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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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October 15, 2018

Nicor Gas
Attn: Keith Bodger
1844 Ferry Road
Naperville, Illinois 60563

Re: 0990555005/LaSalle County
Mendota/Black Brothers Company
Site Remediation Program/Technical Reports

Dear Mr. Bodger:

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the June 2018 *Revised Site Investigation Report/Remediation Objectives Report/Remedial Action Plan* (received August 7, 2018/Log No. 18-67617). The subject document was submitted by Burns & McDonnell Engineering Company, Inc. on behalf of Nicor Gas.

The subject document is approved with the following comments & conditions:

1. Based on the revised site boundaries, please submit a new DRM-1 Form to reflect the addition of the City of Mendota as a property owner. A new legal description is also required.

2. The lateral extent of impact at the site is defined by the revised site boundaries to the north, east, and south. Manufactured Gas Plant (MGP) impacts that have migrated off-site to the west will be addressed separately. As discussed, it is an option to pursue a '4(y)' Letter from the Illinois EPA documenting remediation of MGP-impacted soil west of the site. Under this scenario, it is recommended to submit a workplan and contact the Illinois EPA for further guidance.

3. Regarding the indoor inhalation exposure route, post-remediation groundwater and/or soil gas data will be obtained to re-evaluate this exposure route, as proposed. Regarding the Tier 3 evaluation for this exposure route, the U.S. EPA J&E model was recently updated to include a dirt floor scenario; the approved objectives are outlined below.

Summary of Residential Tier 3 Groundwater and Soil Gas Remediation Objectives
Indoor Inhalation Exposure Route

Analyte	Tier 3 Residential Soil Gas Remediation Objective (mg/m^3)	Tier 3 Residential Groundwater Remediation Objective (mg/L)
Benzene	0.057	0.097
Ethylbenzene	0.21	0.34
Styrene	230	310
Toluene	960	530
Xylenes, Total	23	26
2-Methlynaphthalene	530	25
2-Methylphenol	81	5,300
Phenol	14	2,600
Naphthalene	0.019	0.054
Mercury	0.071	0.047

NOTES:

The Tier 3 soil gas objectives were calculated using a source depth (D_{soucre}) of 4.5 feet. If post-remediation soil gas samples are collected, please collect the samples at an interval of 4.5 feet below ground surface (bgs).

The Tier 3 groundwater objectives were calculated using a D_{source} value of 6 feet bgs.

Post-remediation investigation of the indoor inhalation exposure route should include analysis of all of the compounds listed above (refer to Table 49 of subject document).

4. As stated in the subject document, the horizontal hydraulic conductivity of the upper water bearing unit was determined from slug tests performed at monitoring wells which are screened across the upper water bearing unit. Hydraulic conductivity values range from 1.2×10^{-5} cm/s to 5.6×10^{-4} cm/s, with a geometric mean of 8.2×10^{-5} cm/s. Although it is acceptable to use the geometric mean for future modeling, groundwater beneath the site is most appropriately categorized as a Class I resource.

5. The Tier 3 evaluation related to the groundwater ingestion exposure route (Section 9.1) for polynuclear aromatic hydrocarbons (PNAs) is approved; the proposed Tier 3 objectives for PNAs are acceptable (included on Table 48). However, the arsenic groundwater remediation objective is 0.05 mg/L, as opposed to 0.01 mg/L (Table 48).

6. Table N-1 in Appendix N provides a summary of PNA remediation objectives. Corrected objectives (highlighted using bold font) are summarized in the table below.

