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ENVIRONMENT
& HEALTH

Sent via EMail

Mr. Riley Neuman, Hydrogeologist
Wisconsin Department of Natural Resources
P.O. Box 7921
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WAC NR 716 INDOOR AIR SAMPLING WORK PLAN
NORTHWESTERN BARREL (MARINA CLIFFS) - ADJACENT PROPERTY
3333 5TH AVENUE, SOUTH MILWAUKEE, WISCONSIN
FID NO. 241428990, BRRTS NO. 02-41-559478

Dear Mr. Neuman:

April 30, 2021

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Ref. 1690016812

On behalf of the Marina Cliffs Performing Parties (the "Performing Parties"), Ramboll US Consulting, Inc. (Ramboll) has prepared this *Indoor Air Sampling Work Plan* (the "Work Plan") for the Marina Cliffs/Northwestern Barrel Site Condominium property located at 3333 5th Avenue in South Milwaukee, Wisconsin (the "Site"). This Work Plan was prepared following Wisconsin Administrative Code (WAC) Chapter NR 716 and provides the details of proposed vapor intrusion investigation activities including the indoor and outdoor air sampling strategy and technical methodology.

SITE LOCATION AND DESCRIPTION

The Site is owned by the Marina Cliffs Condominium Corporation and is located at 3333 5th Avenue in South Milwaukee, Wisconsin, northeast of the intersection of Marina Road and 5th Avenue. The Site is municipally zoned as "Commercial or Business Park" with a parcel description of "Residential." The site location and layout are depicted in Figures 1 and 2, respectively.

Four residential condominium buildings (Buildings 1 through 4) are located on the Site. Each building contains ten residential units (Units A through I or the "condo units") and is constructed with two livable floors over a basement (three levels total). The area around the buildings is further developed with depressed concrete carports, asphalt surfaced parking lots, concrete sidewalks, and landscaped patio areas. The basements are all constructed of poured concrete slabs and cinder block walls. The basements in certain units have been finished, while others remain unfinished.

PROJECT BACKGROUND

The Northwestern Barrel Company operated a barrel reconditioning operation on an 18-acre parcel of property extending to Lake Michigan. Under United States Environmental Protection Agency (USEPA) and Wisconsin Department of Natural Resources (WDNR) oversight, the property was the subject of extensive investigation and remediation activities for over 20 years.

As of 2015, numerous remedial activities had been performed at the Site to reduce contaminant source mass including limited soil excavation and *in-situ* chemical oxidation (ISCO) remediation in areas on site where elevated chlorinated volatile organic compounds (cVOCs) were present in the soil. Before conducting the full-scale

ISCO pilot test in November/December 2004, precautionary sub-slab depressurization systems were installed in October 2004 in four basement sump crocks; one in each of the four buildings on the Site (in Units 1J, 2A, 3J, and 4A). The sump crocks are connected to a buried shallow drain tile system surrounding the perimeter of each building (Figure 2). In May 2013, five additional basement sump crocks (in Units 1A, 2J, 3A, 3D, and 4J) were sealed along with other system refurbishments[1]. Operation of the initial vapor mitigation systems (VMS) has been performed by GHD Environmental, Inc. (GHD) on behalf of the Performing Parties since installation in 2004.

A Case Closure Report for the property was submitted to the WDNR by the Performing Parties in October 2012. As of September 2013, all work under 2002, 2004, and 2011 USEPA Administrative Orders on Consent had been completed except for the Post-Closure Site Control Agreement. In May 2015, the WDNR advised the Performing Parties that the WDNR's vapor intrusion (VI) rules and policies have progressed and the WDNR Project Manager at that time, Jason Lowry, requested that additional VI issues be addressed, but also clarified that a decision on Case Closure will ultimately be up to WDNR's Southeast Region Closure Committee.

