2019 Annual Groundwater Monitoring and Corrective Action Report - Material Storage Runoff Basin, Metal Cleaning Waste Basin, and Drying Area

NIPSCO LLC R. M. Schahfer Generating Station

Prepared Pursuant to 40 CFR §257.90(e) and Corresponding Regulations under 329 Indiana Administrative Code 10-9-1

Submitted to:

Northern Indiana Public Service Company LLC
R.M. Schahfer Generating Station
Wheatfield, Indiana

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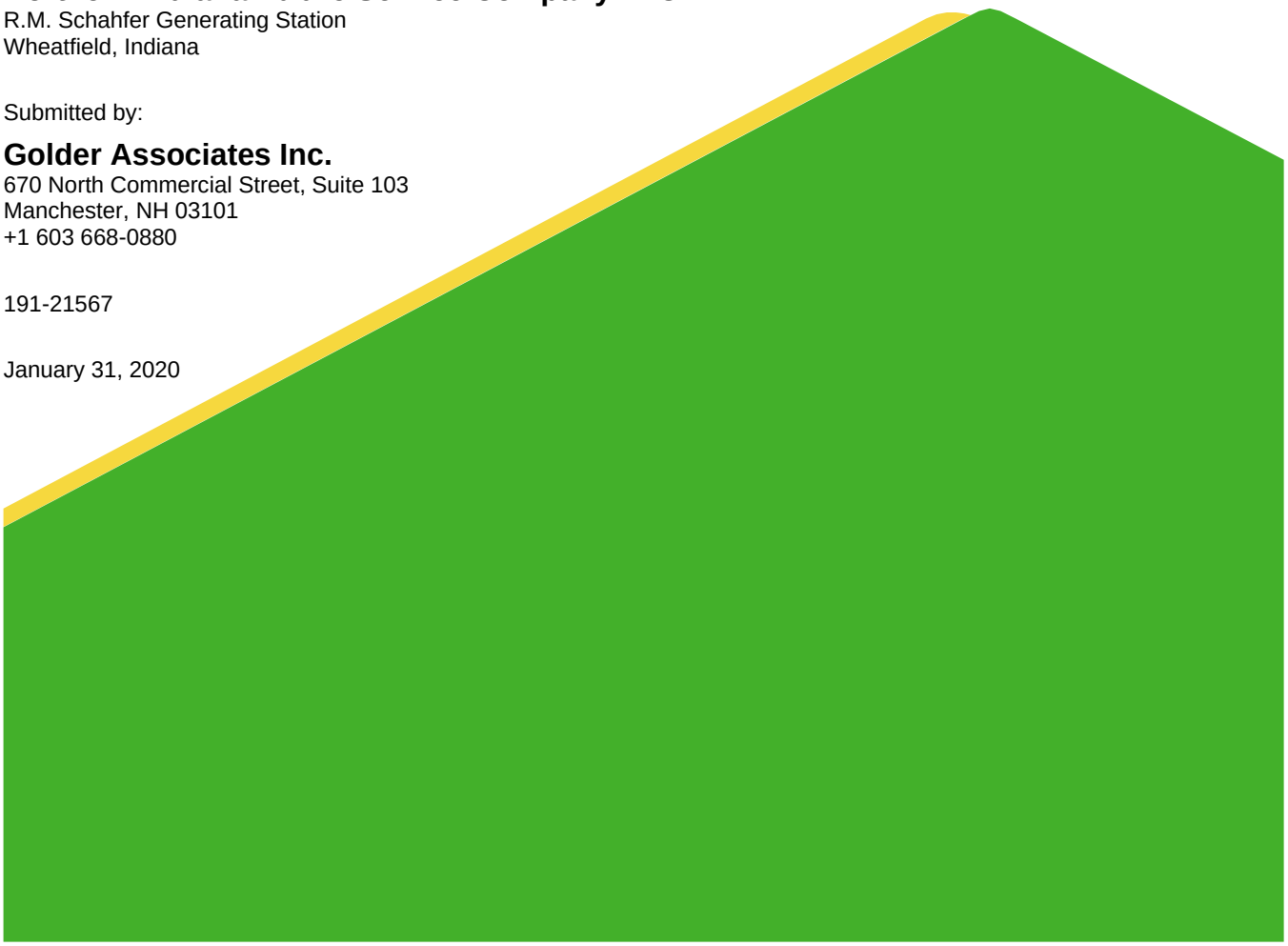

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1.0 INTRODUCTION

On behalf of Northern Indiana Public Service Company LLC (NIPSCO LLC), Golder Associates Inc. (Golder) prepared this 2019 Annual Groundwater Monitoring and Corrective Action Report (2019 Annual Report) for the Rollin M. Schahfer Generating Station (RMSGS, Schahfer) Material Storage Runoff Basin (MSRB), Metal Cleaning Waste Basin (MCWB), and the Drying Area (together, the CCR Unit) located at 2723 E 1500 N Road, Wheatfield, Jasper County, Indiana (Latitude 41° 12' 36" and Longitude 87° 01' 48", see Figure 1). As shown in Figure 2, the Drying Area is an approximately 5.5-acre impoundment that has been completely filled with CCR. The MSRB and MCWB consist of two rectangular, approximately 15-acre impoundments, separated by a narrow berm, located adjacent to one another. Golder prepared the 2019 Annual Report in accordance with 40 Code of Federal Regulations (CFR) Parts 257 and 261, “Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities; Final Rule” (CCR Rule), as amended, and corresponding regulations under 329 Indiana Administrative Code (IAC) 10-9-1.

To comply with the CCR Rule, NIPSCO LLC and Golder decided to monitor the Drying Area, MCWB, MSRB as one CCR Unit due to the proximity of the MSRB, MCWB, and the Drying Area to one another, and because there are no practical means of monitoring groundwater between the impoundments. Routine monitoring activities performed during the reporting period include inspection of wells for integrity and security, measurement of groundwater levels prior to sample collection to assess groundwater flow direction, and collection of samples for laboratory analysis.

In conformance with the applicable requirements of 40 CFR §257.90(e)(1) through (5) and corresponding State of Indiana requirements, the 2019 Annual Report:

- Documents the status of the groundwater monitoring and corrective action program
- Provides figures showing the CCR Unit and monitoring well locations
- Summarizes key CCR Rule groundwater activities completed during calendar year 2019
- Includes CCR Rule groundwater monitoring data obtained in calendar year 2019
- Describes any problems encountered during the monitoring activities
- Discusses actions taken to resolve the problems, if applicable
- Projects key activities for the upcoming year

2.0 GROUNDWATER MONITORING AND CORRECTIVE MEASURES PROGRAM STATUS

Starting in 2016 following the installation of a groundwater monitoring system and throughout calendar year 2017, Golder collected background groundwater samples and performed Detection Monitoring around the CCR Unit pursuant to the requirements of 40 CFR §257.94. In 2018, Golder performed the first and second Assessment Monitoring sampling events pursuant to the requirements of 40 CFR §257.95. Following the first Assessment Monitoring sampling event, including verification sampling, NIPSCO LLC posted a notification to the publicly-assessible website that there were detections of 40 CFR Part 257 Appendix IV parameters downgradient of the MSRB, MCWB, and Drying Area above applicable groundwater protection standards (GWPS). Consequently, NIPSCO LLC initiated the assessment of corrective measures process. In 2019, Golder completed the third and fourth Assessment Monitoring sampling events. NIPSCO LLC has completed the Assessment of Corrective

Measures Report and is continuing to evaluate the feasibility and design of potential groundwater remedial alternatives in accordance with the provisions of 40 CFR §259.97.

2.1 Key Actions Completed - 2019

NIPSCO LLC completed the following key actions relative to CCR Rule groundwater well installation and monitoring at the MSRB, MCWB, and Drying Area during calendar year 2019:

- Preparation of the 2018 Groundwater Monitoring and Corrective Action Annual Report in January 2019 (2018 Annual Report, 40 CFR §257.90(e))
- Evaluation of the results of the second Assessment Monitoring event in February 2019 (40 CFR §257.95)
- Completed and certified the demonstration that an additional 60 days was needed to complete the Assessment of Corrective Measures in February 2019 (40 CFR §257.96(a), Appendix A)
- Notification that constituents in 40 CFR Part 257 Appendix IV exceeded the GWPS in March 2019 (40 CFR §257.95(g))
- Performance of the third Assessment Monitoring event in April 2019 (40 CFR §257.95)
- Completion of the Assessment of Corrective Measures Report in April 2019 (40 CFR §257.96)
- Evaluation of the results of the third Assessment Monitoring event in August 2019 (40 CFR §257.95)
- Notification that constituents in 40 CFR Part 257 Appendix IV exceeded the GWPS in September 2019 (40 CFR §257.95(g))
- Preparation of the first semi-annual Selection of Remedy Progress Report in October 2019 (40 CFR §257.97)
- Performance of the fourth Assessment Monitoring event in November 2019 (40 CFR §257.95)

2.2 Monitoring System Modifications

In June 2019, Golder decommissioned GAMW-55 due to well casing damage and installed GAMW-55R to replace GAMW-55 (see Section 2.7). GAMW-55R was installed adjacent to GAMW-55 and constructed in the same manner. An overview of the modified groundwater monitoring network is provided in the embedded table below.

Background Monitoring Wells	Downgradient Monitoring Wells	Assessment Monitoring Wells
GAMW-04, GAMW-07, GAMW-07B, GAMW-15 and GAMW-15B	GAMW-08, GAMW-08B, GAMW-09, GAMW-09B, GAMW-16, GAMW-16B, GAMW-17, GAMW-17B, GAMW-18 and GAMW-18B	GAMW-46, GAMW-46B, GAMW-52, GAMW-52B, GAMW-53, GAMW-53B, GAMW-54, GAMW-54B, GAMW-55R, GAMW-55B, GAMW-56, and GAMW-56B

Attached Table 1 provides a summary of the well rationale/purpose and date of installation. Golder decommissioned, installed, developed, and surveyed the wells in accordance with the CCR Groundwater Monitoring Program Implementation Manual prepared by Golder in October 2017.

