Technical Support Document

Notice of Construction Approval Order No. Preliminary Determination
Connell Sand & Gravel, Inc. (Copp Pit)
AQPID No. A0210133
Located along Copp Road, north of State Route 260, approximately 7 miles east of Connell, WA in Franklin County

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1. Project Summary

Connell Sand & Gravel, Inc. (CSG) (the source) is a rock crushing operator classified as a true minor source with multiple existing emissions units. This review is for the permitting of all stationary and portable equipment at Copp Pit and Bauer Sand Pit. For the purposes of this review, the Copp Pit and Bauer Sand Pit are considered a single operating site.

An initial Notice of Construction (NOC) application dated November 4, 2022, was submitted by CSG for the permitting project. The Washington State Department of Ecology (Ecology) reviewed the initial application and found it incomplete per WAC 173-400-111 on November 14, 2022. Supplemental information was provided in September 2023 and the application was determined complete on September 20, 2023. It was determined that the project warranted Second Tier Review and a Health Impact Assessment.

2. Application Processing

a. Public Notice

This project is subject to a mandatory 30-day public comment period per WAC 173-400-171(3)(k) for an order issued under WAC 173-400-091 that establishes limitations on a source's potential to emit. The comment period was held <start date> through <end date>. <any comments received? if so, are responses attached as appendix, or are they in a separate document?>.

b. State Environmental Policy Act

An environmental checklist was submitted with the NOC Application which considered environmental impacts of the project as required by Chapter 43.21C RCW, also known as the State Environmental Policy Act (SEPA). Ecology reviewed the checklist and made a Determination of Non-significance which was signed on <date> and made available for public comment at the same time as the NOC Approval Order.

3. Applicable Regulations

a. State Regulations

i. Minor New Source Review Applicability

Per WAC 173-400-110, an NOC application and an order of approval must be issued by the permitting authority prior to the establishment of a new source or modification.

As stated in the NOC application and consistent with Ecology's review, the rock crushing and generator operations are subject to minor new source review (NSR).

A. Exempt Equipment

Generator engines meeting the definition of "nonroad engine" as defined in WAC 173-400-030 are not subject to: new source review, control technology determinations, or emission limits set by the State Implementation Plan (SIP) (per WAC 173-400-035). The generators for CSG that fall under the definition of "nonroad engine" include:

- Cat C4.4 (Unit No. 4)
- Deutz BF4M (Unit No. 5)
- Cat 3406 (Unit No. 13)
- Detroit 200K (Unit No. 14)
- Detroit 250K (Unit No. 15)
- Perkins C18 (aka Cat C18) (Unit No. 16)
- Perkins C18 (aka Cat C18) (Unit No. 17)

Some nonroad engines still have requirements listed in WAC 173-400-035. Generator engines with applicability to WAC 173-400-035 (specifically due to their horsepower ratings) include the following:

- Cat 3406 (Unit No. 13)
- Perkins C18 (aka Cat C18) (Unit No. 16)
- Perkins C18 (aka Cat C18) (Unit No. 17)

B. Potential to Emit (Potential Emissions)

The potential emissions from the project are greater than the Exemption Levels listed under WAC 173-400-110(5) and De Minimis levels listed under WAC 173-460-150, as shown below in Tables One and Two (in bold).

Table One: Potential emissions for pollutants listed under WAC 173-400-110(5), NSR Exemption Levels

Pollutant	Emission Units (tons/year)	Minor NSR Exemption (tons/year)
Carbon Monoxide (CO)	2.6	5.0
Lead (Pb)	0.00002	0.005
Nitrogen Oxides (NOX)	7.7	2.0
PM10	13.9	0.75
PM2.5	2.7	0.5
Total Suspended Particulates (TSP)	16.6	1.25
Sulfur Dioxide (SO2)	0.39	2.0
Volatile Organic Compounds, total (VOC)	0.48	2.0
Greenhouse Gases (GHG)	220	N/A

Table Two. Potential TAP emissions and de minimis emission values

Pollutant	Potential Emissions from Project (lbs/averaging period)	De Minimis Emission Values	Averaging Period
1,3-butadiene	0.10	2.7E-01	Year
Acetaldehyde	15.3	3.0	Year
Acrolein	3.0E-02	1.3E-03	24-hour
Arsenic	4.0E-02	2.5E-03	Year
Benz(a)anthracene	4.5E-03	4.5E-02	Year
Benzene	3.6	1.0	Year
Benzo(a)pyrene	5.0E-04	8.2E-03	Year