In September 2016, a VI Evaluation Work Plan (VI Work Plan) was prepared by GHD on behalf of the Performing Parties and submitted to the WDNR to address the additional air monitoring activities requested by the WDNR, assess the need for the continued operation of the four existing VMS, and assess if any additional vapor mitigation devices were required. The WDNR reviewed and provided conditional approval with comments on the VI Work Plan in October 2016. In accordance with the WDNR-approved VI Work Plan, the following activities were performed: in November 2017, ten sub-slab monitoring points in ten units were installed; in November 2017, ten sub-slab and nine indoor air (IA) samples were collected while the VMS were operating; in December 2017, ten sub-slab and ten IA samples were collected following 2-week shutdowns of VMS units in all buildings; and in April 2018, 12 sub-slab and 12 IA samples were collected following a 30-day shutdown of VMS units in Buildings 2, 3, and 4.

Based on the results of the November and December 2017 testing, GHD prepared a *Soil Vapor Evaluation Report* on behalf of the Performing Parties on March 5, 2018. Subsequent sampling performed during the 2017 to 2018 winter heating season confirmed the presence of sub-slab soil gas concentrations warranting continued mitigation at three of the four buildings. Pilot testing for VMS design in August 2018 confirmed the effectiveness of the existing VMS units for portions of each of the four buildings and identified the need for supplemental VMS installations to ensure complete coverage. As detailed in the July 16, 2019 *Design Report* prepared by GHD, VMSs were installed in Units 1A, 2J, 3A, and 4J in December 2019 along with upgrades to the initial VMSs that were installed in 2004 (the details of the December 2019 GHD VMS upgrade activities are presented in Ramboll's April 2021 *Vapor Mitigation System Construction Documentation and Performance Verification Testing Report*).

In response to the *Design Report* submittal on July 16, 2019, and a subsequent technical meeting on August 20, 2019, the WDNR issued a letter dated September 13, 2019. Specific WDNR comments requested an expanded scope of work to verify the performance of the upgraded VMS and IA sampling to verify the VI pathway is incomplete. Therefore, on behalf of the Performing Parties, Ramboll submitted a *Vapor Mitigation System Documentation and Pressure Field Extension Testing Work Plan* on June 1, 2020 (the "June 2020 Work Plan"). The June 2020 Work Plan was developed utilizing a phased approach. The first phase was to complete a round of pressure field extension (PFE) measurements to evaluate the efficacy of the newly installed VMSs. The rationale was to evaluate the PFE data and if deficient, modify the current VMSs to sustain sufficient depressurization coverage in all the buildings. If the PFE measurement data showed sufficient coverage and

[1] Replacements of all nine seal covers, crock cleanouts, and replacement of the nine crock sump pumps.

sub-slab depressurization across all the units in all buildings, then the second phase of the Work Plan would be completed which included IA testing.

Ramboll completed the VMS documentation and PFE measurements from August 31 through September 3, 2020, in accordance with the June 2020 Work Plan. The results are presented in Ramboll's report entitled *Vapor Mitigation System Construction Documentation and Performance Verification Testing Report Northwestern Barrel (Marina Cliffs) – Adjacent Properties in South Milwaukee, Wisconsin*, dated April 2021 (the "April 2021 VMS Documentation and PFE Verification Testing Report"). Based on the VMS documentation and the PFE measurements, the VMS have sufficient coverage within all four buildings to mitigate sub-slab vapors at the Site and Ramboll recommended that IA testing commence at the Site. This Work Plan includes the second phase of testing which includes the strategy and rationale for the IA sampling locations, ambient outdoor sampling, the sampling protocol, the parameters to be tested, and the need for full column testing[2] based on site conditions, WDNR requirements in their letter dated September 13, 2019, and the data collected during Phase I VMS documentation and PFE measurements. As requested by the WDNR in their letter dated September 13, 2019, this Work Plan also includes a figure depicting our current understanding of the layout of utilities and a discussion of a plan to evaluate the utilities as potential VI pathways.

TECHNICAL STRATEGY

The IA testing program presented herein was designed based on the additional data collected during Ramboll's August and September 2020 PFE measurements and includes IA full column testing in select units. This IA sampling strategy is to verify the indoor air quality in the four condominium buildings based on unit location and access.

HEALTH AND SAFETY

Ramboll will review the Health & Safety and COVID-19 plans already prepared for the Site before commencing the field activities. Ramboll will comply with state and Center for Disease Control protocols for COVID-19.

