Enclosure 2

MET 2.7-1,
General Air Conformity Analysis NO_x and VOC Emissions from Construction Activities,
Bell Bend Nuclear Power Plant,
October 2011

AECOM Environment

Submitted to:
PPL Bell Bend, LLC

Submitted by:
AECOM
Chelmsford, MA
Project No. 60136677
October 2011

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General Air Conformity Analysis
NO_X and VOC Emissions from Construction Activities
Bell Bend Nuclear Power Plant

Prepared By
Ian Miller and William Groot

Reviewed By
Robert Iwanchuk

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1.0 Introduction

PPL Bell Bend, LLC is proposing to construct and operate a new nuclear power unit, the Bell Bend Nuclear Power Plant ("BBNPP") adjacent to the existing Susquehanna Steam Electric Station in Luzerne County, Salem Township, Pennsylvania. The new unit will have a net electric generation capacity of about 1,600 megawatts.

Pursuant to the General Conformity Requirements under 40 CFR 93.150 et seq, the Nuclear Regulatory Commission (NRC) as the lead federal agency is required to make a conformity determination with regard to the proposed construction and operation of BBNPP. The General Conformity Rule applies only in locations designated in 40 CFR Part 81 as maintenance or nonattainment areas for any criteria air pollutant. As shown in Figure 1-1, the BBNPP project site in Luzerne County, Pennsylvania is located within the Scranton-Wilkes Barre maintenance area for the 8-hour ambient ozone standard. As such, construction-related emissions of ozone precursors, i.e., oxides of nitrogen (NO_X) and volatile organic compounds (VOC) from both direct and indirect project-related emissions have been evaluated to determine if annual emissions of these pollutants during the years of construction are above the applicable tonnage thresholds for applicability of General Conformity requirements. The applicable de minimis thresholds are 100 tons per year of NO_X and 50 tons per year of VOC emissions per 40 CFR 93.153.

In accordance with the definition of indirect emissions in §93.153, only emissions "that are caused or initiated by the Federal action and originate in the same nonattainment or maintenance area but occur at a different time or place as the action" are included in the estimate of emissions for General Conformity purposes. As such, motor vehicle emissions outside of the Scranton-Wilkes Barre ozone maintenance area are not included in this study.

Note that operation of BBNPP will not result in significant generation of NO_X emissions, or significant releases of VOCs. Typical sources of NO_X during operation of BBNPP will include vehicle operations (mobile sources) and periodic operation of diesel generators that are used to provide backup power (stationary sources). Emissions of NO_X and VOCs from BBNPP stationary source operations will be subject to restrictions imposed under the Plan Approval process for minor source permitting in Pennsylvania. Potential NO_X and VOC emissions from operations are projected to be below de minimis threshold values listed in 40 CFR 93.153(b). Mobile source emissions from operations were estimated by modeling the on-road emissions from commuting operational employees. Permitted emissions from the BBNPP stationary sources are expected to be less than 25 tpy of NO_X and VOC. Regardless of the quantity, operational emissions are specifically excluded from the requirements for a conformity determination per the exclusion found in 40 CFR 93.153(d) for major or minor new or modified stationary sources that require a permit under the new source review (NSR) program (Section 110(a)(2)(c) and Section 173 of the Clean Air Act) or the prevention of significant deterioration permitting program (Title I, part C of the Act). Stationary sources associated with the operation of BBNPP are expected to require permitting under the PADEP's minor source permitting program.

This report documents the NO_X and VOC emissions associated with the construction of BBNPP for purposes of determining applicability to the federal Clean Air Act General Conformity Rule. Direct emissions included vehicle emissions from non-road construction equipment and engine-driven construction support equipment. Indirect activities considered in this analysis included commercial vehicles used to deliver material, equipment and commodities and worker vehicles used for commuting to and from the plant construction site.

1.1 Content of the Report

This report consists of four sections and two appendices.

Section 1 serves as an introduction to the need to provide a General Conformity Applicability Analysis.