Pollutant	Potential Emissions from Project (lbs/averaging period)	De Minimis Emission Values	Averaging Period
Benzo(b)fluoranthene	2.7E-04	4.5E-02	Year
Benzo(k)fluoranthene	4.2E-04	4.5E-02	Year
Chlorobenzene	1.8E-04	3.7E+00	24-hour
Cadmium	2.9E-02	1.9E-03	year
Chromium, Hexavalent	1.6E-02	3.3E-05	year
Chrysene	9.5E-04	4.5E-01	year
Copper	1.5E-04	9.3E-03	1-hr
Dibenz(a,h)anthracene	1.6E-03	4.1E-03	year
Diesel Engine Exhaust, Particulate (DEEP)	280	2.7E-02	year
Ethylbenzene	0.21	3.2	year
Formaldehyde	33.7	1.4	year
Hexane	2.4E-02	2.6	24-hr
Hydrogen Chloride	1.7E-01	3.30E-02	24-hr
Indeno(1,2,3-cd)pyrene	1.0E-03	4.5E-02	year
Lead	1.6E-01	10	year
Manganese	2.8E-03	1.1E-03	24-hr
Mercury	1.8E-03	1.1E-04	24-hr
Naphthalene	3.9E-01	2.4E-01	year
Nickel	7.6E-02	3.1E-02	year
Nitrogen dioxide	5.9E+00	4.6E-01	1-hr

Pollutant	Potential Emissions from Project (lbs/averaging period)	De Minimis Emission Values	Averaging Period
Propylene	4.2E-01	11	24-hr
Selenium	2.0E-03	7.40E-02	24-hr
Toluene	9.5E-02	19	24-hr
Xylenes	3.8E-02	8.2E-01	24-hr

ii. Prevention of Significant Deterioration

Based on potential emissions, Prevention of Significant Deterioration does not apply.

iii. Other Applicable Requirements

In accordance with WAC 173-400-113, the proposed source must comply with all applicable emission standards adopted under Chapter 70A.15 RCW. The following applicable emission standards are associated with the proposed project:

A. WAC 173-400-040 – General standards for maximum emissions.

B. WAC 173-400-050 – Emission standards for combustion and incineration units.

C. WAC 173-400-060 – Emission standards for general process units.

D. WAC 173-400-075 – Emission standards for sources emitting hazardous air pollutants.

E. WAC 173-400-115 – Standards of performance for new sources.

b. Federal Regulations

In accordance with WAC 173-400-113, the proposed source must comply with all applicable new source performance standards (NSPS) included in 40 C.F.R. Part 60, national emission standards for hazardous air pollutants (NESHAPs) included in 40 C.F.R. Part 61, and NESHAPs for source categories included in 40 C.F.R. Part 63. The following applicable emission standards are associated with the proposed project:

i. Standards of Performance for New Stationary Sources

The source is subject to 40 CFR 60, Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants. Ecology interprets compliance with EPA Method 22 applied to the property boundary as compliance with the visual emission standards for crushing, screening, conveyance and related fugitive sources in NSPS Subpart OOO.

ii. National Emission Standards for Hazardous Air Pollutants for Source Categories

The source is subject to 40 CFR 63 Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. The Cat 3512 generator (Unit No. 12) must conduct an initial performance test to determine if the average Carbon Monoxide (CO) concentration emitted is less than or equal to 23 parts per million by volume dry (ppmvd) at 15 percent O2. If the generator exceeds the CO limit, the Permittee must take action to reduce CO emissions by 70 percent or more using a form of emission control. Subsequent performance tests for the generator will be required for every 8,760 hours of operation, or every 3 years, whichever comes first.

4. Emissions

a. Emission Factors and Calculations

For the Cat 3512 generator, emission factors for Particulate Matter (PM), Nitrogen Oxide (NOx), Carbon Monoxide (CO), and Volatile Organic Compounds (VOCs) were specific to the generator. All other criteria pollutant emission factors for all generator units were based on AP-42 Section 3.3 (assuming PM2.5 = PM10). Although a generator-specific emission factor for Particulate Matter (PM) was available for the 3512, a more conservative emission factor from AP-42 was used for modeling by the consultant. This impacted PM10, PM2.5, and Diesel Engine Exhaust Particulate (DEEP) in the modeling analysis.

For a conservative analysis, emission factors for toxic air pollutants (TAPs) for all generators were the most conservative between emission factors included in Ventura County Air Pollution Control District's AB 2588 and AP-42 Section 3.3. An exception to this is 1,3-butadiene, where AP-42 was used after discussion with the applicant's consultant. The applicant's consultant did not provide calculations using the most conservative emission factors in all cases. I performed supplemental emission calculations for the following pollutants, as part of my conservative analysis: Acetaldehyde, Acrolein, Benzene, Chlorobenzene, Cadmium, Copper, Formaldehyde, Hexane, Hydrogen Chloride, Lead, Manganese, Mercury, Naphthalene, Nickel, Propylene, Selenium, Toluene, and Xylenes.