INDOOR AIR SAMPLING

This Work Plan conforms to the IA sampling requested by the WDNR in their letter dated September 13, 2019 and includes full column testing in two units in each building. This IA sampling plan includes a sampling event in Summer 2021. Ramboll will evaluate the IA results and assess whether an additional sampling event is warranted based on the IA results.

SAMPLING LOCATIONS

The selection of specific monitoring points is dependent upon access and availability to individual units within each building as well as prior PFE test results. Based on the April 2020 VMS and PFE Verification Testing Report, Ramboll performed PFE measuring at 20 units (Building 1 - Units B, C, I, and J; Building 2 – Units A, B, C, F, and I; Building 3 – Units A, C, D, E, G, and J; and Building 4 – Units A, B, F, G, and J) that were chosen to be representative of units at the end and middle of each building. Based on the PFE test results, negative sub-slab pressure readings were documented under all the condo units. The negative sub-slab pressure readings were more negative than -0.004 in H_2O, with the exception of one condo unit (Unit 4G), which had a measured vacuum of -0.002 in H_2O. Condo Unit 3E had variable pressure readings that ranged from -0.002 to -0.004 in H_2O. There were mostly positive unit pressure differentials (between the condo unit and outside air) measured during the August-September 2020 PFE site visits. There were only two negative condo unit pressures; however, these negative condo pressures were not greater than the negative sub-slab

[2] IA sampling on all three levels of select residential units.

pressures in the units. Therefore, the PFE measurements demonstrate and document that the VMS are sufficient to mitigate sub-slab vapors at the Site.

Indoor air sampling will be performed at the following locations (as accessible):

- the basement of 20 units (up to five units per building – see listing below, based on access);
- the first and second floor of two units per building, based on access; and
- two ambient outdoor sampling locations via passive sampling media; one to the west and one to the east of all four buildings.

Ramboll has selected four to six units per building based on access agreements that have been secured in the past during the 2020 PFE testing and the ability to provide overall coverage for each of the condominium buildings (i.e., the ends and middle of the buildings). Ramboll proposes to perform the IA sampling in the same units as were selected during the August 2020 PFE testing locations given we have been able to obtain access in the past. See Figure 3 for proposed IA sampling locations described herein. IA sampling is proposed at the following units based on access:

- Units 1B, 1C, 1I, and 1J;
- Units 2A, 2B, 2C, 2F, and 2I;
- Units 3A, 3C, 3D, 3E, 3G, and 3J; and
- Units 4A, 4B, 4F, 4G, and 4J.

Ramboll will utilize Summa canisters to draw air into the canister under the influence of the canister's vacuum. This sample is a direct measure of the IA concentration near the sampling device during the sampling period. Each canister will be certified clean by the laboratory and fitted with a calibrated flow controller (approximately 4.1 milliliters per minute) that provides a 24-hour (required for residential settings) time-weighted average concentration. Sample media will be deployed in interior spaces approximately 5 feet above the floor (the approximate breathing zone). The sampling cans regulators will be closed with 2 to 10 inches of mercury vacuum remaining in the Summa cans, to ensure ambient air during transport does not impact the sample. Ramboll will utilize a Wisconsin-certified lab using USEPA Method TO-15 to analyze for chemicals of concern[3]. The chemicals of concern are known contaminants of concern at the site which have been previously detected in indoor air. The laboratory deliverable will include a data level II report.

Before the deployment of sampling media, the contents of the living space in which sampling will be performed will be inventoried to identify potential background sources of cVOCs[4]. When possible, potential cVOC-containing materials will be removed from the unit 24 hours before the IA sampling. If the cVOC containing materials can not be removed from the unit, Ramboll may choose to forego the sampling in that unit to avoid potential false-positive[5] cVOC detections. In addition, Ramboll will confirm that recent renovation activities including painting have not been conducted in the units prior to IA sampling. Ramboll will notify the WDNR of any units that cannot be sampled as planned due to access, if cVOC-containing materials cannot be removed or if recent renovations such as painting have been conducted in the units. IA sampling will commence during the 2021 summer season. One IA sampling event is recommended at this time given

[3] Tetrachloroethene, Trichloroethene, 1,2-Dichloroethane and Vinyl Chloride.