Section 2 describes the methodology taken to provide the NRC with a breakout of safety-related emissions as defined under 10 CFR 50.

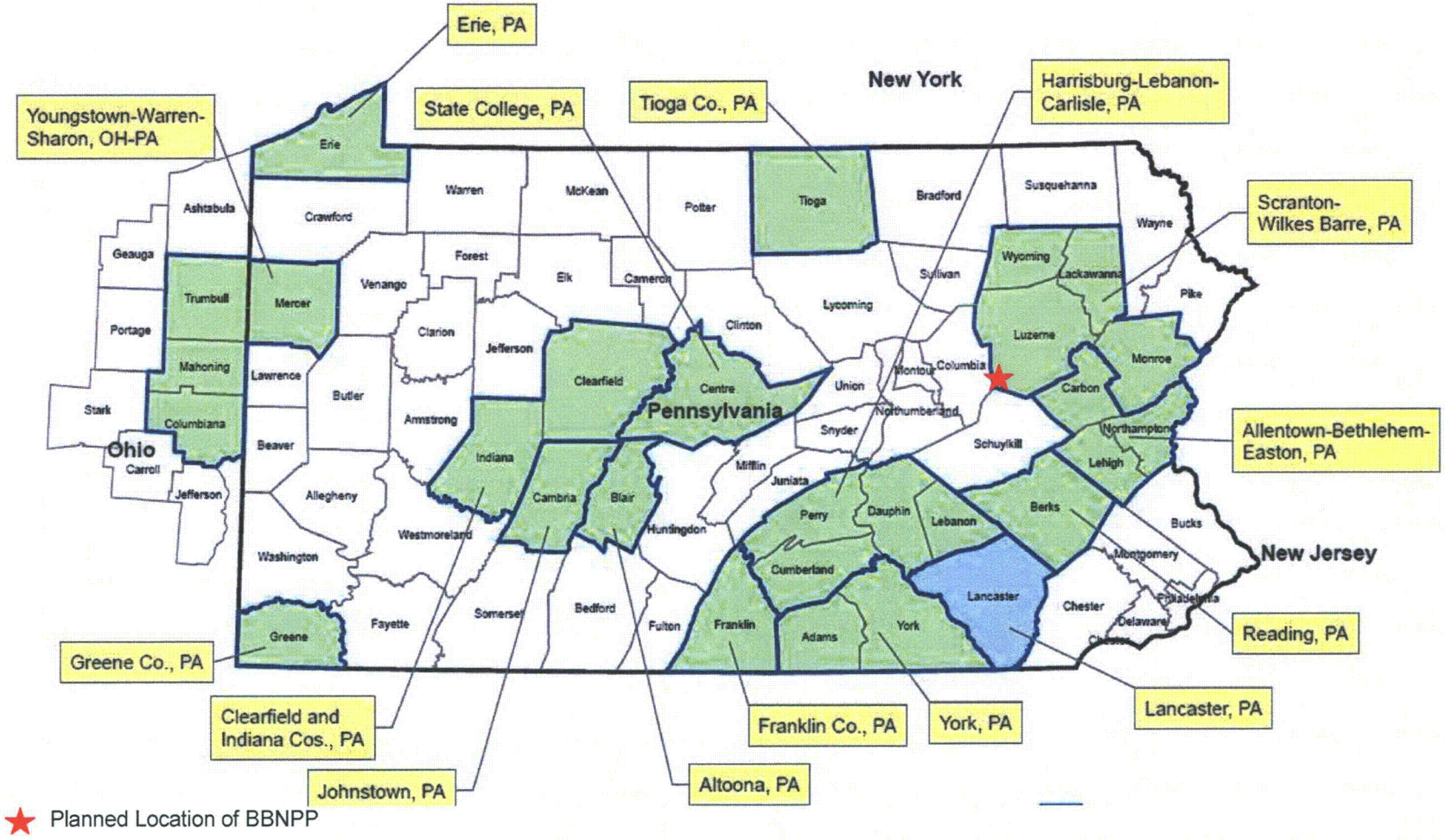
Section 3 presents the estimated direct and indirect NO_X and VOC emissions from construction of the project. This is presented for both total construction and as safety-related construction per 10 CFR 50.