For DEEP, it was assumed that PM2.5 = DEEP.

For all generator emissions, it was assumed that Nitrogen Dioxide = NOx.

For all crushing operations, tertiary crushing emissions were based on AP-42 Section 11.19.2. Second crushing emissions were conservatively estimated at 50 percent of tertiary crushing emissions, and primary crushing emissions were conservatively estimated at 50 percent of secondary crushing emissions. Screening and conveyor transfer emissions were based on AP-42 Section 11.19.2.

b. Best Available Control Technology | Best Available Control Technology for Toxics

For surface mining operations, the consultant proposed that water spray dust suppression is BACT. I agree that the proposal meets or exceeds BACT for Particulate Matter emissions.

For stationary generator use, the consultant proposed that manufacturer specification and limited operation is BACT for Nitrogen Dioxide, Acrolein, Benzene, and Formaldehyde. Many control technologies were deemed infeasible considering the nature of the applicant's operations. Infeasible control technologies include injection timing retardation (ITR), air-to-fuel ratio adjustment, derating, selective non-catalytic reduction (SNCR), and selective catalytic reduction (SCR). I agree that the proposal meets or exceeds BACT for the aforementioned pollutants. My conservative analysis of the source's emission calculations resulted in six additional TAPs exceeding De Minimis. The six additional TAPs included Acetaldehyde, Chlorobenzene, Hexane, Hydrogen Chloride, Naphthalene, and Nickel. After review, I determined that these additional pollutants would fall under the same control technologies proposed as infeasible by the consultant.

For stationary generator use, the consultant proposed that a diesel particulate filter (DPF) and/or diesel oxidation catalyst (DOC) were not cost effective for the applicant's operations. I agree that DPF and DOC are cost prohibitive for particulate matter and Diesel Engine Exhaust Particulate.

5. Ambient Air Quality Standards

As specified in WAC 173-400-113, the proposed new or modified source(s) must not cause or contribute to a violation of any ambient air quality standard. This includes the ambient air quality standards for both criteria and toxic air pollutants.

a. Pollutants Listed Under WAC 173-400-110 (Except TAPs)

For PM10, PM2.5, and NO2, modeling was performed to satisfy the requirements of Chapter 173-476 WAC. The modeling demonstrates that the emissions increases as a result of the project will not exceed the ambient air quality standards. The modeling results are included in the table below.

Table Three. Criteria Pollutant Modeling Results

Criteria Pollutant	Averaging Period	Total Impact (Design plus Background) (µg/m3)	Ambient Air Quality Standard (µg/m3)	Percent of Ambient Air Quality Standard
PM10	24-hour	94	150	63 percent
PM2.5	24-hour	19	35	54 percent
PM2.5	Annual	5.5	12	46 percent

Criteria Pollutant	Averaging Period	Total Impact (Design plus Background) (µg/m3)	Ambient Air Quality Standard (µg/m3)	Percent of Ambient Air Quality Standard
NO2	1-hour	185	188	98 percent
NO2	Annual	5.1	100	5 percent

b. Toxic Air Pollutants

In accordance with WAC 173-460-040, new TAP sources must meet the requirements of Chapter 173-460 WAC, unless they are exempt by WAC 173-400-110(5).

As shown in Table 2, minor NSR is required for the source's diesel generator emissions. As such, the emission units must comply with WAC 173-460-070 (ambient impact requirement). The operation may demonstrate compliance with the ambient impact requirement by either showing that the emissions increase is less than the small quantity emissions rates (SQER) or through dispersion modeling. The table below includes the estimated emissions associated with the project and the applicable SQER.

Table Four. TAP Analysis

TAP	Potential Emissions[1] (lb/avg period)	Averaging Period	SQER (lb/avg period)	Modeling Required?
1,3-Butadiene	0.10	year	5.4	No
Acetaldehyde	15.3	year	60	No
Acrolein	3.0E-02	24-hours	2.6E-02	Yes
Arsenic	4.0E-02	year	4.9E-02	No
Benz(a)anthracene	4.5E-03	year	8.9E-01	No
Benzene	3.6	year	21	No
Benzo(a)pyrene	5.0E-04	year	1.6E-01	No
Benzo(b)fluoranthene	2.7E-04	year	8.9E-01	No
Benzo(k)fluoranthene	4.2E-04	year	8.9E-01	No
Chlorobenzene	1.8E-04	24-hours	7.4E+01	No