2.3 Background Monitoring (2016 to 2017)

Per the requirements of 40 CFR §257.94, Golder collected eight independent background groundwater samples from each background and downgradient well between July 2016 and August 2017. Golder used the results of the background monitoring phase to develop appropriate, statistically valid background values for each constituent/monitoring well. Golder submitted the samples to a contract laboratory, in accordance with chain of custody and quality assurance/quality control procedures, for analysis of 40 CFR Part 257 Appendix III and Appendix IV constituents. In addition, Golder personnel measured field water quality parameters including specific conductance, temperature, dissolved oxygen, turbidity, oxidation-reduction potential, and pH. The background data set is included in the 2017 CCR Annual Groundwater Monitoring and Corrective Action Report, dated January 31, 2018 (2017 Annual Report).

2.4 Detection Monitoring

Golder performed the first Detection Monitoring event in October 2017, followed by a statistical evaluation and data analysis in January 2018. Golder collected groundwater samples from the CCR Unit background and downgradient monitoring wells for analysis of Appendix III constituents per 40 CFR §257.94 and included the results in the 2017 Annual Report. Following receipt and validation of laboratory results, Golder evaluated the results of the first Detection Monitoring sampling event to compare the concentration of 40 CFR Part 257 Appendix III constituents relative to facility background concentrations. Using Sanitas™ software, Golder pooled the background data to calculate prediction limits and compared the October 2017 results to the calculated prediction limits to identify statistically significant increases (SSIs). Due to the identification of SSIs, NIPSCO LLC established an Assessment Monitoring program in April 2018.

2.5 Assessment Monitoring

Golder performed the first Assessment Monitoring event (i.e. Assessment and Verification sampling) in March and April 2018, followed by a statistical evaluation and data analysis in August 2018. Golder collected groundwater samples from each background and downgradient monitoring well for analysis of Appendix IV constituents per 40 CFR §257.95 in March 2018. In April 2018, groundwater samples were collected at the downgradient monitoring well locations and analyzed for Appendix III and detected Appendix IV constituents per 40 CFR §257.95. Golder developed GWPS to use as a comparison against the Assessment Monitoring results in August 2018. Following receipt and validation of laboratory results, Golder evaluated the 40 CFR Part 257 Appendix IV constituent results relative to CCR Unit-specific GWPS (see Table 4). At the time of the statistical evaluation the GWPS was the higher value of either the Maximum Contaminant Level (MCL) or the CCR Unit-specific background concentration for each analyte calculated using a tolerance/prediction limit procedure in accordance with 40 CFR §257.95(h)(2). Results from the downgradient monitoring wells were evaluated by comparing the lower confidence limit (LCL) to the CCR Unit-specific GWPS for each 40 CFR Part 257 Appendix IV analyte at each well. If the LCL exceeds the GWPS, there is statistical evidence of a statistically significant level (SSL). Golder determined that SSLs existed for the MSRB, MCWB, and Drying Area in August 2018 and initiated the assessment of corrective measures in November 2018.

Golder performed the second Assessment Monitoring event in October 2018 by collecting groundwater samples from each background and downgradient monitoring well, including the new assessment monitoring wells, for analysis of Appendix III and Appendix IV constituents per 40 CFR §257.95. Golder performed the statistical evaluation of the analytical results of the second Assessment Monitoring sampling event in February 2019. Golder identified an SSL for cobalt at well GAMW-08.

Golder performed the third Assessment Monitoring event in April 2019 by collecting groundwater samples from each background and downgradient monitoring well for analysis of Appendix III and Appendix IV constituents per 40 CFR §257.95. Golder performed the statistical evaluation of the analytical results of the third Assessment Monitoring sampling event in August 2019. The results confirmed the SSL for cobalt at well GAMW-08.

Golder performed the fourth Assessment Monitoring event in November 2019 by collecting groundwater samples from each background and downgradient monitoring well for analysis of Appendix III and detected Appendix IV constituents per 40 CFR §257.95. Golder will perform the statistical evaluation of the analytical results of the fourth Assessment Monitoring sampling event in February 2020.

Assessment monitoring wells GAMW-46/46B installed on the property boundary (see Figure 2), were sampled in March, April, June, July, August, October, and November 2019. The validated results to date from these wells indicate that there are no constituents detected at concentrations above health-based standards.

The sampling dates, number of groundwater samples collected from each background and downgradient well, and the purpose of sampling are provided in Table 2. The analytical results are presented in Table 3.

2.6 Corrective Measures

NIPSCO LLC is evaluating the feasibility and design of the potential groundwater remedial alternatives presented in the Assessment of Corrective Measures (ACM) report (Golder, 2019). As discussed in the ACM, NIPSCO LLC plans to close this CCR Unit by removal in accordance with 40 CFR §257.102(C). NIPSCO LLC submitted a Closure Application to the Indiana Department of Environmental Management (IDEM) in April 2019. The closure application is currently under review by IDEM. Concurrently, Golder is performing additional field investigations to collect Site-specific data to aid in the selection of a remedy including:

- Supplemental assessment of the CCR Unit with an emphasis on placement, location, thickness, total depth, and material characteristic of the CCR that will be managed during dewatering and excavation stages of the closure process.
- Aquifer tests to determine aquifer characteristics in the area of the CCR Unit including storage characteristics and hydraulic conductivity values, assess potential boundary conditions (e.g., effects of the perimeter slurry wall), and to support future groundwater modeling efforts.
- Installation of additional piezometers to refine understanding of groundwater flow direction.
- Assessment of the CCR Unit perimeter slurry wall including excavation of shallow pits to locate and observe the presence and performance characteristics of the slurry wall.

In 2020, Golder will continue to perform an engineering review of the eight potential Corrective Measures presented in the ACM, by placing an emphasis on monitoring on-Site plume stability, identifying critical data gaps, understanding and reacting to impacts of newly gathered information on previous assumptions and/or conclusions, identifying and researching applicability of emerging technologies, and monitoring changing groundwater and operational conditions, if any, and future plans for the Site and their impacts on the remedy process.

2.7 Statistical Evaluation

Subsequent to each monitoring event, Golder assessed the analytical data for outliers, anomalies, and trends that might be an indication of a sampling or analytical error. Outliers and anomalies are generally defined as

inconsistently large or small values that can occur as a result of sampling, laboratory, transportation, or transcription errors, or even by chance alone. Significant trends may indicate natural geochemical variability, a source of systematic error, influence of an upgradient/off-site source, or an actual occurrence of CCR Unit influence upon groundwater quality. Appropriate statistical methods are used to remove outliers from the database and manage trends with detrending routines, prior to the calculation of statistical limits. To assess the data for outliers, anomalies, and trends, Golder assessed the data using time vs. concentration graphs, and statistical routines included in the Sanitas™ statistical analysis software package. Golder has not identified any additional outliers since the 2018 Annual Report.

Golder evaluated the background data set for trends using Sanitas™ software. Golder will continue to monitor trends and apply detrending routines, if applicable, before using these data to calculate GWPSs. Golder identified the following 40 CFR Part 257 Appendix IV parameter trends in background monitoring wells:

- Antimony concentrations detected in groundwater samples collected from GAMW-15B show an increasing trend, however, antimony has never been detected above the laboratory reporting limit in this well and all results are below the MCL, therefore, the GWPS is equal to the MCL. No detrending routines are required.
- Arsenic concentrations detected in groundwater samples collected from well GAMW-15B show a decreasing trend, however, arsenic has never been detected above the laboratory reporting limit in this well. No detrending routines are required.
- Barium concentrations detected in groundwater samples collected from well GAMW-15B show an increasing trend, however, all results are below the MCL, therefore, the GWPS is equal to the MCL. No detrending routines are required.
- Cobalt concentrations detected in groundwater samples collected from well GAMW-15B show an increasing trend, however, cobalt has never been detected above the laboratory reporting limit in this well. No detrending routines are required.
- Lithium concentrations detected in groundwater samples collected from well GAMW-15B show an increasing trend, however, all results are below the MCL, therefore, the GWPS is equal to the MCL. No detrending routines are required.
- Selenium concentrations detected in groundwater samples collected from well GAMW-15B show an increasing trend, however, selenium has never been detected above the laboratory reporting limit in this well. No detrending routines are required.

2.8 Problems Encountered and Follow-Up Corrective Actions

During the April 2019 Assessment Monitoring sampling event, well GAMW-55 was unable to be sampled. Surface damage was observed at this time and the tubing above the permanent pump was pinched at less than 10 feet below ground surface (ft bgs). Golder replaced this well with GAMW-55R in June 2019. GAMW-55R is installed approximately 10 feet east of the original GAMW-55 and is also screened from 5-10 ft bgs. GAMW-55R was sampled in October 2019.

During the fourth Assessment Monitoring event (November 2019), groundwater was sampled from GAMW-15 at turbidity level of approximately 6.9 NTUs. According to the CCR Groundwater Monitoring Program Implementation Manual (Golder 2017), groundwater samples are to be collected once a well has achieved a turbidity level below 5 NTUs. Due to time constraints in the field, wells were purged for a minimum of two hours and sampled when

turbidity appeared to stabilize (e.g., no downward or upward trend over three consecutive readings five minutes apart). Evaluation of the analytical results from this well suggests that the slightly elevated turbidity levels had no significant effect on the representativeness of the samples of groundwater quality. Moving forward, wells will be purged for two hours or five well volumes, whichever is shorter. Professional judgement will then be used to determine when the purge water is representative of groundwater for sampling. In the event that an acceptable turbidity level cannot be achieved within a reasonable timeframe (e.g. three hours), Golder will redevelop the affected monitoring wells prior to the next sampling event.