[4] RR-800 Appendix A - Background Vapor Sources.

[5] i.e., analyte detections related to unit materials and not as a result of VI.

the operation of the VMS and the PFE testing have confirmed sufficient coverage within all four buildings to mitigate sub-slab vapors at the Site. Depending on the IA results, additional testing may be recommended.

UTILITIES

Current known utilities are presented on Figure 2. Ramboll will contact the City of South Milwaukee to determine if they have any construction documentation drawings of utilities in particular the sanitary/storm sewers. In addition, a utility locate will be completed at the time of performing the IA sampling. Ramboll will verify the utilities on site during the IA sampling to identify sewer vents, manholes, and other openings to sample along the utilities, focusing on the sanitary sewer lines. Following completion of the IA sampling, Ramboll will screen the sewer vents, manholes, and other openings to determine if they are acting as a potential pathway for vapor migration. The vapor survey activities will include screening of vapors within the utilities with a photoionization detector for the presence of VOCs at sewer vents, manholes, and other openings on the property. All samples will be obtained by lowering tubing into the access point or manhole. At no time during performance of the utility vapor survey will the utility manholes or utility access points be entered. The work will be coordinated in advance with the City of South Milwaukee, MMSD, and We Energies.

SCHEDULE

It is anticipated that the field activities will commence during Summer 2021; we plan to target the first week of June 2021 pending receipt of site access. Vapor intrusion sampling activities at the residential condo units will be completed in 7 to 14 business days. The concurrent utility investigation will be completed in 4 to 5 business days.

REPORTING

Ramboll will evaluate the laboratory data and notify the WDNR and property owners of the IA results within 10 days of receipt of the laboratory data according to WAC Ch. NR 716.14(2). Ramboll will also prepare a report identifying the sampling methods and procedures, summarizing the IA sampling results, and providing conclusions and recommendations, as appropriate. The report will include tabulated IA sampling results that will be compared to Residential Indoor Air Vapor Action Limits[6]. The report will also include Ramboll's evaluation of the utility survey and assess potential VI risks via the utility corridors and provide recommendations. The report will be submitted to the WDNR within 30 to 45 days after receipt of the laboratory data.

CLOSING

If you have any questions or need further information, please contact either of the undersigned.