TAP	Potential Emissions[1] (lb/avg period)	Averaging Period	SQER (lb/avg period)	Modeling Required?
Cadmium	2.9E-02	year	3.9E-02	No
Chromium, Hexavalent	1.6E-02	year	6.5E-04	Yes
Chrysene	9.5E-04	year	8.9	No
Copper	1.5E-04	1-hour	1.90E-01	No
Dibenz(a,h)anthracene	1.6E-03	year	8.2E-02	No
Diesel Engine Exhaust, Particulate (DEEP)[2]	280	year	5.4E-01	Yes
Ethylbenzene	0.21	year	65	No
Formaldehyde	33.7	year	27	Yes
Hexane	2.4E-02	24-hours	5.20E+01	No
Hydrogen Chloride	1.7E-01	24-hours	6.70E-01	No
Indeno(1,2,3-cd)pyrene	1.0E-03	year	8.9E-01	No
Lead	1.6E-01	year	14	No
Manganese	2.8E-03	24-hours	2.2E-02	No
Mercury	1.8E-03	24-hours	2.2E-03	No
Naphthalene	3.9E-01	year	4.8	No
Nickel	7.6E-02	year	6.20E-01	No
Nitrogen dioxide	5.9E+00	1-hour	8.7E-01	Yes
Propylene	4.2E-01	24-hours	220	No
Selenium	2.0E-03	24-hours	1.5	No
Toluene	9.5E-02	24-hours	370	No

TAP	Potential Emissions[1] (lb/avg period)	Averaging Period	SQER (lb/avg period)	Modeling Required?
Xylenes	3.8E-02	24-hours	16	No

Notes:

1. For conservative analysis, the most conservative emission factor between AP-42 Section 3.3 and Ventura County Air Pollution Control District's AB 2588 were used by Ecology. This resulted in modifying or adding to the emission calculations provided by the applicant's consultant for the following pollutants: Acetaldehyde, Acrolein, Benzene, Chlorobenzene, Formaldehyde, Hexane, Hydrogen Chloride, Naphthalene, Propylene, Toluene, and Xylenes.
2. Although potential emissions for DEEP were eventually determined to be 280 pounds per year, initial modeling for DEEP was done with a value of 830 pounds per year. Initial emissions were based on the assumption that DEEP = PM2.5 and the emission factor for PM2.5 was based on AP-42 Section 3.3. Later in the project review, generator-specific data for PM was discovered, among other criteria pollutants. This newly acquired information prompted a re-calculation and re-modeling of NOx and NO2, due to a higher emission factor than previously submitted. However, the emission factor for PM and DEEP was lower than before, so re-modeling was unneeded for PM and DEEP.

For Hexavalent Chromium, DEEP, and NO2, modeling was performed to satisfy the requirements of Washington's state toxics rule in Chapter 173-460 WAC. Because modeling was not conducted by the applicant's consultant for Acrolein and Formaldehyde, input values were calculated by me and scaled accordingly. Acrolein for a one hour averaging period was scaled using modeling results for NO2, which has a one hour averaging period. Acrolein for the 24-hour averaging period was then determined by multiplying the one hour design value for Acrolein by 0.6 (typical multiplier in AERSCREEN used to convert one hour design values to 24-hour design values). Formaldehyde for the annual averaging period was scaled using modeling results for DEEP, which has an annual averaging period.

The modeling demonstrates that the emissions as a result of the project will not exceed the acceptable source impact level (ASIL) screening thresholds, with the exception of DEEP. The modeling results are included in the table below.

Table Five. TAP Modeling Results.

TAP	Averaging Period	Maximum Modeled Concentration (µg/m3)	ASIL (µg/m3)	Percent of ASIL
Chromium, Hexavalent	Annual	6.2E-07	4.0E-06	16 percent
DEEP	Annual	3.3E-02	3.3E-03	1,000 percent
NO2	1-hour	163	470	35 percent

TAP	Averaging Period	Maximum Modeled Concentration (µg/m3)	ASIL (µg/m3)	Percent of ASIL
Acrolein	24-hour	4.2E-03	3.50E-01	1 percent
Formaldehyde	Annual	1.3E-03	1.70E-01	1 percent

As shown in the table above, all TAPs except DEEP are below the associated ASIL. A Second Tier Health Impact Assessment (HIA) was conducted for DEEP and submitted separately from the NOC application, per WAC 173-460-090. Ecology reviewed the assessment and recommended approval of the project because, "the health hazards are considered to be acceptable." Ecology's analysis and recommendations are included in the document titled, "<document title>", <date>.

Appendix A – Response to Comments

This section will be updated following the public comment period.