3.0 KEY ACTIVITIES PROJECTED FOR 2020

During calendar year 2020, NIPSCO anticipates conducting the following key CCR Rule groundwater monitoring activities for the MSRB, MCWB, and Drying Area:

- Prepare and submit the appropriate notifications according to the CCR Rule;
- Continue semi-annual Assessment Monitoring groundwater sampling per CCR Rule requirements;
- Continue to evaluate potential remedial alternatives and prepare semi-annual reports describing the progress in selecting and designing the remedy; and
- Inspect and maintain monitoring system including wells, pumps, and equipment.

4.0 REFERENCES

Golder Associates, “2017 Annual Groundwater Monitoring and Corrective Action Report- Material Storage Runoff Basin, Metal Cleaning Waste Basin, and Drying Area NIPSCO R. M. Schahfer Generating Station”, January 31, 2018.

Golder Associates, “2018 Annual Groundwater Monitoring and Corrective Action Report- Material Storage Runoff Basin, Metal Cleaning Waste Basin, and Drying Area NIPSCO R. M. Schahfer Generating Station”, January 31, 2019.

Golder Associates, “CCR Assessment of Corrective Measures,” April 19, 2019.

Golder Associates, “NIPSCO R.M. Schahfer Generating Station, CCR Unit Consisting of MSRB, MCWB, and DA Corrective Measures Selection of Remedy, Semi-Annual Progress Report #19-01” October 16, 2019.

Tables

Table 1 Monitoring Well Network
CCR Unit Schahfer MSRB, MCWB, and Drying Area
NIPSCO LLC Rollin M. Schahfer Generating Station
Wheatfield, Indiana

CCR Unit	Well Purpose	Monitoring Well ID	Installation Date	Decommission Date (If Applicable)	Basis For Action
Material Storage Runoff Basin, Metal Cleaning Waste Basin, and Drying Area	Background Monitoring Well	GAMW-04	6/27/2015	-	Installed for groundwater quality monitoring[1]
		GAMW-07	6/29/2015	-	
		GAMW-15	5/25/2016	-	
		GAMW-15B	5/24/2016	-	
		GAMW-07B	7/25/2018	-	Installed to provide additional groundwater quality data
	Downgradient Monitoring Well	GAMW-08	6/28/2015	-	Installed for groundwater quality monitoring[1]
		GAMW-09	6/28/2015	-	
		GAMW-09B	5/24/2016	-	
		GAMW-16	5/26/2016	-	
		GAMW-16B	5/25/2016	-	
		GAMW-17	5/25/2016	-	
		GAMW-17B	5/25/2016	-	
		GAMW-18	5/24/2016	-	
		GAMW-08B	7/25/2018	-	Installed to characterize the nature and extent of a potential release[2]
		GAMW-18B	7/26/2018	-	
		GAMW-52	7/30/2018	-	
		GAMW-52B	7/30/2018	-	
		GAMW-53	7/30/2018	-	
		GAMW-53B	7/30/2018	-	
		GAMW-54	7/30/2018	-	
		GAMW-54B	7/27/2018	-	
		GAMW-55	7/26/2018	6/8/2019	Decommissioned due to well casing damage[4]
		GAMW-55R	6/8/2019	-	Installed to replace GAMW-55[4]
		GAMW-55B	7/26/2018	-	Installed to characterize the nature and extent of a potential release[2]
		GAMW-56	7/27/2018	-	
		GAMW-56B	7/27/2018	-	
		GAMW-46	5/15/2018	-	Installed to monitor groundwater quality at the property boundary[3]
		GAMW-46B	5/15/2018	-	

Notes:

1) Per 40 CFR §257.93, Golder collected eight rounds of background data prior to October 17, 2017.

2) Per 40 CFR §257.95(g)(1)(i) Rule requirements, Golder collected additional data to further characterize the nature and extent of potential groundwater impacts.

3) Per 40 CFR §257.95(g)(1)(iii), Golder collected data to monitor groundwater quality in the direction of flow at the property boundary

4) Golder field personnel were unable to collect a groundwater sample from monitoring well GAMW-55 during the April 2019 Assessment Monitoring sampling event due to surface damage (i.e., tubing above the permanent pump was pinched at less than 10 feet below ground surface). The well was replaced with GAMW-55R in June 2019.

Prepared by: AMH
Checked by: KMC
Reviewed by: MAH

Table 2: Summary of Sampling Events
CCR Unit Schahfer MSRB, MCWB, and Drying Area
NIPSCO LLC Rollin M. Schahfer Generating Station
Wheatfield, Indiana

Well Purpose	Monitoring Well ID	Supplemental Sampling Event	Sample Event #12	Supplemental Sampling Event	Supplemental Sampling Event	Supplemental Sampling Event	Supplemental Sampling Event	Sample Event #13	Total Number of Samples
Purpose of Sample		Nature and Extent Characterization Sampling	Annual Assessment Monitoring	Nature and Extent Characterization Sampling	Nature and Extent Characterization Sampling	Nature and Extent Characterization Sampling	Nature and Extent Characterization Sampling	Semi-Annual Assessment Monitoring	
Sample Parameters		Appendix III and Appendix IV	Appendix III and Appendix IV	Metals Only	Appendix III and Appendix IV	Appendix III and Appendix IV	Appendix III and Appendix IV	Appendix III and Appendix IV	
Background Monitoring Well	GAMW-04	NS	4/23/2019	NS	NS	NS	NS	11/7/2019	2
	GAMW-07	NS	5/2/2019	NS	NS	NS	NS	11/8/2019	2
	GAMW-07B	NS	5/2/2019	NS	NS	NS	NS	11/12/2019	2
	GAMW-15	NS	5/6/2019	NS	NS	NS	NS	11/8/2019	2
	GAMW-15B	NS	5/8/2019	NS	NS	NS	NS	11/8/2019	2
Downgradient Monitoring Well	GAMW-08	NS	5/8/2019	NS	NS	NS	NS	11/7/2019	2
	GAMW-08B	NS	5/2/2019	NS	NS	NS	NS	11/7/2019	2
	GAMW-09	NS	5/2/2019	NS	NS	NS	NS	11/7/2019	2
	GAMW-09B	NS	5/8/2019	NS	NS	NS	NS	11/7/2019	2
	GAMW-16	NS	5/3/2019	NS	NS	NS	NS	11/8/2019	2
	GAMW-16B	NS	5/6/2019	NS	NS	NS	NS	11/8/2019	2
	GAMW-17	NS	5/9/2019	NS	NS	NS	NS	11/8/2019	2
	GAMW-17B	NS	5/9/2019	NS	NS	NS	NS	11/8/2019	2
	GAMW-18	NS	4/29/2019	NS	NS	NS	NS	11/7/2019	2
	GAMW-18B	NS	4/29/2019	NS	NS	NS	NS	11/7/2019	2
	GAMW-46	3/1/2019	4/17/2019	6/6/2019	7/18/2019	8/26/2019	10/4/2019	11/9/2019	7
	GAMW-46B	3/4/2019	4/17/2019	6/7/2019	7/18/2019	8/26/2019	10/4/2019	11/19/2019	7
	GAMW-52	NS	5/9/2019	NS	NS	NS	NS	11/14/2019	2
	GAMW-52B	NS	5/9/2019	NS	NS	NS	NS	11/14/2019	2
	GAMW-53	NS	4/30/2019	NS	NS	NS	NS	11/14/2019	2
	GAMW-53B	NS	4/30/2019	NS	NS	NS	NS	11/14/2019	2
	GAMW-54	NS	4/30/2019	NS	NS	NS	NS	11/14/2019	2
	GAMW-54B	NS	5/1/2019	NS	NS	NS	NS	11/15/2019	2
	GAMW-55	NS	NS	NI	NI	NI	NI	NI	0
	GAMW-55R	NI	NI	NS	NS	NS	NS	11/15/2019	1
	GAMW-55B	NS	5/1/2019	NS	NS	NS	NS	11/15/2019	2
	GAMW-56	NS	4/29/2019	NS	NS	NS	NS	11/15/2019	2
	GAMW-56B	NS	4/29/2019	NS	NS	NS	NS	11/15/2019	2
Total Number of Samples		2	26	2	2	2	2	27	63

Notes:
Sample counts do not include QA/QC samples.
(1) Sample events #1-#11 were completed prior to 2019. The purpose, sample parameters, and sample dates are included in the 2017 Annual Report and the 2018 Annual Report.
(2) semi-annual assessment monitoring parameters did not include radium
NI= not installed
NS= not sampled

Prepared by: DFS
Checked by: AMH
Reviewed by: MAH

Table 3: Analytical Data
CCR Unit Schahfer MSRB, MCWB, and Drying Area
NIPSCO LLC R. M. Schahfer Generating Station
Wheatfield, Indiana