Section 4 describes the emission estimation methodology for the non-road and the direct and indirect on-road mobile vehicles.

Technical references are provided in Section 5.

Appendix A contains a study prepared by Sargent & Lundy of estimated fuel consumption during construction of BBNPP. Appendix B contains emissions calculations which support Tables 3-1 and 3-2 of this analysis. It is broken up into five tables which show the calculation of emissions for non-road construction equipment (denoted as B-1a and B-1b), construction commuting (Table B-2), deliveries (Table B-3), and on-road on-site vehicles (Table B-4).

Figure 1-1 Pennsylvania 8-hour Ozone Maintenance Areas



★ Planned Location of BBNPP

2.0 Emissions Evaluation Approach

2.1 Nuclear Regulatory Commission

Per Nuclear Regulatory Commission (NRC) regulations in 10 CFR Part 50, only certain portions of construction are considered to be under the NRC's jurisdiction. Sargent & Lundy ("S&L") PPL Bell Bend's current project/construction engineering firm prepared a study of estimated fuel usage during construction of BBNPP (Appendix A). Equipment in the fuel study includes an estimate of the fuel used to support the construction of safety-related systems, structures and components. The fuel study "was developed using preliminary site information and assumptions based on recent participation in new fossil construction, current planning for new nuclear construction and past nuclear construction experience".

The definition of construction under 10 CFR 50.2 reads as follows:

> *Construction* or *constructing* means, for the purposes of §50.55(e), the analysis, design, manufacture, fabrication, quality assurance, placement, erection, installation, modification, inspection, or testing of a facility or activity which is subject to the regulations in this part and consulting services related to the facility or activity that are safety related.

Additional delineation of construction versus "pre-construction" activities is found under 10 CFR 50.10(a)(1) and (2) under limited work authorization. These are paraphrased below.

> (1) Activities constituting construction are the driving of piles, subsurface preparation, placement of backfill, concrete, or permanent retaining walls within an excavation, installation of foundations, or in-place assembly, erection, fabrication, or testing, which are for: safety-related structures, systems, or components (SSCs)
>
> (2) Construction does not include: Site exploration, preparation of a site for construction of a facility, including clearing of the site, grading, installation of drainage, erosion and other environmental mitigation measures, and construction of temporary roads and borrow areas; excavation; erection of support buildings building of service facilities

S&L has determined the portions of construction operations which would qualify as safety related. In determining the construction emissions as defined in 10 CFR Part 50.2 and Part 50.10, certain groups of activities were lumped together as safety related whereas other cases only have specific safety-related equipment/activities. Portions of construction activities (as indicated in Appendix A) which are indicated as safety related include:

- Structural Concrete (50% safety related)
- Switchyard (25%)
- Superstructure & Structural Steel (40%)
- Mechanical and Electrical Installation (50%)
- Soil Compaction (10%) for Powerblock

Total estimated fuel use for an activity was multiplied by the percentage of work estimated to be safety related to determine the quantity of fuel used to construct the safety-related portions of that activity. Emissions from equipment associated with safety-related activities are estimated separately from the overall emissions estimate. The safety-related construction emissions are found in Tables B-1b and Table B-4 in Appendix B.

3.0 Emissions Estimates

The evaluation of the emissions associated with construction of the plant is the aggregate of non-road and on-road direct and indirect emissions. Non-road emissions were estimated using NONROAD 2008 model methodology and on-road emissions were estimated using EPA's MOVES model. AECOM incorporated these two models and applied them to determine the emissions.

