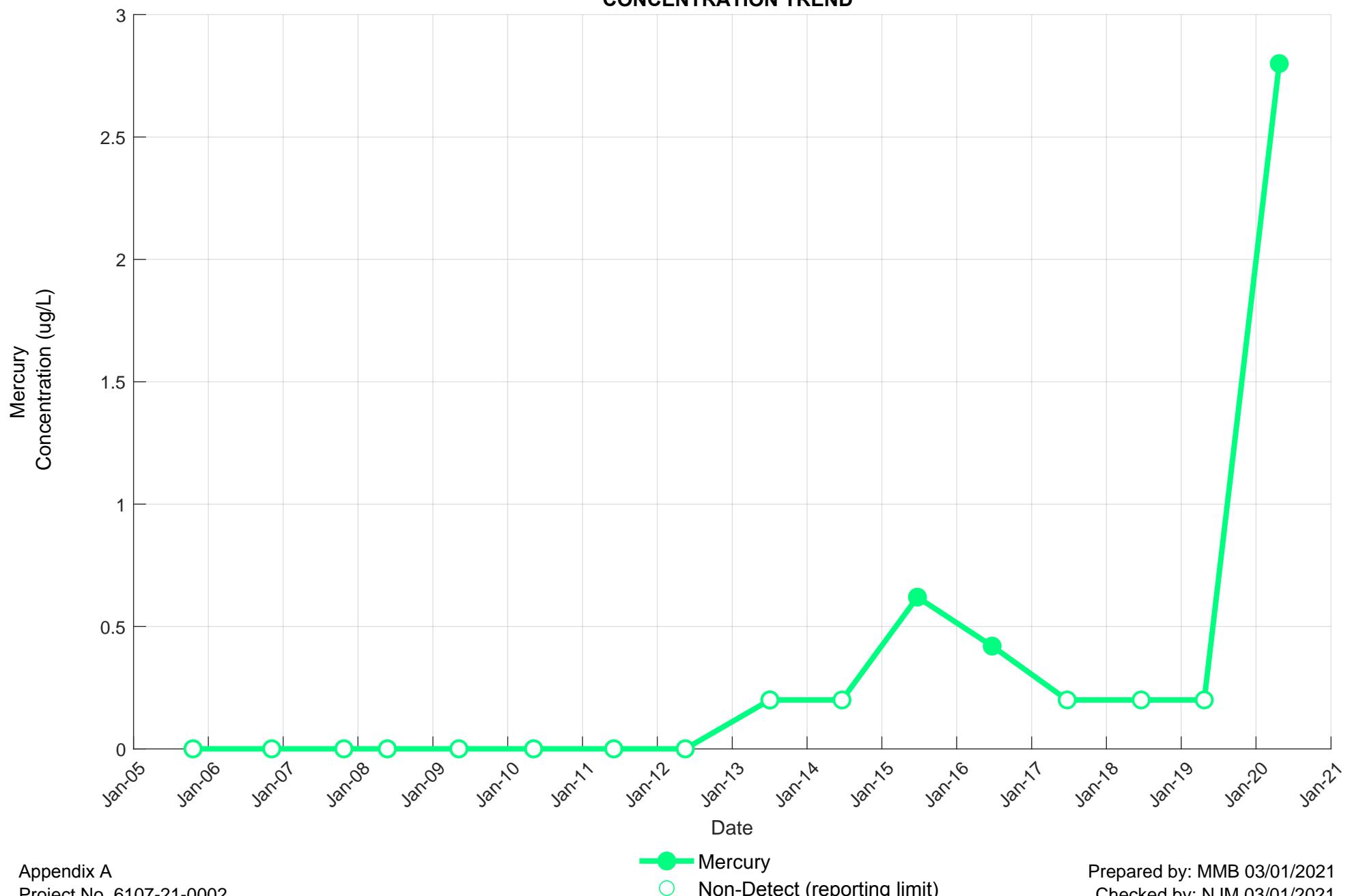
PN-5B
MERCURY
CONCENTRATION TREND