Analyte	Unit	GAMW04		GAMW07		GAMW07B		GAMW08		GAMW08B		GAMW09			GAMW09B	
		2019-04-23	2019-11-07	2019-05-02	2019-11-08	2019-05-02	2019-11-12	2019-05-08	2019-11-07	2019-05-03	2019-11-07	2019-05-02		2019-11-07	2019-05-08	2019-11-07
		N	N	N	N	N	N	N	N	N	N	FD	N	N	N	N
CCR Appendix III																
Boron	mg/L	0.74	1.3	0.85	0.85	18	15	1.4	2.5	14	13	3	3	2.7	14	8
Calcium	mg/L	130	190	220	180	380	400	250	280	350	340	200	200	150	150	150
Chloride	mg/L	3.7	9.5	6.5	4.8	170	150	49	66	160	180	46	46	39	140	110
Fluoride	mg/L	0.16 J+	0.23	0.97	0.88	1.3	1.2	2.2	1.9	1.9	1.7	0.27	0.27	0.33	1.6	1.5
pH	SU	7	7.14	7.2	7.44	7.58	7.13	7.37	7.5	7.57	7.85		7.1	7.06	7.49	7.56
Sulfate	mg/L	260	490	500	480	1500	1400	540	670	1400	1300	530	530	380	520	440
Total Dissolved Solids	mg/L	600	900	1100	940	920	2300	1300	1300	2300	2200	970	980	770	1200	990
CCR Appendix IV																
Antimony	mg/L	0.00065 J	0.00092 J	0.002 U	0.002 U	0.002 U	0.002 U	0.00076 J	0.00077 J	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Arsenic	mg/L	0.0023 J	0.0018 J	0.0019 J	0.0011 J	0.0019 J	0.0017 J	0.0015 J	0.0016 J	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0057	0.0042 J
Barium	mg/L	0.068	0.066	0.053	0.043	0.053	0.043	0.058	0.066	0.025	0.023	0.041	0.041	0.036	0.041	0.029
Beryllium	mg/L	0.00053 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0004 J	0.001 U	0.001 U	0.001 U	0.00058 J	0.00052 J	0.00049 J	0.001 U	0.001 U
Cadmium	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chromium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.0012 J	0.0012 J	0.002 U	0.002 U	0.002 U
Cobalt	mg/L	0.0011	0.00043 J	0.0074	0.0049	0.001 U	0.001 U	0.0079	0.011	0.001 U	0.001 U	0.00049 J	0.00055 J	0.00035 J	0.00025 J	0.001 U
Fluoride	mg/L	0.16 J+	0.23	0.97	0.88	1.3	1.2	2.2	1.9	1.9	1.7	0.27	0.27	0.33	1.6	1.5
Lead	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Lithium	mg/L	0.0045 J	0.0028 J	0.0041 J	0.0033 J	0.004 J	0.0035 J	0.015	0.0091	0.0063 J	0.0058 J	0.008 U	0.008 U	0.008 U	0.0055 J	0.0033 J
Mercury	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Molybdenum	mg/L	0.024	0.055	0.0097 J	0.0087 J	0.025	0.026	0.08	0.068	0.057	0.044	0.043	0.043	0.035	0.012	0.0096 J
Radium, Total	pci/l	0.591		0.37 U		2.31		0.473		0.704		0.505	0.427 U		1.01	
Radium-226	pci/l	0.311 U		0.305 U		1.17		0.312 U		0.438		0.33	0.355 U		0.449	
Radium-228	pci/l	0.405		0.37 U		1.14		0.456 U		0.518 U		0.428 U	0.427 U		0.564	
Selenium	mg/L	0.0013 J	0.0052	0.0045 J	0.0019 J	0.005 U	0.005 U	0.016	0.0036 J	0.005 U	0.005 U	0.012	0.012	0.0077	0.005 U	0.0011 J
Thallium	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00045 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0002 J	0.001 U
Sample Parameters																
Dissolved Oxygen	mg/L	7.08	2.55	0.81	0.38	0.19	0.2	0.44	4.2	0.13	2.61		5.82	5.54	0.04	0.35
Oxidation-Reduction Potential	millivolts	19	-60.7	135.1	-131.8	34.9	-196.7	62.2	44.1	7.9	-67		53.6	-25.7	-16.8	-131.8
pH	SU	7	7.14	7.2	7.44	7.58	7.13	7.37	7.5	7.57	7.85		7.1	7.06	7.49	7.56
Specific Conductivity	uS/cm	549	866	975	828	2357	1686	1102	1322	2190	1896		888	685	1165	9.24
Temperature	deg c	4.2	13.2	10.3	15.3	12.4	12.9	11	10.84	12.8	8.05		11.4	15.9	14.2	14.4
Turbidity	NTU	4.48	1.38	2.72	4.58	2.86	1.11	1.81	0.31	1.72	2.89		3.41	1.55	4.7	3.36

Notes:
mg/L = milligrams per liter
uS/cm = micro Siemens per centimeter
deg C = degrees Celsius
NTU = Nephelometric Turbidity Units
"-" = Location was dry during time of sample
SU = Standard Units

"U" = Indicates the result was not detected above the method detection limit (MDL) for the sample; the quantitation limit (RL) is provided.
"J" = Indicates the result is estimated.
"J+" = Indicates the result is estimated may be biased high.

"UJ" = Indicates the result was not detected above the MDL, the estimated RL is provided.

Table 3: Analytical Data
CCR Unit Schahfer MSRB, MCWB, and Drying Area
NIPSCO LLC R. M. Schahfer Generating Station
Wheatfield, Indiana

Analyte	Unit	GAMW15		GAMW15B		GAMW16		GAMW16B			GAMW17		GAMW17B		GAMW18		GAMW18B	
		2019-05-06	2019-11-08	2019-05-08	2019-11-08	2019-05-03	2019-11-08	2019-05-06	2019-11-08		2019-05-09	2019-11-08	2019-05-09	2019-11-08	2019-04-29	2019-11-07	2019-04-29	2019-11-07
		N	N	N	N	N	N	N	FD	N	N	N	N	N	N	N	N	N
CCR Appendix III																		
Boron	mg/L	0.71	0.73	10	6.2	1.6	1.9	12	11	10	7.7	4.9	12	9.4	0.95	1.7	14	11
Calcium	mg/L	140	100	280	280	210	210	350	300	280	130	120	180	150	320	360	240	180
Chloride	mg/L	22	28	110	80	28	59	190	220	210	90	92	130	110	12	27	170	140
Fluoride	mg/L	0.52	0.73	0.84 J+	0.89	0.99	1.1	0.76	1	1	1.6	1.7	0.62	0.67	0.074	0.15	0.88	0.99
pH	SU	7.1	7.34	7.43	7.57	7.46	7.8	7.49		7.85	7.53	7.75	7.15	7.66	6.71	7.18	7.15	7.68
Sulfate	mg/L	380	260	1300	940	570	530	940	1500	1500	300	290	270	350	780	920	1100	840
Total Dissolved Solids	mg/L	740	640	2100	1600	1100	1100	1800	2400	2400	800	860	980	990	1400	1500	2100	1500
CCR Appendix IV																		
Antimony	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Arsenic	mg/L	0.081	0.075	0.00088 J	0.005 U	0.005	0.0082	0.0071	0.0079	0.0076	0.0021 J	0.0028 J	0.0022 J	0.0019 J	0.00079 J	0.005 U	0.0037 J	0.0041 J
Barium	mg/L	0.047	0.037	0.081	0.054	0.034	0.034	0.079	0.055	0.054	0.041	0.052	0.11	0.074	0.039	0.05	0.039	0.024
Beryllium	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00076 J	0.001 U	0.00033 J	0.001 U	0.00094 U	0.001 U	0.00053 U	0.001 U
Cadmium	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chromium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Cobalt	mg/L	0.0035	0.0017	0.001 U	0.001 U	0.00066 J	0.00061 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00028 J	0.001 U	0.00024 J	0.00024 J
Fluoride	mg/L	0.52	0.73	0.84 J+	0.89	0.99	1.1	0.76	1	1	1.6	1.7	0.62	0.67	0.074	0.15	0.88	0.99
Lead	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Lithium	mg/L	0.0053 J	0.0027 J	0.012	0.0085	0.008 U	0.008 U	0.007 J	0.0054 J	0.0055 J	0.0035 J	0.0052 J	0.008 U	0.008 U	0.008 U	0.008 U	0.023	0.015
Mercury	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Molybdenum	mg/L	0.017	0.029	0.012	0.01	0.027	0.028	0.014	0.02	0.019	0.017	0.012	0.0073 J	0.01	0.062	0.076	0.026	0.011
Radium, Total	pci/l	0.476 U		1.61		0.685 U		0.984			0.518 U		1.71		0.365 U			
Radium-226	pci/l	0.28 U		1.07		0.277 U		0.753			0.26 U		0.964		0.325 U		0.41	
Radium-228	pci/l	0.476 U		0.544		0.685 U		0.459 U			0.518 U		0.748		0.365 U		0.941	
Selenium	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0015 J	0.005 U	0.005 U	0.005 U	0.004 J	0.011	0.005 U	0.005 U	0.015	0.012	0.005 U	0.005 U
Thallium	mg/L	0.001 U	0.001 U	0.0003 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00063 J	0.001 U	0.00022 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Sample Parameters																		
Dissolved Oxygen	mg/L	0.15	0.12	0.23	0.16	0.29	4.02	0.33		3.41	5.75	6.47	0.23	4.2	7.01	2.95	0.92	0.36
Oxidation-Reduction Potential	millivolts	-27.5	-100	46.3	-189.2	8	-2	21.2		-99.5	53.1	35	11.8	-3.6	129.2	-41.1	109.2	-144.8
pH	SU	7.1	7.34	7.43	7.57	7.46	7.8	7.49		7.85	7.53	7.75	7.15	7.66	6.71	7.18	7.15	7.68
Specific Conductivity	uS/cm	730	598	1798	1384	1001	1014	1692		2340	894	798	1060	890	1060	1338	1902	1475
Temperature	deg c	8.3	15.8	8.1	13.8	10.5	17.52	11.2		14.65	12.1	17.23	13.6	15.05	8.8	14.2	11.8	13.7
Turbidity	NTU	4.9	6.9	3.56	1.49	4.65	3.98	3.72		2.81	0.44	0.86	3.61	2.68	4.55	2.04	3.21	3.14

Notes:
mg/L = milligrams per liter
uS/cm = micro Siemens per centimeter
deg C = degrees Celsius
NTU = Nephelometric Turbidity Units
"-" = Location was dry during time of sample
SU = Standard Units

"U" = Indicates the result was not detected above the method detection limit (MDL) for the sample; the quantitation limit (RL) is provided.
"J" = Indicates the result is estimated.
"J+" = Indicates the result is estimated may be biased high.