3.1 Construction/Pre-Construction Emissions

Table 3-1 presents the total estimated NO_X and VOC emissions calculated for each year of construction within the Scranton-Wilkes Barre ozone maintenance area. As seen in Figure 1-1, BBNPP is located in the Scranton-Wilkes Barre 8-hour ozone maintenance area, but is also close to the Reading and Allentown-Bethlehem-Easton maintenance areas. Vehicle emissions from these other ozone maintenance areas are not included in the calculations as they fall outside of the definition of indirect emissions as noted in Section 1.0.

Annual NO_X and VOC emissions in all years of construction are projected to be under the 100 and 50 ton threshold for NO_X and VOC, respectively

Table 3-2 presents a breakout of safety-related construction emissions as defined under 10 CFR Part 50 – Domestic Licensing for Production and Utilization Facilities. Emissions reported in Table 3-2 are based on equipment types expected to perform safety-related construction activities as defined in 10 CFR 50. For example activities excluded are direct and indirect emissions from on-road motor vehicles (except concrete trucks) and site preparation equipment (except some soil compaction and concrete placement). The S&L Fuels Report provided the percentage of fuel utilization for each individual piece of equipment and the percentage utilization for safety-related activities.

As stated previously, the emissions in Table 3-2 represent the best estimate of construction emissions as defined by 10 CFR Part 50 and an estimate of associated fuel utilization. Based on the NRC definition of construction and estimated fuel utilization by S&L, Table 3-2 shows no exceedances of the conformity threshold for NO_X or VOC.

3.2 Operational Emissions

As noted in Section 1, the operational emissions from BBNPP stationary sources will require permitting under the PADEP's Plan Approval permitting process. As such, these emissions are specifically excluded from the requirements for a conformity determination per the exclusion found in 40 CFR 93.153(d).

The only other emissions of NO_X and VOC from BBNPP operations are indirect emissions associated with vehicular emissions from employee traffic. As stated in the preliminary traffic impact study prepared in September 2011 (Reference 1), 363 permanent employees are expected once BBNPP begins operations resulting in at most 363 additional round trips. This is similar to the round trips estimated for the construction workforce in Years 2 (423 round trips) and 7 (308 round trips) but well below the estimated 3,039 peak daily round trips during years 4 and 5 of construction.

Using similar assumptions as with the construction workforce, emissions from indirect operational employee commuting are expected to be only 3.5 tons/yr of NO_X and 1.1 tons/yr of VOC in the Scranton Wilkes-Barre maintenance area. These levels are well below the respective applicability thresholds of 100 tons/yr NO_X and 50 tons/yr VOC.

Table 3-1 BBNPP Total Construction Emissions within the Scranton-Wilkes Barre Ozone Maintenance Area

	NOx						VOC					
	All non-road diesel	Workforce commuting	Comm. & const. deliveries	On-site on-road mobile engines	Total NOx (Tons)	Exceeds conformity threshold? (Yes/No)	All non-road diesel	Workforce commuting	Comm. & const. deliveries	On-site on-road mobile engines	Total VOC (Tons)	Exceeds conformity threshold? (Yes/No)
Year 1	65.9	1.0	1.4	1.6	**69.9**	No	4.62	0.3	0.1	0.2	**5.3**	No
Year 2	66.5	3.7	25.5	3.8	**99.5**	No	4.59	1.1	1.4	0.6	**7.7**	No
Year 3	37.4	11.4	27.2	5.7	**81.6**	No	2.44	3.1	1.5	0.9	**7.9**	No
Year 4	33.4	22.3	7.9	5.2	**68.8**	No	2.2	4.8	0.4	0.8	**8.2**	No
Year 5	15.9	22.3	4.3	3.7	**46.2**	No	1.0	4.8	0.2	0.6	**6.7**	No
Year 6	5.9	11.7	2.4	1.4	**21.4**	No	0.4	3.2	0.1	0.2	**4.0**	No
Year 7	7.3	2.3	2.3	1.2	**13.2**	No	0.6	0.6	0.1	0.2	**1.5**	No

Includes activities not defined as construction under 10 CFR 50.