Yours sincerely,

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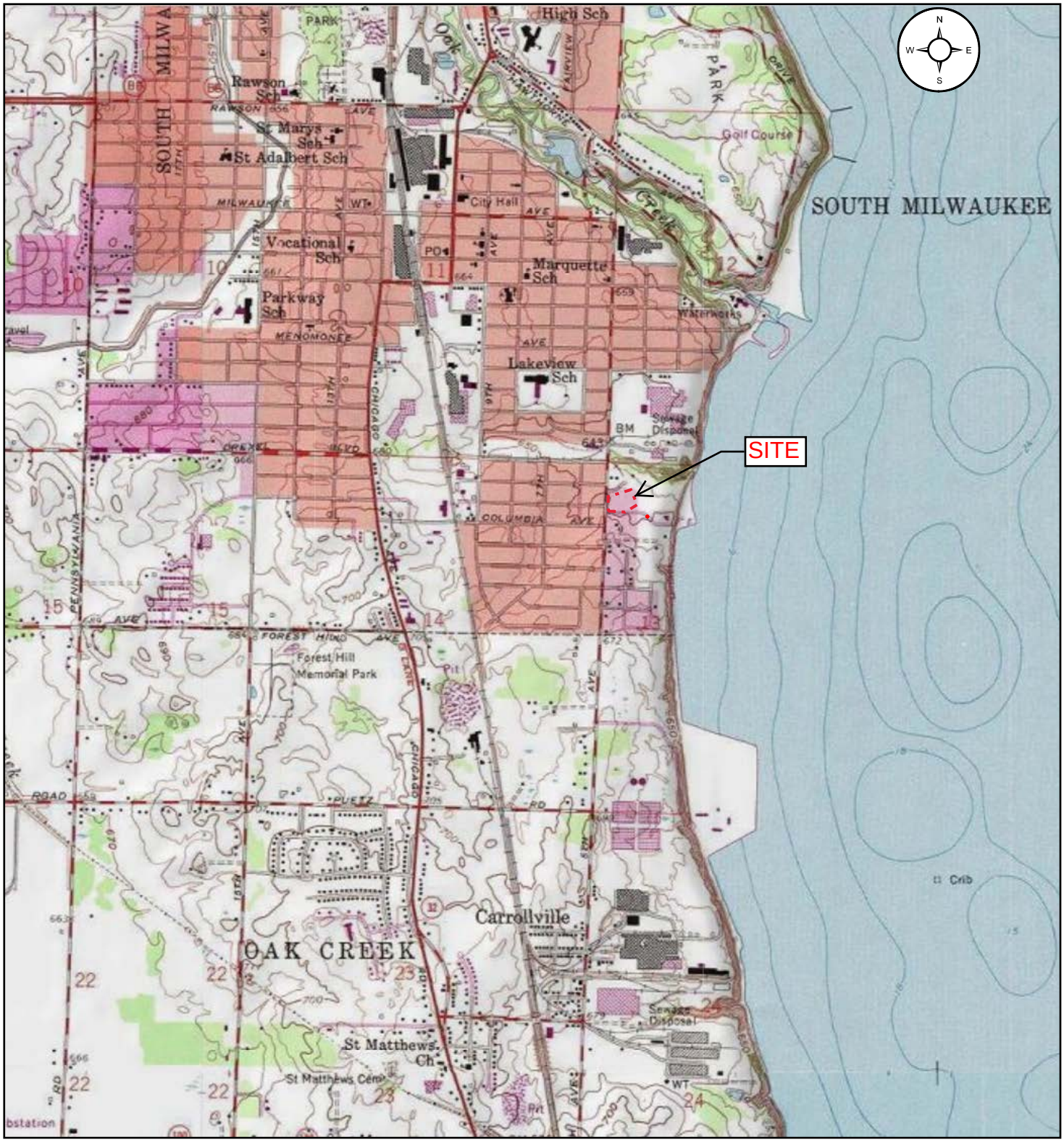
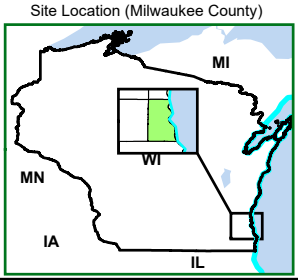
[6] Based on November 2020 USEPA Regional Screening Levels (with Target Risk for Carcinogens of 1.00 E-05 and Target Hazard Quotient for Non-Carcinogens of 1).

FIGURES



Site Location (Milwaukee County)