Summary of PNA Remediation Objectives

	Residential		Industrial/Commercial		Construction Worker			
Chemical	Ingestion (mg/kg)	Outdoor Inhalation* (mg/kg)	Ingestion (mg/kg)	Outdoor Inhalation* (mg/kg)	Ingestion (mg/kg)	Outdoor Inhalation* (mg/kg)	Soil Component of Groundwater Ingestion Class I (mg/kg)	Groundwater Ingestion Class I (mg/L)
Benz(a)anthracene	6.4	**380**	57	**730**	1200	**1000**	14	0.00085
Benzo(b)fluoranthene	6.4	**170**	57	**330**	1200	**470**	36	0.00085
Benzo(k)fluoranthene	64	**14000**	570	**27000**	12000	**38000**	340	0.0085
Benzo(a)pyrene	0.64	**45****	5.7	**71****	**120*****	**6.9****	8	0.0002 (Tier 1)
Chrysene	640	**11000**	5700	**21000**	120,000	**30000**	1400	0.085
Dibenz(a,h)anthracene	0.64	**330**	5.7	**640**	120	**900**	8.5	0.0003 (Tier 1)
Indeno(1,2,3-c,d)pyrene	6.4	**2100**	57	**3900**	1200	**5500**	110	0.00085

NOTES

*consultant proposes using the fugitive dust equations. 35 IAC 742.710(c)(1) and (2) requires organic chemicals be evaluated separately using Equations S4-S10. Equations S4-S10 provide lower values.

**non-carcinogenic value

***proposed value of 61 mg/kg in Table N-1 is different from the value listed at Table N-9 (610 mg/kg). The value was calculated using a chronic RfD of 0.0003 mg/kg-d. The correct sub-chronic RfD = 0.004 mg/kg-d. Using the correct sub-chronic RfD, the most stringent value is the carcinogen value of 120 mg/kg.

The consultant proposes calculating a benzo(a)pyrene non-carcinogenic groundwater remediation objective by substituting the daily soil ingestion rate (IR_s) with the daily water ingestion rate (IR_w) in the S1 equation, instead of using the method prescribed in the 620 regulations. Further, the proposed exposure values of body weight, averaging time, and exposure duration for use in the equation are the adult values, instead of the child values.

The non-carcinogenic remediation objective using the proposed S1 method = 11,000 mg/L. The non-carcinogenic remediation objective using the method in 620 = 0.0021 mg/L. This is the method that should be used. In both cases, the value < carcinogenic groundwater remediation objective.

7. The lowest soil remediation objectives are the proposed objectives for this project (Table 47). For PNAs, the objectives correspond to either the residential ingestion remediation objective or the soil migration to Class I groundwater remediation objective. Regarding Table 47, the soil migration to groundwater remediation objective for 2-methlynaphthalne is 1.9 mg/kg, which should be used as the remediation objective for this compound.

8. Confirmation soil sampling should include pH analysis in each confirmation sample if pH-based remediation objectives for inorganic parameters are used for evaluation of the soil migration to groundwater exposure route. Average pH values or pH ranges cannot be used for this comparison; discrete values are required.

9. Exposure routes will be re-evaluated based on final site conditions (i.e. post-remediation data). As a result, groundwater & groundwater to surface water models provided in the subject document have not been reviewed since site conditions will change. The need for surface water sampling will be determined based on post-remediation data.

10. Site-specific values for fraction of organic carbon (f_{oc}) were previously verified by the Illinois EPA and are acceptable (refer to Table 37). In addition, the site-specific soil saturation limit (C_{sat}) values were previously verified by the Illinois EPA and are acceptable remediation objectives. Finally, the proposed Tier 3 remediation objective of 1.48 mg/kg for total mercury for evaluation of the construction worker (outdoor) inhalation route is acceptable, as previously conveyed.

11. Imported soil must be clean; soil samples from each source location should be sampled for the Target Compound List (35 IAC 740, Appendix A, Tables A-D) at a rate of one sample per 500 cubic yards of imported soil. The results must be below residential remediation objectives. If the material to be used is from a quarry where there is no possible contamination of the backfill source (virgin material), then sampling is not required. However, documentation should be provided to the Illinois EPA on the source of the backfill.

12. Please submit a response to this letter as part of the Remedial Action Completion Report (RACR).

All future submittals to the Site Remediation Program should include one original and one copy of each document and a DRM-2 form.

If you have questions, please contact me at (217) 785-8724 or by e-mail at Jeff.Guy@illinois.gov.

Sincerely,

MG

Jeffrey J. Guy, Project Manager
Voluntary Site Remediation Unit
Remedial Project Management Section
Division of Remediation Management
Bureau of Land

cc: Amanda Haugen, Burns & McDonnell Engineering Company, Inc.:
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Bureau of Land File