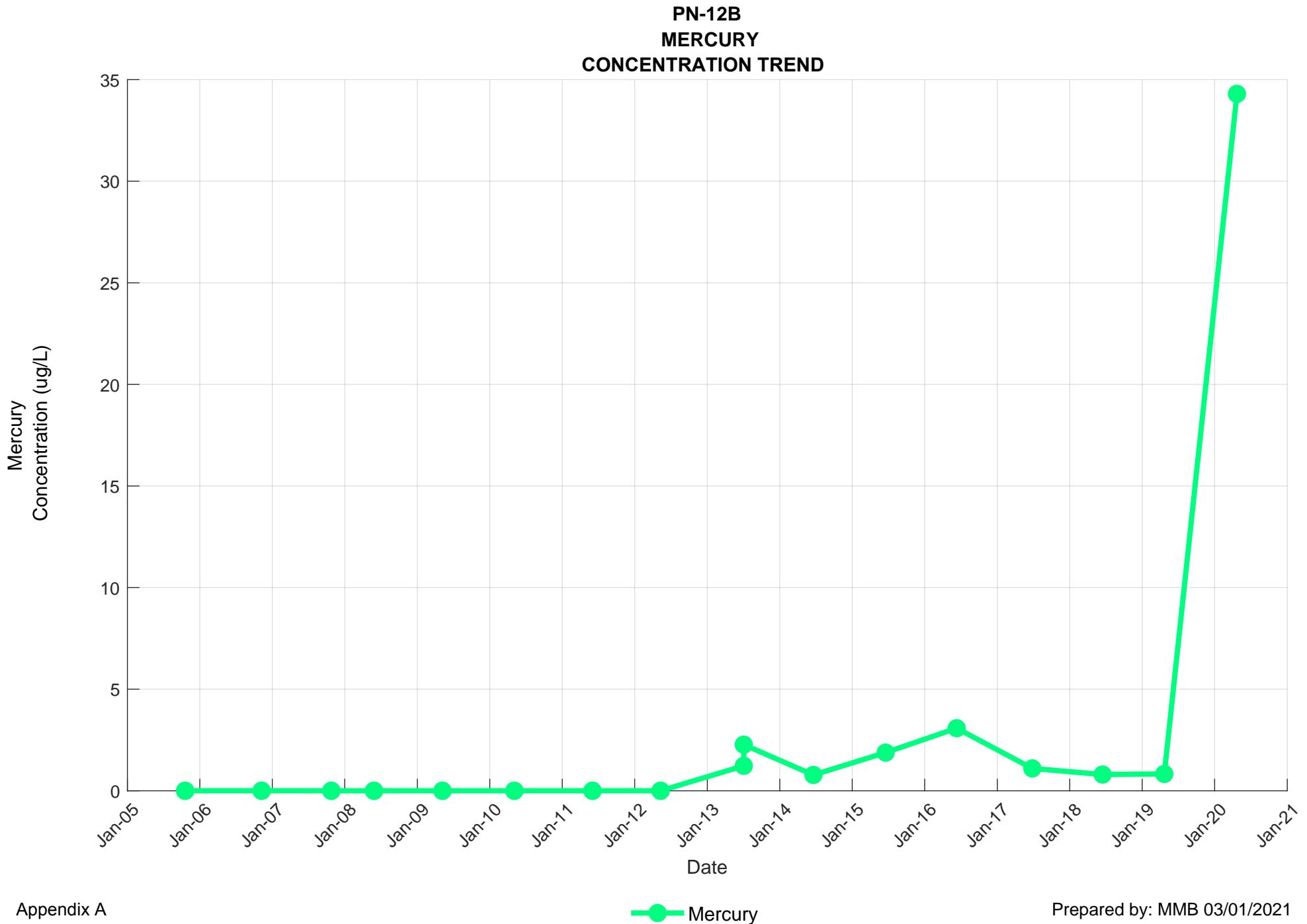


PN-7B
MERCURY
CONCENTRATION TREND

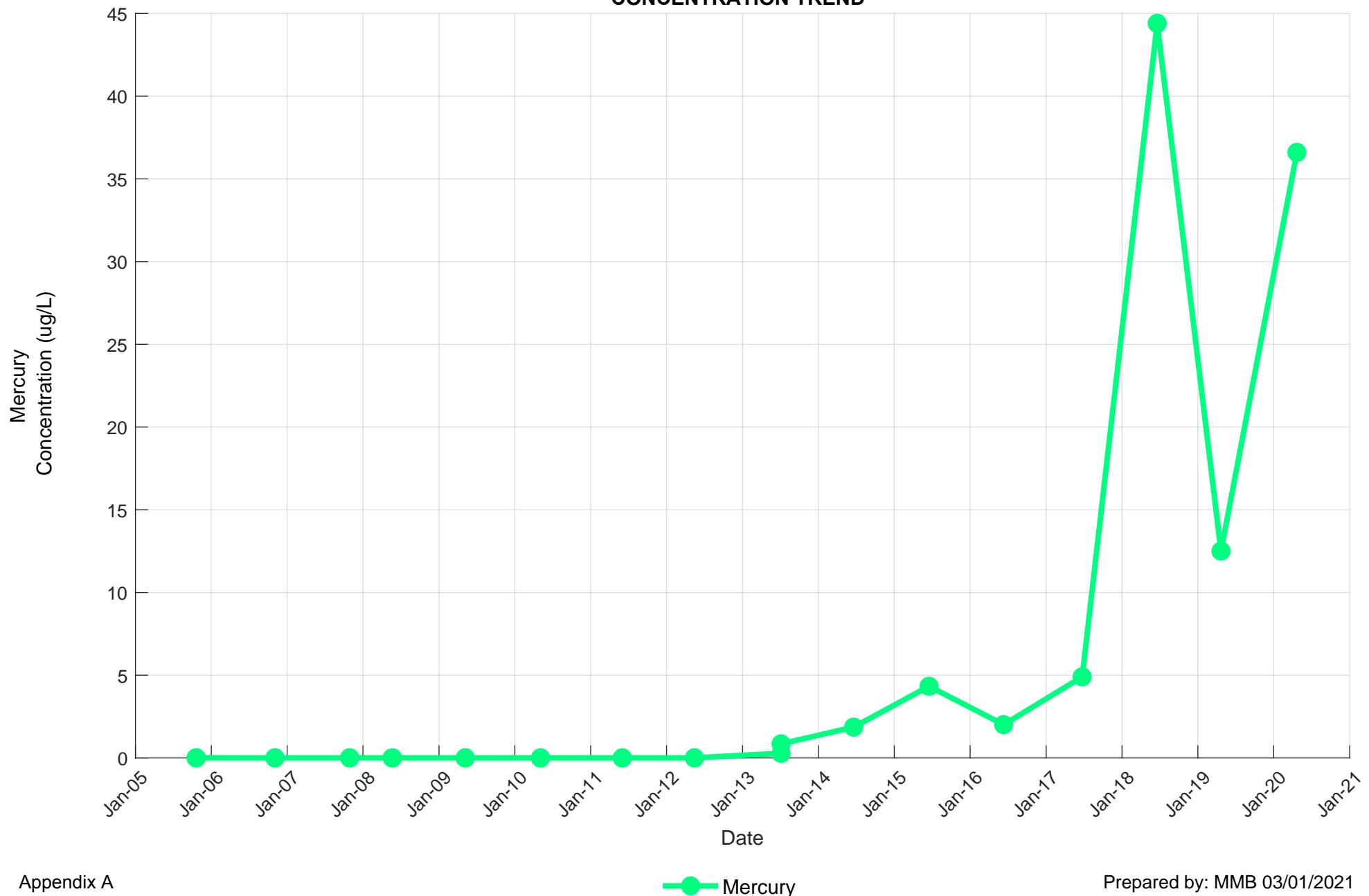


