This Technical Support Memorandum has been prepared to document the basis for multiple Chapter 2 permits needed for equipment to be operated at a temporary concrete production facility to support construction of buildings at the ART Place at Fort Totten for the following:

Applicant and Permittee:
Miller & Long Co., Inc.
4001 Brandywine Street NW
Washington DC, 20001

Facility Location:
5300 South Dakota Avenue NE
Washington DC 20011

Application Signatory per 20 DCMR 200.13:
Mr. Jim Martinoski, Vice President

FACILITY DESCRIPTION AND BACKGROUND INFORMATION:

On May 13, 2022, the Air Quality Division (AQD) of the Department of Energy and Environment (the Department) received an application for a synthetic minor permit to construct and operate a concrete batch plant at 5300 South Dakota Avenue NE, Washington DC 20011. Miller & Long Co., Inc., located at 4001 Brandywine Street NW, Washington DC 20001, is the applicant who has proposed to construct and operate the temporary concrete batch plant. The
application proposed installation and operation of primary emission units consist of one (1) Model 275 CEMCO Concrete Batch Plant (a truck mix plant), one (1) ELBA EMC85VAS concrete batch plant (a central mix plant), one (1) factory mounted generator set powered by 173 hp (129 kWm) John Deere diesel-fired engine attached to and powering the CEMCO Batch Plant, one (1) 397 kWe1 Caterpillar generator set powered by a Caterpillar model C18 diesel engine with an advertised power output of 838 hp (maximum rating of 861 hp), and one (1) 320 kWe Baldor Model TS400 generator set powered by a 538 hp John Deere diesel-fired engine.

However, upon the evaluation of a synthetic minor application submitted by Miller & Long Co., Inc for a similar concrete batch plant proposed to be located at 66 New York Avenue NE, it was determined that the Caterpillar and Baldor generators, which had been proposed for the 5300 South Dakota Avenue site as well, did not comply with the requirements of 20 DCMR 209 (Minor New Source Review). As such, on July 20, 2022, the applicant amended their application to replace those two units for the 66 New York Avenue NE site with two MQ Power WhisperWatt™, Model DCA400SSI4F3, 336 kWe generator sets powered by Isuzu Model BQ-6WG1X 512.3 hp (382 kWm) diesel engines (Model year 2021, Tier 4). The reduction in potential to emit (PTE) from the replacement of these two engines reduced the PTE to below major source thresholds even without the “synthetic” limit, making the facility a natural (true) minor source. They similarly indicated in communications with AQD that they would make the same change to their 5300 South Dakota Avenue NE facility design.

While the 66 New York Avenue NE site was proposed as a synthetic minor-style permit to expedite the permitting process for that proposed plant, AQD requested in a meeting on July 22, 2022 that the 5300 South Dakota Avenue NE site synthetic minor application be resubmitted by Miller & Long Co., as five separate chapter 2 permits. On July 30, 2022, AQD received five Chapter 2 applications for the following:

<table>
<thead>
<tr>
<th>Emission Unit ID</th>
<th>Unit Description</th>
<th>Location</th>
<th>Assigned Chapter 2 Permit Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant #1</td>
<td>CEMCO 275 Truck Mix Concrete Plant</td>
<td>5300 South Dakota Avenue NE</td>
<td>7333</td>
</tr>
<tr>
<td>Plant #2</td>
<td>ELBA EMC85VAS Central Mix Concrete Plant</td>
<td>5300 South Dakota Avenue NE</td>
<td>7334</td>
</tr>
<tr>
<td>Plant Gen #1</td>
<td>One factory mounted (CEMCO) generator set powered by a 173 hp John Deere diesel engine, Engine Family BJDXL06.8116 (Model year 2011)</td>
<td>5300 South Dakota Avenue NE</td>
<td>7335</td>
</tr>
<tr>
<td>Gen #1</td>
<td>One MQ Power WhisperWatt™, Model DCA400SSI4F3, 320 kWe prime/336 kWe standby generator set powered by an Isuzu Model BQ-6WG1X 512.3 hp (382 kWm) Diesel Engine (Model year 2020)</td>
<td>5300 South Dakota Avenue NE</td>
<td>7336</td>
</tr>
</tbody>
</table>

1 The unit did not specify the electric power output of generator, but this value was determined by multiplying the voltage of the unit (480 volts) by the current rating (828 amperes, and dividing by 1000 to convert to kWe from Watts.
The equipment at the site will also include a small Pearson Model P-10-25W No. 2 fuel oil-fired hot water boiler with a rated heat input of 3.5 MMBTU/hr.

