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Bridgman, MI 49106
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October 3, 2019

AEP-NRC-2019-47
10 CFR 50.4

Docket Nos.: 50-315
50-316

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Donald C. Cook Nuclear Plant Units 1 and 2
NOTIFICATION OF GW1810102 NON-COMPLIANCE FOR MERCURY

References:

1. Letter from M. K. Scarpello, Indiana Michigan Power Company (I&M), to U. S. Nuclear Regulatory Commission (NRC) Document Control Desk, "Donald C. Cook Nuclear Plant Units 1 and 2, Notification of GW1810102 Non-Compliance for Mercury," AEP-NRC-2019-45, dated August 8, 2019.
2. Letter from M. K. Scarpello, I&M, to U. S. NRC Document Control Desk, "Donald C. Cook Nuclear Plant Units 1 and 2, Notification of GW1810102 Non-Compliance for Mercury," AEP-NRC-2019-46, dated August 19, 2019.

Indiana Michigan Power Company, the licensee for Donald C. Cook Nuclear Plant (CNP) Units 1 and 2, is providing a second follow-up notification to the Nuclear Regulatory Commission (NRC) of a Groundwater Permit GW1810102 non-compliance for mercury, in accordance with CNP's Environmental Protection Plan, Section 5.4.2, "Non-routine Reports."

By Reference 1, the NRC was notified that on August 2, 2019, Monitoring Well 1A was confirmed to be 4.1 ng/l (0.0041 ug/l) for mercury, which exceeds the permit limit of 1.3 ng/l (0.0013 ug/l).

By Reference 2, the NRC was notified that on August 5, 2019, Monitoring Well 1A was resampled and, although mercury was showing a decreasing trend, was still above the permit limit of 0.0013ug/l.

The purpose of this letter is to provide a 60-day update, as required by CNP's Groundwater Permit GW1810102, of CNP's evaluation results of this exceedance. Evaluation results determined that based on the understanding of groundwater flow patterns at CNP and the upgradient surface water mercury concentrations, the exceedance is likely due to sources outside of CNPs control. Samples were collected from the Thornton Valley drain, absorption pond, turbine room sump, the sewage plant, Monitoring Well 1A, Monitoring Well 16, and rainwater collected directly into a sample bottle during precipitation events. None of these locations, when sampled, contained mercury concentrations greater than the permit limit. There is no evidence to suggest any impacts to groundwater. Monitoring wells on the property boundary are not exhibiting high mercury levels and the mercury concentration levels never

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exceeded the state's drinking water limits. Corrective actions will include CNP expanding the sampling program to include upgradient and downgradient monitoring wells, surface water in Thornton Valley drain, overflow pond, turbine room sump and the sewage plant. CNP will submit a follow up report to Michigan Department of Environmental, Great Lakes, and Energy by September 29, 2020, with a review of this data.

The notification to the Michigan Department of Environment, Great Lakes, and Energy is provided as an enclosure to this letter. This letter contains no new or revised commitments. Should you have any questions please contact Michael K. McCarthy, Chemistry Manager, at (269) 465-5901, extension 2810.

Sincerely,

Handwritten signature of Michael K. Scarpello in black ink, written in a cursive style.

Michael K. Scarpello
Regulatory Affairs Director

Enclosure: Letter from M. K. McCarthy, Indiana Michigan Power Company, to J. Klang, Michigan Department of Environment, Great Lakes, and Energy, "American Electric Power Company, Donald C. Cook Nuclear Plant, Groundwater Permit GW1810102," dated September 30, 2019.

KMH/rdw

c: R. J. Ancona – MPSC
D. A. Kopec – AEP Columbus
R. F. Kuntz – NRC Washington D.C.
NRC Resident Inspector, w/o enclosure
D. J. Roberts – NRC Region III
A. J. Williamson – AEP Ft. Wayne

ENCLOSURE TO AEP-NRC-2019-47

Letter from M. K. McCarthy, Indiana Michigan Power Company, to J. Klang, Michigan Department of Environment, Great Lakes, and Energy, "American Electric Power Company, Donald C. Cook Nuclear Plant, Groundwater Permit GW1810102," dated September 30, 2019.