PN-11B
MERCURY
CONCENTRATION TREND

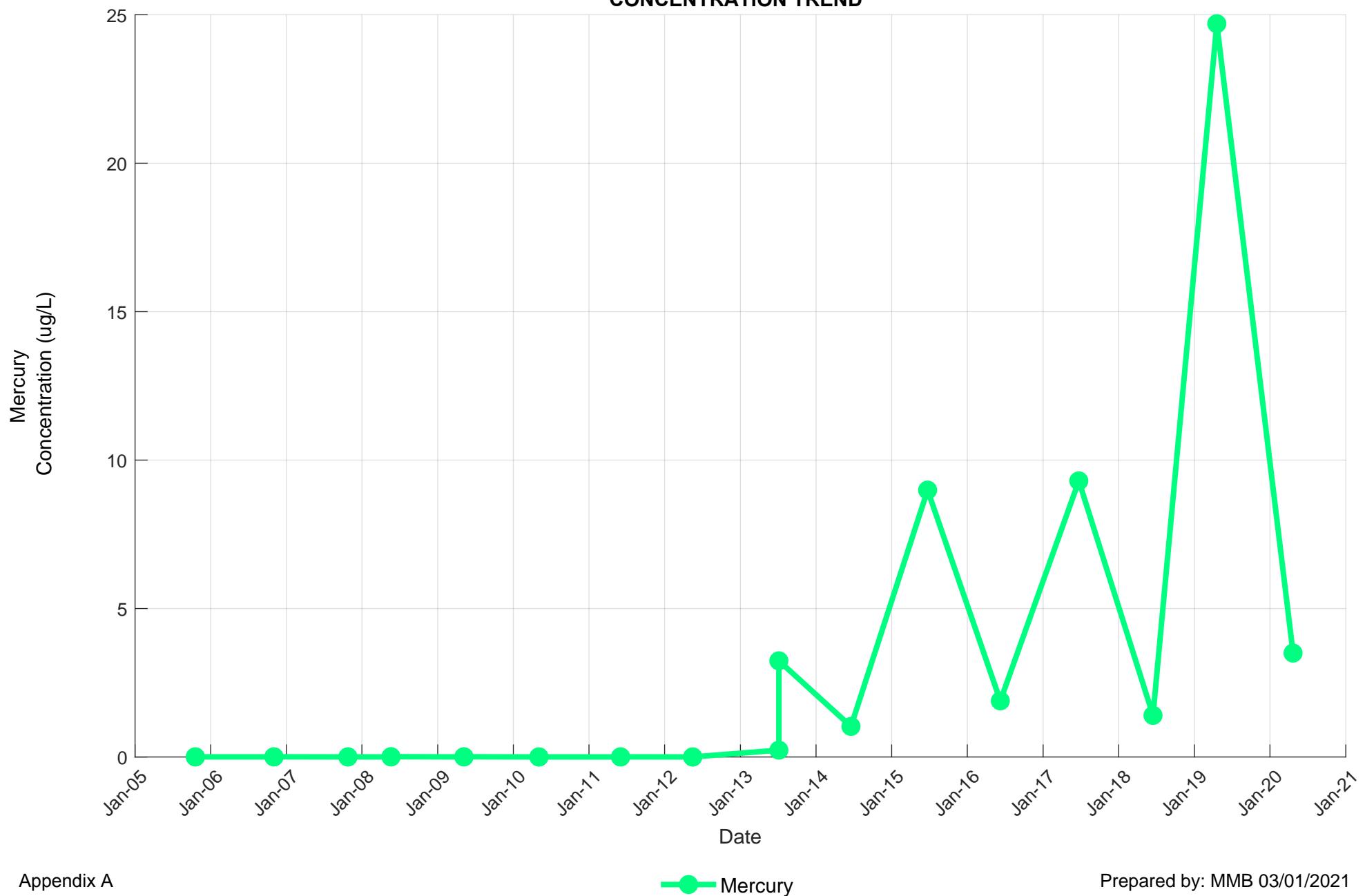