SITE LOCATION MAP
Marina Cliffs
3333 5th Avenue
South Milwaukee, WI 53172

Ramboll Project: 16900116812

Date: 04/13/2021

0 mi — 1/2 mi — 1 mi

Source: NGS USA Topographic Maps
Copyright: © 2009 National Geographic Society

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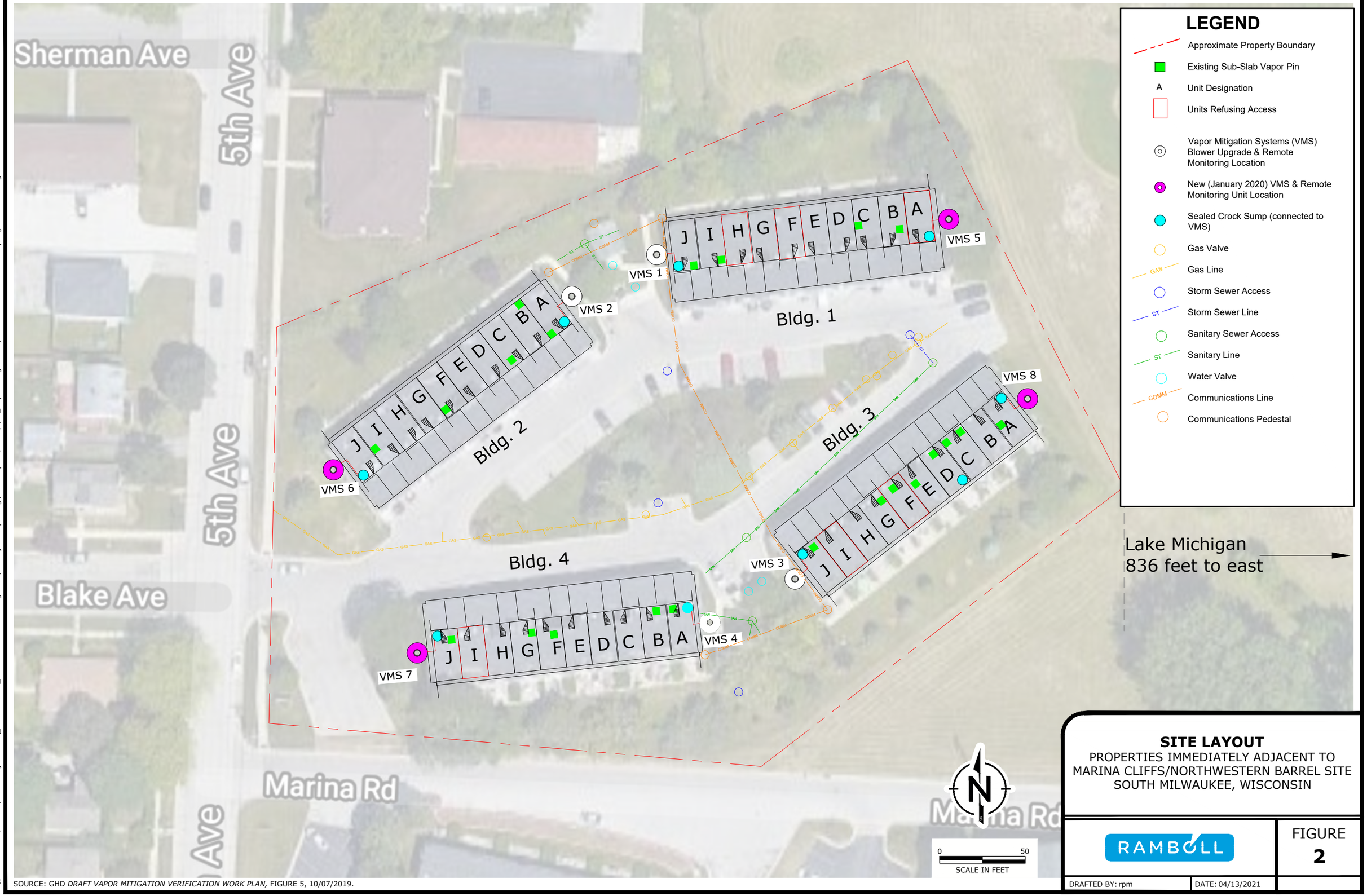
FIGURE 1

NW1/4, NW1/4, Section 13, Township 5 North, Range229 East



LEGEND

- Approximate Property Boundary
- Existing Sub-Slab Vapor Pin
- A — Unit Designation
- Units Refusing Access
- Vapor Mitigation Systems (VMS) Blower Upgrade & Remote Monitoring Location
- New (January 2020) VMS & Remote Monitoring Unit Location
- Sealed Crock Sump (connected to VMS)
- Gas Valve
- GAS — Gas Line
- Storm Sewer Access
- ST — Storm Sewer Line
- Sanitary Sewer Access
- ST — Sanitary Line
- Water Valve
- COMM — Communications Line
- Communications Pedestal

SOURCE: GHD *DRAFT VAPOR MITIGATION VERIFICATION WORK PLAN,* FIGURE 5, 10/07/2019.