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Ms. Jen Klang
Michigan Department of Environment, Great Lakes and Energy
7953 Adobe Road
Kalamazoo, MI 49009-5026

September 30, 2019

Re: American Electric Power Company
Donald C. Cook Nuclear Plant
Groundwater Permit No. GW1810102

Dear Ms. Klang:

This notification is made pursuant to Cook Nuclear Plant's (CNP) Groundwater Permit GW1810102, Part I.11.d Compliance Requirements, and will serve as the 60 day written report to address 1) results of confirmation sampling, 2) an evaluation of the cause for the limit exceedance and the impact to the groundwater, and 3) a proposal detailing steps taken and to be taken to prevent recurrence.

Additionally, two previous letters dated August 8, 2019 and August 19, 2019 have been submitted to your attention to address Part I.11.b and c of the aforementioned permit.

Background

Analytical results for annual groundwater monitoring were reported to CNP senior environmental specialist on July 30, 2019, and indicated the Total Mercury concentration at downgradient Monitoring Well EW1A (1A) of 0.0041 ug/L. This exceeded the permit limit of 0.0013 ug/L. The same groundwater sample underwent laboratory analysis a second time on August 2, 2019, to ensure there was not a lab error during the first analytical procedure. The second analytical results confirmed the original exceedance and the noncompliance event was reported, in writing, on August 8, 2019.

The required 14-day resampling event, per permit requirements, occurred at Monitoring Well 1A on August 5, 2019, with analytical results reported on August 7, 2019. The result of the resampling for Total Mercury was 0.0030 ug/L which was still above the permit limit. At this point, the CNP environmental team made a plan to continue to sample various locations around the facility property to determine the source of the Monitoring Well 1A Total Mercury exceedance. This included sampling of upgradient surface water from the Thornton Valley Drain, the absorption pond, the turbine room sump (outfall 00D), the sewage plant (outfall 00E), Monitoring Well 1A, Monitoring Well EW16, and rainwater collected directly into a sample bottle during precipitation events. A summary of the sampling events, locations, and laboratory analytical results can be found in Table 1 on the next page.

Table 1 shows that the outfalls, when sampled in August, did not contain Total Mercury concentrations greater than the permit limit. For example, the Turbine Room Sump (Outfall 00D) was sampled on August 26, 2019 and the laboratory analytical result was 0.00087 ug/L. Outfall 00D outlets into the absorption pond. The absorption pond is designed to overflow into the overflow pond when there is increased flow and/or precipitation causing such an event. During the August 26, 2019 sampling, the absorption pond water was also sampled and the laboratory analytical result for Total Mercury was 0.0027 ug/L. This is more than double the source concentration, Outfall 00D. A precipitation sample was also collected at this time in a decontaminated sampling bottle during a storm event for research purposes. The laboratory

analytical result for Total Mercury was 0.0038 ug/L, more than four times the Outfall 00D concentration. Based on these laboratory data, precipitation at and near the site contains Total Mercury concentrations greater than the groundwater permit limit. The precipitation may seep directly into groundwater through percolation and also can collect in surface water bodies and drain to the groundwater (Thornton Valley Drain, Absorption Pond, Overflow Pond).

The absorption pond is designed to outlet into the overflow pond when there is increased flow from Outfall 00D and/or precipitation events. The overflow pond can be assumed to have similar chemistry of the absorption pond, since the absorption pond is a direct source to the overflow pond. The overflow pond is the closest adjacent surface water to Monitoring Well 1A. The overflow pond is also unlined, has direct hydraulic connection to the groundwater, and likely has an outward, radial flow pattern to the groundwater. The radial flow pattern of the pond water to the groundwater can be visualized in Attachment 1 which contains the site-wide groundwater elevation contours as developed for the December 2018 Hydrogeologic Review of the Groundwater Protection Program by Environmental Resources Management (ERM).