"UJ" = Indicates the result was not detected above the MDL, the estimated RL is provided.

Table 3: Analytical Data
CCR Unit Schahfer MSRB, MCWB, and Drying Area
NIPSCO LLC R. M. Schahfer Generating Station
Wheatfield, Indiana

Analyte	Unit	GAMW46							GAMW46B						
		2019-03-01	2019-04-17	2019-06-06	2019-07-18	2019-08-26	2019-10-04	2019-11-19	2019-03-04	2019-04-17	2019-06-07	2019-07-18	2019-08-26	2019-10-04	2019-11-19
		N	N	N	N	N	N	N	N	N	N	N	N	N	N
CCR Appendix III															
Boron	mg/L	0.1 U	0.033 J	0.1 U	0.032 J	0.053 J	0.043 J	0.049 J	0.05 J	0.037 J	0.047 J	0.03 J	0.05 J	0.047 J	0.046 J
Calcium	mg/L	14	28	25 J-	25	25	23	27	58	58	56	52	58	49	56
Chloride	mg/L	2.4	1.9		1.8	1.6	1.6	1.6	7.9	7.9		7.2	8	7.1	6.9
Fluoride	mg/L	0.068	0.063		0.065	0.06	0.079 J+	0.062	0.066	0.076		0.072	0.069	0.073 J+	0.072
pH	SU	8.17	8.23	7.52	8.15	7.9	7.81	7.77	7.11	7.99	7.58	8.18	7.62	7.44	7.47
Sulfate	mg/L	34	30		28	29	30	27	64	64		64	68	65	64
Total Dissolved Solids	mg/L	160	150		130	150	140 J+	140	260	290		240	220 J	250	240
CCR Appendix IV															
Antimony	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Arsenic	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.00086 J	0.005 U	0.0012 J	0.00076 J	0.005 U	0.00091 J	0.00095 J	0.0013 J	0.001 J
Barium	mg/L	0.0028 J	0.0059	0.0065	0.0054	0.0054	0.0049 J	0.0059	0.027	0.026	0.025	0.023	0.024	0.021	0.025
Beryllium	mg/L	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00054 J	0.001 U	0.0011	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0011
Cadmium	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chromium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.0014 J	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Cobalt	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Fluoride	mg/L	0.068	0.063		0.065	0.06	0.079 J+	0.062	0.066	0.076		0.072	0.069	0.073 J+	0.072
Lead	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Lithium	mg/L	0.04 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0017 J	0.008 U	0.008 U	0.002 J	0.008 U	0.008 U	0.003 J
Mercury	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Molybdenum	mg/L	0.01	0.01 U	0.01 U	0.01 U	0.01 U	0.0015 J	0.01 U	0.0024 J	0.0022 J	0.0025 J	0.0028 J	0.0028 J	0.0025 J	0.003 J
Radium, Total	pci/l	0.486 U	0.33 U		0.427 U	0.505 U	0.566		0.402 U	0.308 U		0.427 U	0.609 U	0.408 U	
Radium-226	pci/l	0.103 U	0.0708 U		0.214 U	0.0925 UJ	0.179 J+		0.286	0.108		0.232 U	0.105 UJ	0.192 J+	
Radium-228	pci/l	0.486 U	0.33 U		0.427 U	0.505 UJ	0.481 U		0.402 U	0.308 U		0.427 U	0.609 UJ	0.408 U	
Selenium	mg/L	0.025 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Thallium	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00059 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00068 J
Sample Parameters															
Dissolved Oxygen	mg/L	1.85	4.18	6.44	6.58	4.03	2.44	3.36	0.08	1.9	0.3	1.4	1.25	0.31	0.3
Oxidation-Reduction Potential	millivolts	1.9	7.7	157.6	25.5	40.6	9.16	-141.1	111.9	-111.1	-133.1	-93.9	-119.9	33.7	-229.6
pH	SU	8.17	8.23	7.52	8.15	7.9	7.81	7.77	7.11	7.99	7.58	8.18	7.62	7.44	7.47
Specific Conductivity	uS/cm	155	161	179	153	153	152	132	268	294	282	274	284	260	242
Temperature	deg c	8	9.1	11.1	13.2	14.2	14.8	11.7	9.6	10.8	11	11.9	12.3	12.3	11.3
Turbidity	NTU	1.91	1.33	0.51	0.82	0.69	0.89	0.66	3.26	4.3	3.25	3.11	1.15	4.16	2.84

Notes:
mg/L = milligrams per liter
uS/cm = micro Siemens per centimeter
deg C = degrees Celsius
NTU = Nephelometric Turbidity Units
"-" = Location was dry during time of sample
SU = Standard Units

"U" = Indicates the result was not detected above the method detection limit (MDL) for the sample; the quantitation limit (RL) is provided.
"J" = Indicates the result is estimated.
"J+" = Indicates the result is estimated may be biased high.

"UJ" = Indicates the result was not detected above the MDL, the estimated RL is provided.

Table 3: Analytical Data
CCR Unit Schahfer MSRB, MCWB, and Drying Ar ea
NIPSCO LLC R. M. Schahfer Generating Station
Wheatfield, Indiana

Analyte	Unit	GAMW52		GAMW52B		GAMW53		GAMW53B		GAMW54		GAMW54B		GAMW55R	GAMW55B	
		2019-05-09	2019-11-14	2019-05-09	2019-11-14	2019-04-30	2019-11-14	2019-04-30	2019-11-14	2019-04-30	2019-11-14	2019-05-01	2019-11-15	2019-15-11	2019-05-01	11/15/2019
		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CCR Appendix III																
Boron	mg/L	0.077 J	0.13	1	1.3	0.056 J	0.13	2.2	0.73	0.39	0.37	5.9	6	1.1	9.1	11
Calcium	mg/L	52	72	110	130	17	25	150	140	93	81	200	240	180	210	210
Chloride	mg/L	5.5	37	380	370	1.9	3.6	81	74	10	4	110	120	61	170	150
Fluoride	mg/L	0.25 J+	0.3	0.21 J+	0.23	0.05 U	0.05 U	0.51	0.7	0.14	0.28	0.59	0.58	0.62	0.31	0.31
pH	SU	7.17	7.59	7.42	7.34	5.93	6.21	7.41	7.52	6.82	7.08	7.27	7.2	7.31	7.31	7.46
Sulfate	mg/L	24	67	220	290	37	36	340	320	190	76	710	720	480	790	750
Total Dissolved Solids	mg/L	240	350	1100	1100	130	160	900	770	470	350	1500	1400	950	1700	1400
CCR Appendix IV																
Antimony	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.00061 J	0.002 U	0.002 U	0.00078 J	0.001 J	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Arsenic	mg/L	0.005 U	0.005 U	0.00083 J	0.0012 J	0.00097 J	0.0018 J	0.001 J	0.0016 J	0.0022 J	0.0045 J	0.0045 J	0.005	0.005 U	0.005 U	0.005 U
Barium	mg/L	0.015	0.02	0.25	0.28	0.019	0.026	0.044	0.072	0.031	0.031	0.08	0.084	0.035	0.074	0.067
Beryllium	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00059 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Cadmium	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chromium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.0012 J	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Cobalt	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 J	0.001 U	0.001 U	0.001 U	0.00062 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Fluoride	mg/L	0.25 J+	0.3	0.21 J+	0.23	0.05 U	0.05 U	0.51	0.7	0.14	0.28	0.59	0.58	0.62	0.31	0.31
Lead	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.00057 J	0.00063 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Lithium	mg/L	0.008 U	0.0025 J	0.0033 J	0.0071 J	0.008 U	0.0021 J	0.005 J	0.0066 J	0.008 U	0.0023 J	0.0048 J	0.0074 J	0.0035 J	0.0055 J	0.0078 J
Mercury	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Molybdenum	mg/L	0.0016 J	0.0017 J	0.0095 J	0.0086 J	0.0051 J	0.011	0.0098 J	0.02	0.023	0.03	0.0085 J	0.012	0.024	0.0046 J	0.005 J
Radium, Total	pci/l	0.53 U		2.63		0.344 U		1.26		0.393 U		1.82			2.08	
Radium-226	pci/l	0.436		1.2		0.316 U		0.544		0.337 U		0.956			1.15	
Radium-228	pci/l	0.53 U		1.44		0.344 U		0.719		0.393 U		0.865			0.926	
Selenium	mg/L	0.0014 J	0.0011 J	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0043 J	0.0035 J	0.005 U	0.005 U	0.0046 J	0.005 U	0.005 U
Thallium	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00049 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00022 J	0.001 U	0.001 U
Sample Parameters																
Dissolved Oxygen	mg/L	6.42	2.2	0.15	0.19	3.11	0.84	0.36	0.09	0.72	0.26	0.42	0.31	0.72	0.11	0.17
Oxidation-Reduction Potential	millivolts	108.2	-43.2	6.31	-102.9	43.7	-54.8	27.7	-75.3	48.4	-69.5	-23.1	-43.3	-28.9	-57.5	-137.9
pH	SU	7.17	7.59	7.42	7.34	5.93	6.21	7.41	7.52	6.82	7.08	7.27	7.2	7.31	7.31	7.46
Specific Conductivity	uS/cm	308	320	1652	1353	125	155	1160	870	493	374	1636	1310	1017	1967	1491
Temperature	deg c	14.2	15.3	15.3	16.1	11.4	17.5	18.7	19.7	10.5	15.3	15.5	15.8	16.7	18.1	17.9
Turbidity	NTU	0.42	0.74	2.35	1.01	4.76	4.8	3.45	2.5	3.24	2.31	4.49	1.67	2.26	4.77	3.92

Notes:
mg/L = milligrams per liter
uS/cm = micro Siemens per centimeter
deg C = degrees Celsius
NTU = Nephelometric Turbidity Units
"-" = Location was dry during time of sample
SU = Standard Units

"U" = Indicates the result was not detected above the method detection limit (MDL) for the sample; the quantitation limit (RL) is provided.
"J" = Indicates the result is estimated.
"J+" = Indicates the result is estimated may be biased high.