TECHNICAL INFORMATION

While the permits being requested are no longer synthetic minor, the applicant is still requesting in the applications sent on July 30, 2022 that all permitted equipment on site be limited to 3,744 hours of operation per 12-consecutive-month rolling period. On top of the hourly operation limit, the CEMCO 275 plant has been requested to have a production limit of 275 cubic yards per hour and 1,029,600 cubic yards in any consecutive 12-month period. The ELBA EMC85VAS plant has been requested with a production rate of 109 cubic yards per hour and 408,096 cubic yards in any consecutive 12-month period.

As demonstrated in the emissions summary below, although these limitations are not necessary to ensure that emissions are maintained below the District’s major source threshold of 25 tons per year of NOx or any other pollutant major source threshold, they will provide additional assurance of lower emissions from this site.

These operational limits have been established in Conditions III(a)(1) and III(a)(2) in permits 7333 and 7334 and III(b) of permits 7335-7337.

EMISSIONS SUMMARY:

The following is an estimate of overall potential emissions from the facility:

<table>
<thead>
<tr>
<th>Pollutants</th>
<th>Potential Emissions Without Limits</th>
<th>Potential Emissions With Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfur Dioxide (SO2)</td>
<td>10.75</td>
<td>4.61</td>
</tr>
<tr>
<td>Oxides of Nitrogen (NOx)</td>
<td>7.68</td>
<td>4.23</td>
</tr>
<tr>
<td>Coarse Particulate Matter (PM10)</td>
<td>6.86</td>
<td>3.23</td>
</tr>
<tr>
<td>Fine Particulate Matter (PM2.5)</td>
<td>1.61</td>
<td>0.68</td>
</tr>
<tr>
<td>Volatile Organic Compounds (VOCs)</td>
<td>1.65</td>
<td>0.46</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>32.05</td>
<td>13.93</td>
</tr>
</tbody>
</table>

† Assumes 8760 hours per year of operation for all facility operations.
REGULATORY REVIEW:

20 DCMR Chapter 2, Section 200 – General Permit Requirements:
All stationary engines regardless of size as well as concrete mixing equipment are subject to the Chapter 2 permitting requirements of this section. As such, all the significant units at the facility are subject to Chapter 2 permitting requirements. The 2.5 MMBTU/hr boiler would not separately be considered a significant unit requiring a permit, however, it is equipment used as part of the concrete plant operation and has applicable requirements. As such, it has been included in the permit as part of the concrete plant significant units.

As discussed above, the applicant has requested an operating hour limit of 3,744 hours per 12-consecutive-month rolling period for all operations at the site. Limits on the CEMCO 275 concrete production rate of 275 cubic yards per hour and 1,029,600 cubic yards in any consecutive 12-month have been requested. Limits on the ELBA EMC85VAS concrete production rate of 109 cubic yards per hour and 408,096 cubic yards in any consecutive 12-month period have also been requested. These limits are not required to achieve minor source status, but are being established pursuant to authority under 20 DCMR 201.

20 DCMR Chapter 2, Section 204 – Permit Requirements for Sources Affecting Non-Attainment Areas:
This section does not apply to the facility because the potential emissions of NOx and all other pollutants from the equipment do not exceed the definition of “significant”.

20 DCMR Chapter 2, Section 209 – Permit Requirements for Non-Major Stationary Sources (Minor New Source Review):
In the initial synthetic minor application submitted for this facility, this section applied to the Baldor and Caterpillar generator sets, which each had a potential to emit greater than 5 tons per year of NOx, even after taking operating hour limits. However, when the control technologies for the units (Tier 2 and Tier 3, respectively) were evaluated, it was determined that they did not comply with this section. In order to remedy this, the applicant removed these units from the application, and instead proposed to use two MQ Power generator sets that met Tier 4 emission standards. However, because the MQ Power generator sets have much more effective NOx control technologies installed, they do not have the potential to emit greater than 5 tons per year of NOx. As such, they do not trigger applicability of 20 DCMR 209. Thus, this section is not applicable to the facility as now proposed.