Table 1
Total Mercury Permit Limit: 0.0013 ug/L

Sample ID	Location Relative to 1A	Parameter	7/8/2019 Results (ug/L)	8/5/2019 Results (ug/L)	8/12/2019 Results (ug/L)	8/12/2019 Split (Brighton Analytical) Results (ug/L)	8/26/2019 (Brighton Analytical) Results (ug/L)	9/9/2019 Results (ug/L)
EW8	Sidegradient	Total Mercury	0.0013	-	-	-	-	-
EW12	Sidegradient	Total Mercury	<0.0002	-	-	-	-	-
EW19	Sidegradient	Total Mercury	<0.0002	-	-	-	-	-
EW16	Upgradient	Total Mercury	0.0008	-	-	-	-	0.00087
Thornton Valley Drain	Upgradient*	Total Mercury	-	-	0.0027	0.00201	0.00738	-
Turbine Room Sump / 00D	Upgradient**	Total Mercury	-	-	-	-	0.00087	0.00057
Absorption Pond	Upgradient**	Total Mercury	-	-	0.0020	0.00119	0.00273	-
Sewage Plant / 00E	Upgradient**	Total Mercury	-	-	0.0007	<0.0005	0.0007	<0.0005
Precipitation	-	Total Mercury	-	-	-	-	0.00386	-
1A	Reference Point	Total Mercury	0.0041	0.0030	0.0037	0.0029	0.00242	0.00168
EW13	Downgradient	Total Mercury	<0.0002	-	-	-	-	-
Notes:								
* Thornton Valley Drain is downgradient of the furthest upgradient Monitoring Well EW16.								
**The outfalls and ponds appear downgradient of 1A, however significant flow to the unlined ponds likely causes groundwater mounding in the vicinity of 1A and creates a radial groundwater flow path from the ponds to the groundwater. The surface water from the absorption pond, overflow pond, and sewage pond likely mix and influence the groundwater at 1A, thus they are labeled as upgradient relative to this monitoring well location.								
Values in bold are higher than the downgradient groundwater monitoring well permit limit of 0.0013 ug/L.								

Additionally, upgradient to the site is a surface water body called Thornton Valley Drain. Thornton Valley Drain was also sampled at the culvert where the stream crosses Livingston Road during the August 26, 2019 sampling event. The Total Mercury concentration was found to be 0.00738 ug/L. This is the highest concentration of Total Mercury recorded around CNP since 2003. The Thornton Valley Drain surface water elevation is higher than that of the groundwater and therefore can be determined to be supplying the groundwater. It should be noted that the Thornton Valley Drain was sampled after a precipitation event. Monitoring Well EW16 is located further upgradient than the Thornton Valley Drain.

Concentrations of Total Mercury up to the permit limit have been recorded in recent history. The most recent sampling event at Monitoring Well EW16 was on September 9, 2019 and the results were received on September 18, 2019 indicating a Total Mercury concentration of 0.00087ug/L. This is consistent with historical values at this groundwater monitoring location.

It should be noted that the Total Mercury concentration at Monitoring Well 1A has generally been declining since the July 2019 annual sampling event, there is no evidence at other monitoring points or the downgradient property boundary of any Total Mercury exceedances or trends, and the concentration never exceeded the state's drinking water limit of 2,000 ng/L.

Evaluation of Exceedance and Impact to Groundwater

Based on the understanding of groundwater flow patterns at CNP and the upgradient surface water Total Mercury concentration, the exceedance at Monitoring Well 1A is likely due to sources outside of CNP's control. The Total Mercury concentration of 0.00738 ug/L in the surface waters of Thornton Valley Drain, which is upgradient, is a contributing factor to groundwater Total Mercury concentration at CNP.

Property boundary groundwater monitoring wells are not exhibiting high Total Mercury concentrations and there is no evidence to suggest that the Total Mercury exceedance at Monitoring Well 1A has caused impacts to neighboring properties.

Proposed Actions

In order to continue to investigate and better understand the cause of the Total Mercury exceedance at EW1A, an increased frequency of sampling groundwater monitoring wells and CNP outfalls is being proposed.

CNP proposes an expanded sampling program be instituted that includes Total Mercury analysis during quarterly sampling of upgradient and downgradient Monitoring Wells 1A, EW8, EW13, and EW16; surface water in Thornton Valley Drain and overflow pond; and Outfalls 00D and 00E. The existing permit quarterly sampling schedule will be retained and these additional analyses will be added, as well as the additional locations will be sampled only for Total Mercury.

CNP will submit a follow up report by September 29th, 2020 with a review of the collected data. The report will address the conditions as observed today and changes observed throughout the next 12 months. The additional sampling locations data will be provided by laboratory report and summarized in table form.

If you have any questions, please contact me at (269) 465-5901, ext. 2810.

I certify that, based on information and belief formed after reasonable inquiry, the statements and information contained in this document are true, accurate, and complete.

Sincerely,



Michael K McCarthy
Chemistry Manager

Enc.

c: MIWATERS