"UJ" = Indicates the result was not detected above the MDL, the estimated RL is provided.

Table 3: Analytical Data
CCR Unit Schahfer MSRB, MCWB, and Drying Area
NIPSCO LLC R. M. Schahfer Generating Station
Wheatfield, Indiana

Analyte	Unit	GAMW56		GAMW56B	
		2019-04-29	2019-11-15	2019-04-29	2019-11-15
		N	N	N	N
CCR Appendix III					
Boron	mg/L	0.21	0.2	2.3	3.2
Calcium	mg/L	91	120	150	150
Chloride	mg/L	3.2	2.1	55	64
Fluoride	mg/L	0.53	0.71	0.4	0.44
pH	SU	6.83	7.06	7.08	7.21
Sulfate	mg/L	54	56	260	360
Total Dissolved Solids	mg/L	420	440	830	860
CCR Appendix IV					
Antimony	mg/L	0.002 U	0.002 U	0.002	0.002 U
Arsenic	mg/L	0.011	0.0097	0.005	0.005 U
Barium	mg/L	0.044	0.04	0.082	0.076
Beryllium	mg/L	0.001 U	0.001 U	0.001	0.001 U
Cadmium	mg/L	0.001 U	0.001 U	0.001	0.001 U
Chromium	mg/L	0.002 U	0.002 U	0.002	0.002 U
Cobalt	mg/L	0.0084	0.0081	0.001	0.001 U
Fluoride	mg/L	0.53	0.71	0.4	0.44
Lead	mg/L	0.001 U	0.001 U	0.001	0.001 U
Lithium	mg/L	0.0023 J	0.0053 J	0.0044	0.0062 J
Mercury	mg/L	0.0002 U	0.0002 U	0.0002	0.0002 U
Molybdenum	mg/L	0.0072 J	0.0079 J	0.0031	0.0064 J
Radium, Total	pci/l				
Radium-226	pci/l	0.334 U		0.506	
Radium-228	pci/l	0.373 U		0.571	
Selenium	mg/L	0.005 U	0.005 U	0.005	0.005 U
Thallium	mg/L	0.001 U	0.001 U	0.001	0.001 U
Sample Parameters					
Dissolved Oxygen	mg/L	1.3	0.34	0.79	0.18
Oxidation-Reduction Potential	millivolts	64	-86.6	31.8	-105.7
pH	SU	6.83	7.06	7.08	7.21
Specific Conductivity	uS/cm	460	466	856	741
Temperature	deg c	8.7	14	11.6	12.9
Turbidity	NTU	2.31	2.01	4.77	1.4

Notes:
mg/L = milligrams per liter
uS/cm = micro Siemens per centimeter
deg C = degrees Celsius
NTU = Nephelometric Turbidity Units
"-" = Location was dry during time of sample
SU = Standard Units

"U" = Indicates the result was not detected above the method detection limit (MDL) for the sample; the quantitation limit (RL) is provided.
"J" = Indicates the result is estimated.
"J+" = Indicates the result is estimated may be biased high.

"UJ" = Indicates the result was not detected above the MDL, the estimated RL is provided.

Prepared by: AMH
Checked by: DFS
Reviewed by: MAH

Table 4: Groundwater Protection Standards
CCR Unit Schahfer MSRB, MCWB, and Drying Area
NIPSCO LLC Rollin M. Schahfer Generating Station
Wheatfield, Indiana

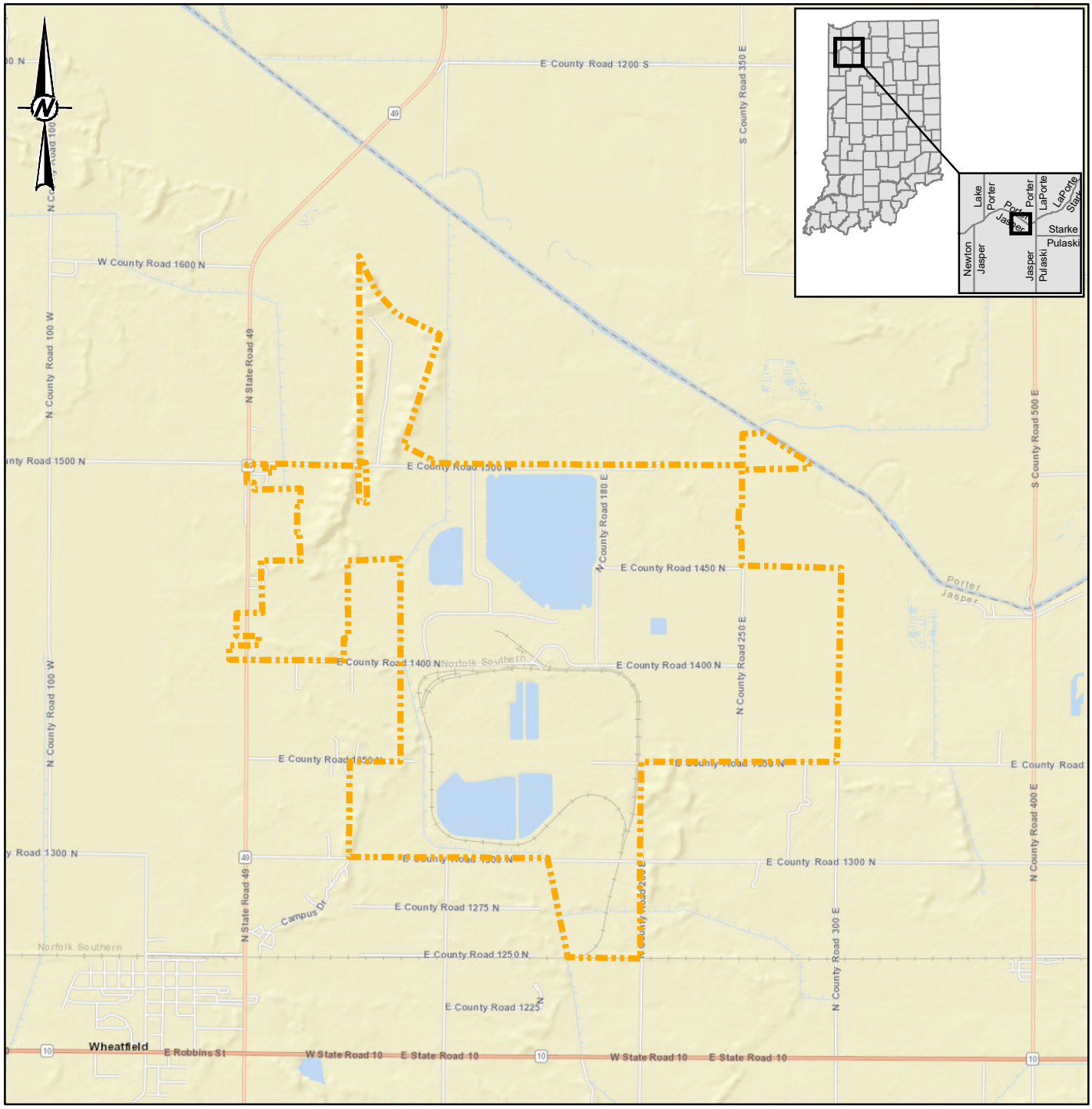
Analyte	MCL (mg/L)	GWPS (mg/L)
Antimony	0.006	0.006
Arsenic	0.01	0.078
Barium	2	2
Beryllium	0.004	0.004
Cadmium	0.005	0.005
Chromium	0.1	0.1
Cobalt(1)	0.006	0.01
Fluoride	4	4
Lead(1)	0.015	0.015
Lithium(1)	0.04	0.04
Mercury	0.002	0.002
Molybdenum(1)	0.1	0.1
Radium 226+228	5	5
Selenium	0.05	0.05
Thallium	0.002	0.002

Notes:
MCL= Environmental Protection Agency Maximum Contaminant Level
GWPS= Groundwater Protection Standard calculated in February 2019
mg/L= milligrams per liter

1) As of August 29, 2018, these four constituents have health-based standards that can be used when calculating the GWPS, these health-based standards are not MCLs but are provided in the MCL column.

Prepared by: DFS
Checked by: KMC
Review by: MAH

Figures



LEGEND

Approximate Property Line

0 0.75 1.5

1 " = 0.75 miles Miles

REFERENCE(S)

SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

CLIENT

NORTHERN INDIANA PUBLIC SERVICE COMPANY LLC

PROJECT

R.M. SCHAHFER GENERATING STATION
WHEATFIELD, INDIANA

TITLE

SITE LOCATION MAP

CONSULTANT

GOLDER

YYYY-MM-DD	12/31/2019
DESIGNED	DFS
PREPARED	SHL
REVIEWED	JSP
APPROVED	MAH

PROJECT NO.	CONTROL	REV.	FIGURE
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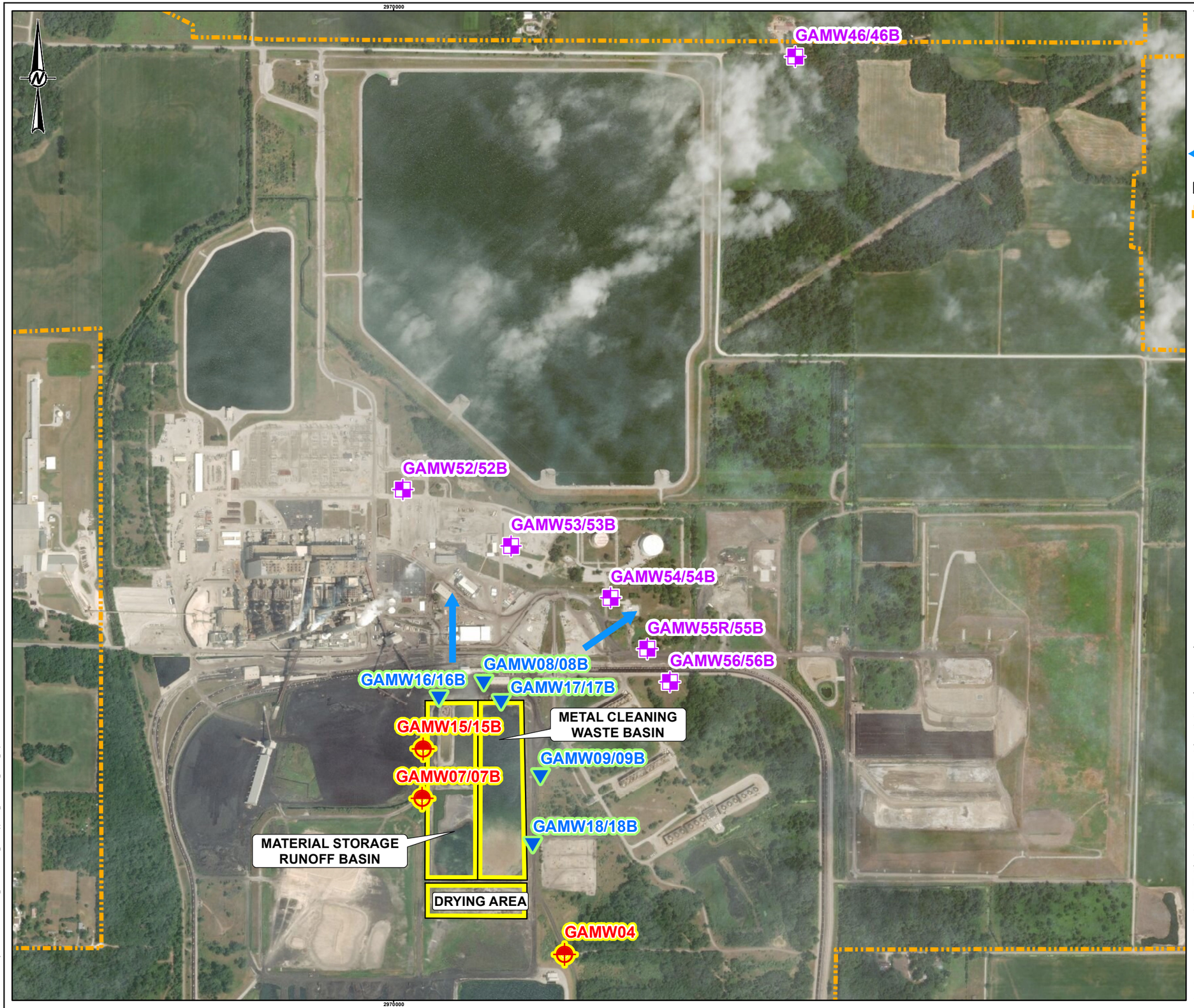

LEGEND

- Assessment Monitoring Well
- Background Monitoring Well
- Downgradient Monitoring Well
- Generalized Groundwater Flow Direction
- CCR Units
- Approximate Property Line

0 850 1,700

1 " = 850 feet Feet

NOTE(S)

REFERENCE(S)

1. SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY

CLIENT

NORTHERN INDIANA PUBLIC SERVICE COMPANY LLC

PROJECT

R.M. SCHAHFER GENERATING STATION
WHEATFIELD, INDIANA

TITLE

WELL LOCATION MAP
DRYING AREA, MATERIAL STORAGE RUNOFF BASIN, AND METAL CLEANING WASTE BASIN

CONSULTANT

GOLDER

YYYY-MM-DD	1/22/2020
DESIGNED	DFS
PREPARED	SHL
REVIEWED	JSP
APPROVED	MAH

PROJECT NO.	CONTROL	REV.	FIGURE
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APPENDIX A

Extension of 60 Days to Complete Assessment of Corrective Measures

REPORT

R.M. SCHAHFER GENERATING STATION
Wheatfield, Indiana

EXTENSION OF 60 DAYS TO COMPLETE ASSESSMENT OF CORRECTIVE MEASURES FOR CCR MANAGEMENT UNIT REFERRED TO AS MATERIAL STORAGE RUNOFF BASIN, METAL CLEANING WASTE BASIN, AND DRYING AREA

Pursuant to 40 CFR 257.96(a)

Submitted to:

Northern Indiana Public Service Company
2755 Raystone Drive
Valparaiso, IN 46383

Submitted by:

Golder Associates Inc.
670 North Commercial Street, Suite 103
Manchester, NH 03101
+1 603 668-0880

164817101

February 2019

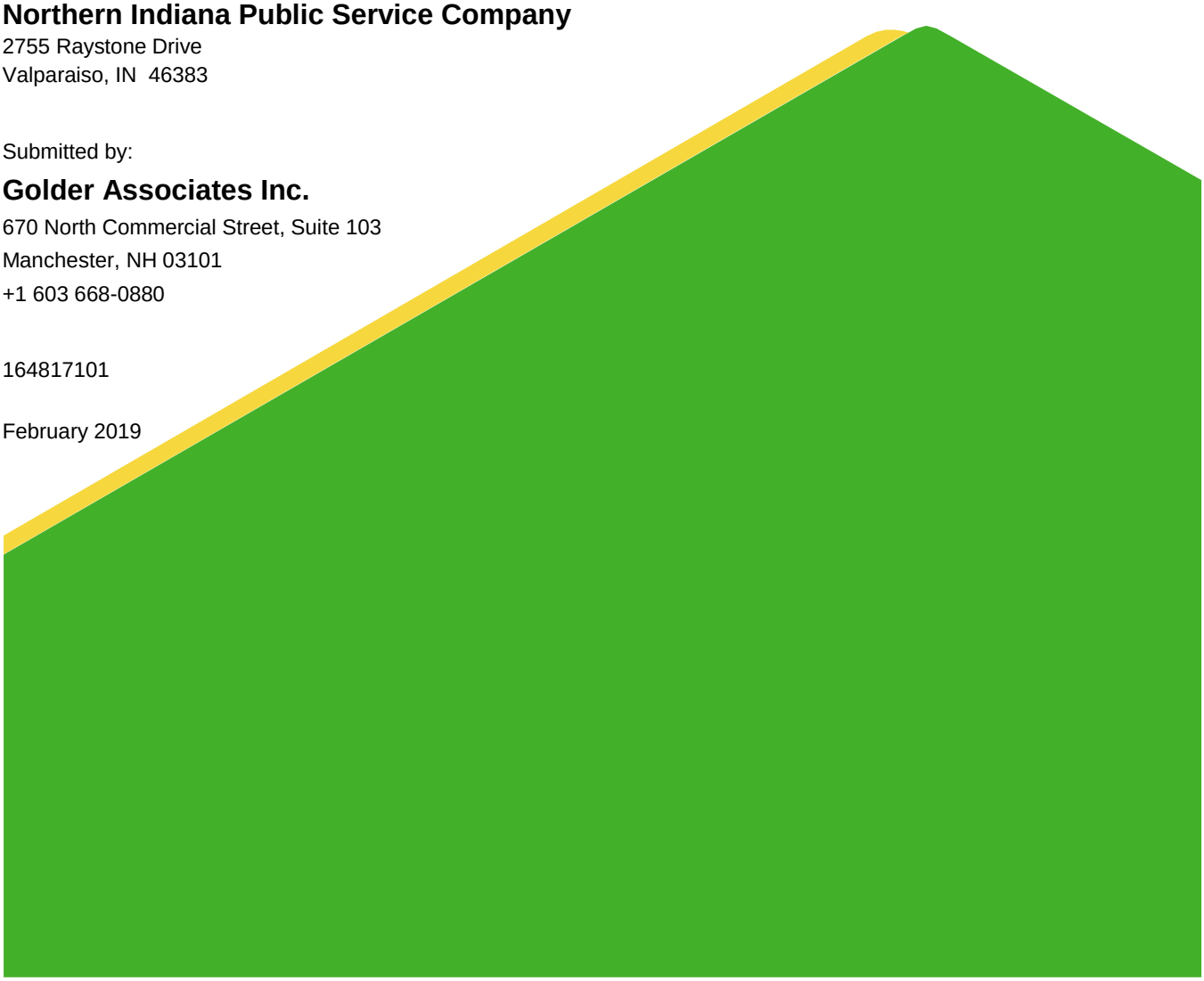

Table of Contents

ATTACHMENTS

1.0 INTRODUCTION

1.1 Background

The Northern Indiana Public Service Company (NIPSCO) R. M. Schahfer Generating Station (RMSGS or Site) manages coal combustion residuals (CCR) in three active surface impoundments including the Material Storage Runoff Basin (MSRB), Metal Cleaning Waste Basin (MCWB), and Drying Area. These three impoundments, which are surrounded (encircled) as a group by a slurry wall reaching from approximately ground surface to the underlying shale bedrock, are collectively referred to hereinafter as the CCR Management Unit (see Figure 1). Monitoring of groundwater downgradient of the CCR Management Unit per 40 CFR §257.95(g) indicates releases in exceedance of the groundwater protection standard (GWPS), requiring assessment of corrective measures and closure.

1.2 Purpose

Within 90 days of the detection of an Appendix IV constituent at a statistically significant level above the GWPS defined in 40 CFR §257.95(h), 40 CFR §257.96 requires NIPSCO to initiate and 90 days to complete an assessment of corrective measures to prevent further releases, remediate any releases, and restore affected areas to original conditions. However, the regulations allow NIPSCO to demonstrate the need for additional time, not to exceed 60 days, to complete the assessment due to site-specific conditions or circumstances. The purpose of this document is to demonstrate the requirement for the 60-day extension of the initial 90-day corrective measures assessment deadline.