SITE LAYOUT
PROPERTIES IMMEDIATELY ADJACENT TO
MARINA CLIFFS/NORTHWESTERN BARREL SITE
SOUTH MILWAUKEE, WISCONSIN

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FIGURE
2

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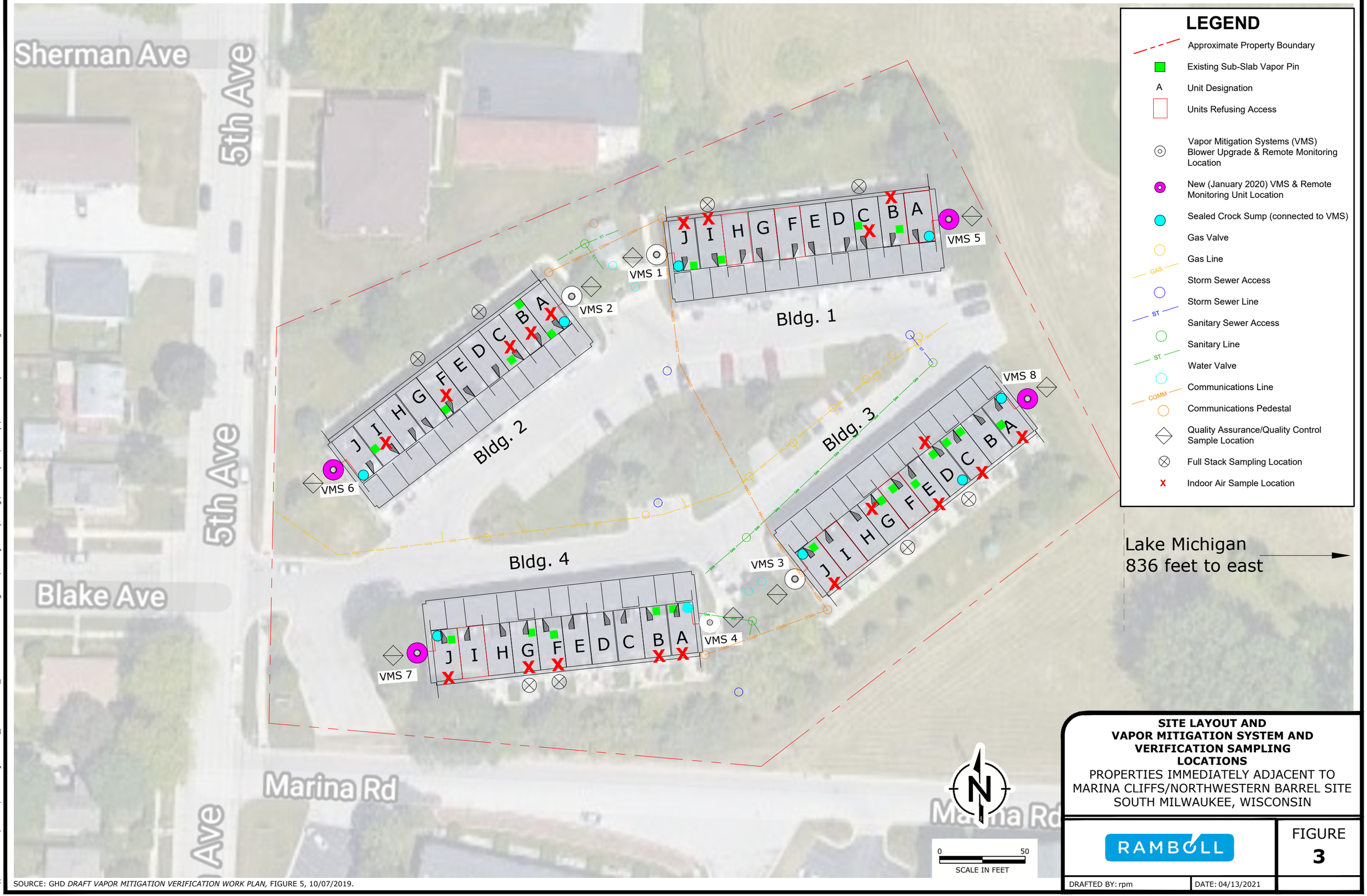

SOURCE: GHD *DRAFT VAPOR MITIGATION VERIFICATION WORK PLAN,* FIGURE 5, 10/07/2019.

SITE LAYOUT AND VAPOR MITIGATION SYSTEM AND VERIFICATION SAMPLING LOCATIONS

PROPERTIES IMMEDIATELY ADJACENT TO MARINA CLIFFS/NORTHWESTERN BARREL SITE
SOUTH MILWAUKEE, WISCONSIN

RAMBOLL

FIGURE **3**

DRAFTED BY: rpm | DATE: 04/13/2021

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