20 DCMR Chapter 5 – Source Monitoring and Testing:
Throughout the permit, appropriate monitoring, testing, and record keeping requirements have been established to ensure that all emission and operational limits in the permit are enforceable as a practical matter. These requirements are established under the authority of Chapter 5.
20 DCMR Chapter 6, Section 603 and Appendix 6-1: Particulate Process Emissions:
The discharge of particulate matter\(^2\) into the atmosphere from any process shall not exceed three hundredths (0.03) grains per dry standard cubic foot of the exhaust. Additionally, pursuant to 20 DCMR 603.1 and Appendix 6-1, based on the high process weight throughput of the equipment, the equipment is limited to emitting 40 pounds per hour of particulate matter. These limits are contained in Conditions II(c) and (d) of draft permits 7333 and 7334.

To meet the particulate matter emissions standards, the applicant has proposed the use of dust collectors controlling emissions from the mixer and truck loading operations and elevated storage silo loading. All dust collector filters are required to maintain a control efficiency of 99.9%. Proper operation of the dust collectors will be monitored regularly through the use of differential pressure monitoring (to monitor filter element status) and regular (at least weekly) visible emissions monitoring. To ensure continuous proper operation, the permit requires the Permittee to keep replacement filter elements for the dust collectors on site.

Additionally, to ensure the equipment is maintained, records of maintenance are required in the permit.

20 DCMR Chapter 6, Section 605: Control of Fugitive Dust
The visible emissions limitations of 20 DCMR 605 are applicable to this concrete mix equipment. Reasonable precautions shall be taken to minimize the emissions of any fugitive dust into the outdoor atmosphere. The reasonable precautions shall include, but not be limited to, in the case of demolition of building or structures, use, to the extent possible, of water; in the case of removal of demolition debris, which is dusty or likely to become dusty, use of water to thoroughly wet the material before moving or removing the material and keeping it wet or otherwise in a dust-free condition until eventual disposal. These requirements are found in Condition III(f) of permits 7333 and 7334. Additional reasonable precautions not identified in the regulation, but identified as appropriate for this facility have been included in Condition III(g) of those permits. The facility must monitor the site for compliance per Condition IV(f) and maintain records of deviations per Condition V(i) of permits 7333 and 7334.

20 DCMR Chapter 6 – Section 606: Visible Emissions:
The visible emissions limitations of 20 DCMR 606 apply to these concrete mix plant operations. Visible emissions shall not be emitted into the outdoor atmosphere from the operation of the concrete mix plant; provided that discharges not exceeding forty percent (40%) opacity (unaveraged) shall be permitted for two minutes in any sixty (60) minute period and for an aggregate of twelve (12) minutes in any twenty-four hour (24 hr.) period during start-up, or malfunction of equipment.

\(^2\) 20 DCMR 603 refers to “particulate matter”, however, at the time that this regulation was promulgated, that term referred to what is now termed “total suspended particulate matter” (TSP), or total filterable particulate matter. As such, in order to avoid confusion with other classifications of particulate matter, the permit refers to TSP in lieu of the regulatory language.
This requirement is contained in Condition II(f) of permits 7333 and 7224 as well as Condition II(b) of permits 7335 through 7337. Monitoring for compliance is required pursuant to Condition IV(c) of permits 7333 and 7334 and Condition IV(d) of permits 7335 through 7337. Records of any deviation must be kept pursuant to Condition V(f) of permits 7333 and 7334 and V(a)(3) of permits 7335 through 7337.

Note that language has been included in the permits notifying the facility that there is an outstanding call for a State Implementation Plan (SIP) revision from EPA that may result in revisions to the applicable regulation. As such, if the regulation is changed, the new regulatory requirements will supersede those expressed in the permit specifically.

20 DCMR 801: Sulfur Content of Fuel Oils:
This regulation limits fuel oil sulfur content to 1% by weight in all circumstances. There are more stringent requirements for commercial fuel oil, but the only portion of 20 DCMR 801 applicable to the non-emergency engines is the 1% sulfur content limit. This requirement is streamlined with the more stringent requirements found 40 CFR 60.4207(b) for the facility’s NSPS engines. Additionally, it applies to the commercial fuel oil used in the small boiler where the sulfur content of the distillate fuel oil used in the unit must not exceed 15 parts per million by weight (ppmw) pursuant to 20 DCMR 801.3. This is specified in Condition III(i) of permits 7333 and 7334.