2.0 ASSESSMENT OF CORRECTIVE MEASURES

2.1 Approach

NIPSCO determined the identification and screening of potential corrective measures required CCR Management Unit- and Site-specific data beyond that available from Detection and Assessment Monitoring programs only. Supplemental data needs included the characterization of source materials; the type(s), degree, and extent of groundwater impacts; and the abilities of Site conditions to support various corrective measures alternatives.

2.2 Work-to-Date Encountering Site-Specific Conditions

Prior to the confirmation of exceedances of groundwater protection standards (GWPS), NIPSCO engaged in the design and installation of supplemental source material, soil, pore water, and groundwater sampling programs. Steps in this linear supplemental assessment process included:

- investigation program design/scoping;
- subcontractor driller procurement and scheduling;
- access to and clearance of potential drilling locations within the congested operations areas of the generating station;
- monitoring well installation, development, and stabilization;
- sample collection, laboratory turnaround, and data validation; and
- preliminary evaluation of analytical data

By necessity, due to the stages inherent in the supplemental data collection program, a substantial portion of the initial 90-day assessment period was consumed by data collection and preliminary analysis, leaving insufficient time to complete the assessment of corrective measures within the initial performance period.

2.3 Work-to-Date Encountering Site-Specific Circumstances

NIPSCO is engaged in other ongoing activities for RMSGS which directly support the Assessment of Corrective Measures process including:

- NIPSCO has collected an additional two rounds of monitoring data; however, these data are determined to be insufficient. Additional monitoring is planned to enhance the recently collected datasets;
- NIPSCO intends to close the CCR Management Unit by removal of source materials, with source removal being an integral component of its overall Corrective Measures strategy for groundwater. NIPSCO has been working diligently to meet a May 1, 2019 target date for preparation and submittal of a Closure Application for the combined MSRB/MWCB/Drying Area to Indiana Department of Environmental Management (IDEM); and
- Related to supplemental groundwater investigation work discussed in Section 2.2 and as one of several options, NIPSCO is performing a preliminary evaluation of the feasibility of in-situ as well as ex-situ processes as potential remedial alternatives to be considered in the Corrective Measures alternatives screening process.

Similar to work being conducted as discussed in Section 2.2, activities as described herein are ongoing but could not be completed within the initial 90-day performance period due to inherent complexity, the necessity to understand and respond to requirements of state regulators, or lack of a clear outcome based on results to date.

3.0 CONCLUSION

Due to an exceedance of a GWPS downgradient of the CCR Management Unit, NIPSCO must within 90 days complete an assessment of corrective measures unless a demonstration for an additional 60-day extension of time is made and certification from a qualified professional engineer attests to the accuracy of the demonstration. This document demonstrates that NIPSCO has initiated the assessment of corrective measures process, is taking reasonable steps to complete the process in a timely manner, and provides the basis for the qualified professional engineer's attestation for an additional 60-day extension. Pursuant to 40 CFR §257.96(a), a statement of Certification is appended to this plan and located in Exhibit A.

Golder Associates Inc.

Mark A. Haney
Program Leader and Principal

MAH/drb

\\manchester\data\projects\2016\1648171 nipsco ccr\01 extender\rmsgs ccr- phase 03\reports and deliverables\60-day cm extension\rmsgs multi-unit 60 day corrective measures extension request 2-15-19_final.docx

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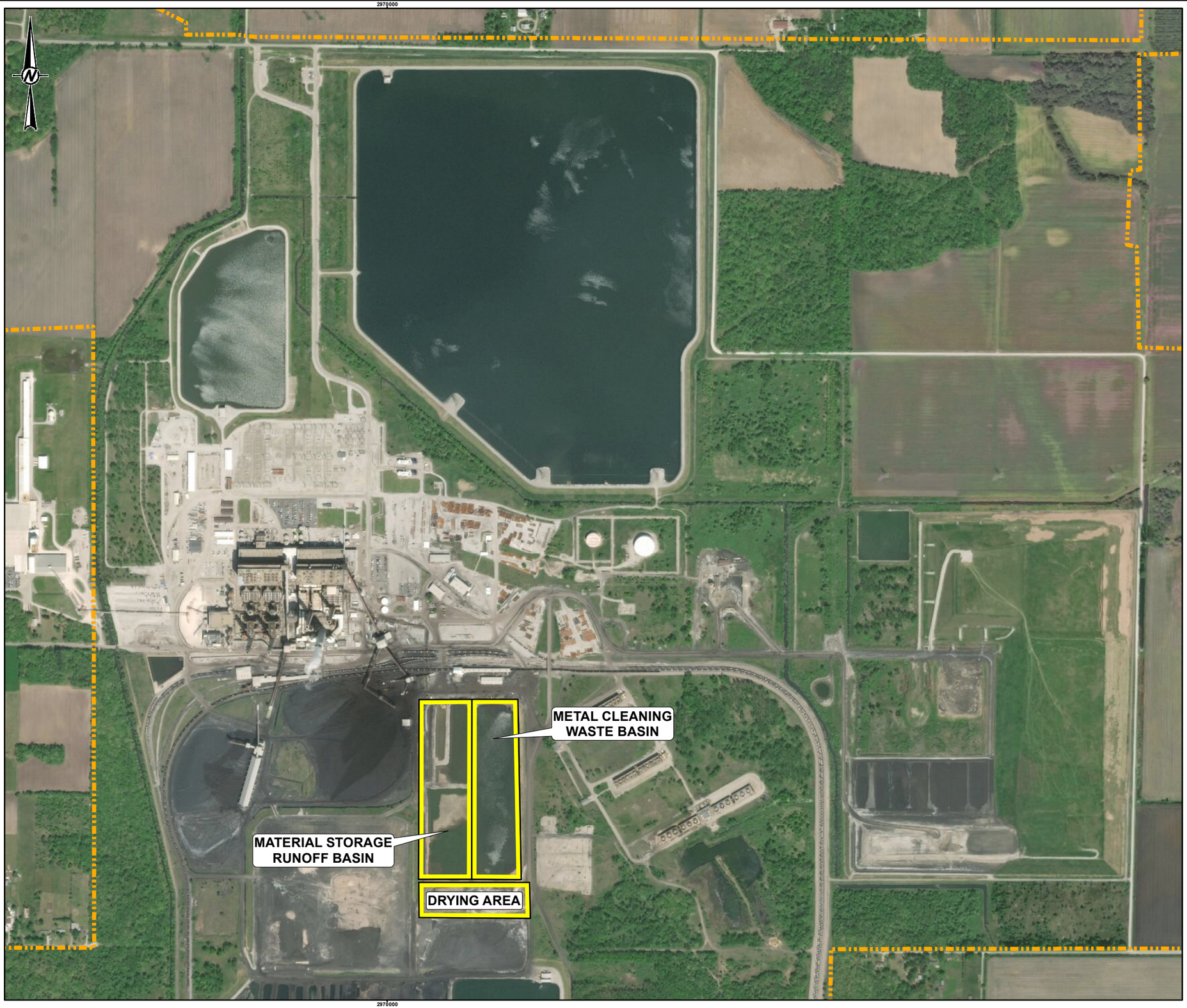

2970000

LEGEND

- CCR Units
- Approximate Property Line

0 850 1,700

1 " = 850 feet Feet

REFERENCE(S)

1. SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY

CLIENT

NORTHERN INDIANA PUBLIC SERVICE COMPANY

PROJECT

NORTHERN INDIANA PUBLIC SERVICE COMPANY
R.M. SCHAHFER GENERATING STATION
WHEATFIELD, INDIANA

TITLE

DRYING AREA, MATERIAL STORAGE RUNOFF BASIN, AND METAL CLEANING WASTE BASIN LOCATIONS MAP

CONSULTANT

GOLDER

YYYY-MM-DD	2/15/2019
DESIGNED	DFS
PREPARED	SHL
REVIEWED	MAH
APPROVED	MAH

PROJECT NO.	CONTROL	REV.	FIGURE
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GOLDER

EXHIBIT A

February 2019

Northern Indiana Public Service Company (NIPSCO) R.M. Schahfer Generating Station (RMSGS)
Wheatfield, Jasper County, Indiana
Material Storage Runoff Basin, Metal Cleaning Waste Basin, and Drying Area

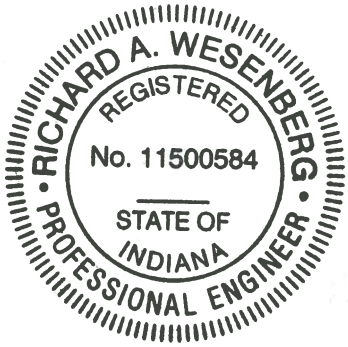
STATEMENT OF CERTIFICATION

NIPSCO RMSGS MATERIAL STORAGE RUNOFF BASIN, METAL CLEANING WASTE BASIN, AND DRYING AREA

ASSESSMENT OF CORRECTIVE MEASURES

40 Code of Federal Regulations (CFR), Part 257.96 (a)

I, Richard Wesenberg, certify that I have personally examined and am familiar with the provisions of Title 40 of the Code of Federal Regulations Part 257.96 and with the information submitted in the NIPSCO Extension of 60 Days to Complete Assessment of Corrective Measures for CCR Management Unit Referred to as Material Storage Runoff Basin, Metal Cleaning Waste Basin, and Drying Area documentation, prepared by Golder Associates Inc., dated February 2019. I believe that the information contained therein is true, accurate and has been prepared in accordance with good engineering practices and that the documentation provided in accordance with 257.96 (a) demonstrates the need for additional time to complete the assessment of corrective measures due to site-specific conditions and circumstances.



2-15-2019

Richard A. Wesenberg, PE
Program Leader and Principal
Registered Professional Engineer
State of Indiana No.: PE11500584

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