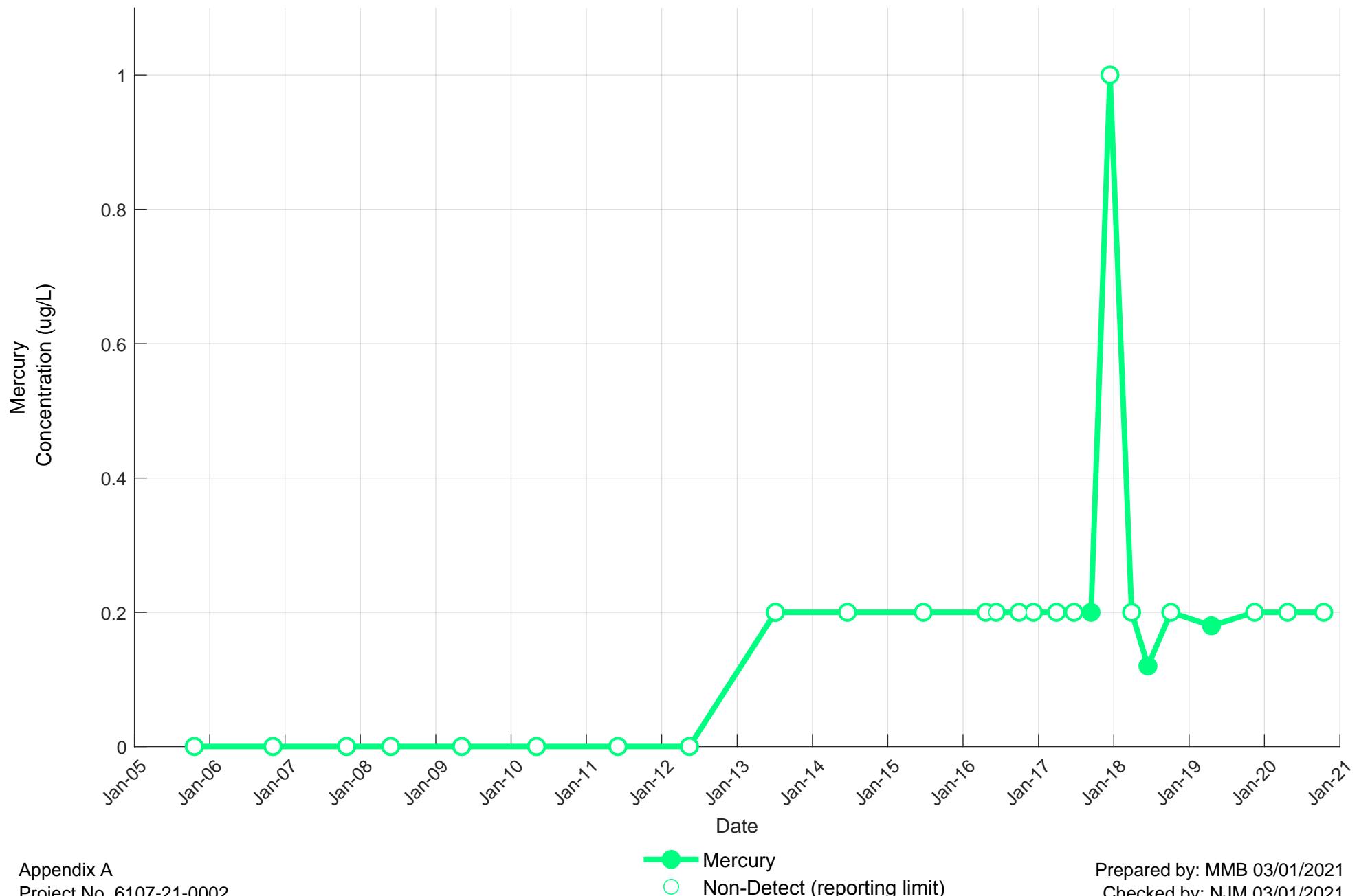
PN-15B
MERCURY
CONCENTRATION TREND



PN-17B
MERCURY
CONCENTRATION TREND



PN-20B
MERCURY
CONCENTRATION TREND



PN-24B
MERCURY
CONCENTRATION TREND