40 CFR 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines:
This regulation applies to all three diesel engines to be installed and operated at the site. It applies to stationary compression ignition internal combustion engines (CI-ICE) that: 1) are model year of 2007 or later, 2) commenced construction after July 11, 2005 and were manufactured after April 1, 2006, or 3) were modified or reconstructed after July 11, 2005.

The Department confirmed that the diesel CI-ICEs identified below are subject to 40 CFR 60, Subpart IIII:

<table>
<thead>
<tr>
<th>Equipment Location</th>
<th>Emission Unit ID</th>
<th>Emission Unit Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking Lot</td>
<td>Plant Gen #1</td>
<td>One factory mounted (CEMCO) generator set powered by a 173 hp John Deere diesel engine, Engine Family BJDXL06.8116 (Model year 2011)</td>
</tr>
<tr>
<td>Parking Lot</td>
<td>Gen #1</td>
<td>One MQ Power WhisperWatt™, Model DCA400SSI4F3, 320 kWe prime/336 kWe standby generator set powered by an Isuzu Model BQ-6WG1X 512.3 hp (382 kWm) Diesel Engine (Model year 2020)</td>
</tr>
<tr>
<td>Parking Lot</td>
<td>Gen #2</td>
<td>One MQ Power WhisperWatt™, Model DCA400SSI4F3, 336 kWe generator set powered by an Isuzu Model BQ-6WG1X 512.3 hp (382 kWm) Diesel Engine (Model year 2021)</td>
</tr>
</tbody>
</table>
The requirements of this regulation applicable to these units are incorporated throughout permits 7335 through 7337.

40 CFR 63, Subpart JJJJJJ – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources:
As part of the equipment at the site, the permit applicant has proposed to install a Pearson Model P-10-25W hot water boiler, rated at 3.5 MMBTU/hr heat input and fueled by No. 2 fuel oil. This equipment is covered by this regulation. The tune-up requirements are contained in Condition III(j) of permits 7333 and 7334. Reporting requirements are contained in Condition V(m) of permits 7333 and 7334. Record keeping related to this regulation is specified in Conditions V(n) and (o) of permits 7333 and 7334.

Subpart ZZZZ of 40 CFR 63 regulates HAPs such as acetaldehyde, acrolein, benzene, toluene, xylene, cadmium, chromium, lead, etc., through surrogate compounds such as formaldehyde, CO and/or VOC.

A facility that emits or has the PTE 10 tons/year of any single HAP or 25 tons/year of any combination of HAPs is considered a major source of HAPs. Any source that is not a major source is an area source of HAPs. Because this facility does not have a PTE of more than 10 tons/year of a single HAP or an aggregate of more than 25 tons of total HAPs, it is not a major source; it is an area source.

Subpart ZZZZ is applicable to new or reconstructed compression ignition (CI) engines at this facility, where “new” is defined as those engines that are manufactured or reconstructed after June 12, 2006. One of the generator sets (Plant Gen #1 has a model year 2011 engine; Gen #1 and Gen #2 have model year 2021 engines), therefore they are considered “new” rather than “existing” with respect to this regulation. Pursuant to 40 CFR 63.6590(c)(1), because these units are subject to 40 CFR 60, Subpart IIII, their only requirement under 40 CFR 63, Subpart ZZZZ is to comply with the requirements of 40 CFR 60, Subpart IIII.

PROCEDURE FOR SUBMITTING COMMENTS OR REQUESTING PUBLIC HEARING:

During the public comment period, any interested person may submit written comments on the draft permit and may request a public hearing, if no public hearing has already been scheduled. A request for public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. The District shall grant such a request if it is deemed appropriate. The venue, date, and time for any public hearing will be announced in the D.C. Register and on the Department’s website.
COMMENT PERIOD:

Beginning Date: August 19, 2022
Ending Date: September 19, 2022

All written comments should be addressed to the following individual and office:

Stephen S. Ours, P.E.
Chief, Permitting Branch
Department of Energy and Environment
Air Quality Division
1200 First Street, NE, 5th Floor
Washington DC 20002
stephen.ours@dc.gov

POINT OF CONTACT FOR INQUIRIES:

Wyatt Bohmann
Environmental Engineer
Department of Energy and Environment
Air Quality Division
1200 First Street, NE, 5th Floor
Washington DC 20002
wyatt.bohmann@dc.gov