Table 3-2 BBNPP 10 CFR 50 Construction Emissions within the Scranton-Wilkes Barre Ozone Maintenance Area

	NOx						VOC					
	All non-road diesel	Workforce commuting	Comm. & const. deliveries	On-site on-road mobile engines	Safety Related NOx (Tons)	Exceeds conformity threshold? (Yes/No)	All non-road diesel	Workforce commuting	Comm. & const. deliveries	On-site on-road mobile engines	Safety Related VOC (Tons)	Exceeds conformity threshold? (Yes/No)
Year 1	0.0	0	0	0	**0.0**	No	0.0	0	0	0	**0.0**	No
Year 2	1.72	0	0	0.8	**2.5**	No	0.1	0	0	0.1	**0.2**	No
Year 3	6.44	0	0	0.9	**7.4**	No	0.4	0	0	0.1	**0.5**	No
Year 4	12.00	0	0	0.7	**12.7**	No	0.8	0	0	0.1	**0.9**	No
Year 5	5.52	0	0	0.5	**6.0**	No	0.4	0	0	0.1	**0.4**	No
Year 6	1.93	0	0	0.2	**2.1**	No	0.1	0	0	0.0	**0.2**	No
Year 7	1.43	0	0	0.2	**1.6**	No	0.1	0	0	0.0	**0.1**	No

4.0 Emission Estimation Methodology

Sargent and Lundy ("S&L"), PPL Bell Bend's current project/construction engineering firm, was responsible for developing an estimate of fuel-burning equipment (non-road and on-road) needed to construct the proposed BBNPP. S&L provided an equipment schedule with equipment sizes, estimated annual hours of operation, and estimated quantities of materials delivered. As previously mentioned in Section 2, this list was then used to develop a safety- related construction list of equipment. Emissions calculations based on this equipment along with indirect NO_X and VOC emissions are presented in Appendix B.

4.1 Emissions from Non-Road Equipment

Emissions from non-road equipment (mobile, portable, and stationary fuel-burning equipment) were estimated using EPA's NONROAD2008 model and methodology (References 2-5). S&L provided a study of fuel consumption from construction equipment engines with horsepower and annual hours of operation. AECOM developed a spreadsheet -based approach to estimate non-road engine emissions based on the NONROAD model guidance and NONROAD model data files. This allows the emissions estimates to be thoroughly checked and allows transparency to how emissions are developed.

Applicable engine tiers for this analysis were based on the estimated tiers as indicated in the S&L fuel study. No gasoline engines were assumed as part of the S&L study. The applicable SCC codes for equipment were chosen (based on engine duty and fuel type) from the list in Appendix A of Reference 4. This cross reference allowed AECOM to match equipment from S&L's list to the NONROAD data files which contain the steady state pollutant emission factors and load factors.

The equation involved in determining the non-road construction emissions is as follows (from Page 1 of Reference 4):

$$EF_{adj} = EFss * DF \qquad \textbf{Equation 1}$$

EF_{adj} = Final emission factor used in model after adjustments to account for deterioration (g/hp-hr)

EFss = NONROAD 2008 steady state emission factor (g/hp-hr)

DF = Deterioration factor

The deterioration factor (DF) is a function of the technology type and age of the engine.

The NONROAD methodology addresses the effects of deterioration in the engines by multiplying the steady state emission factor for each category of engine by deterioration factor (DF). The following equation (from p 19 of Reference 3) is used to calculate DF as a function of engine age

$$DF = 1 + A * (Age\ factor)^b \quad for\ Age\ Factor \leq 1 \qquad \textbf{Equation 2}$$

$$DF = 1 + A \quad for\ Age\ Factor > 1 \qquad \textbf{Equation 3}$$

Where Age factor = fraction of median life expended = (cumulative hours * load factor) / median life at full load, in hours.

A = constants for a given pollutant / technology type

b ≤ 1, for most engines or 0.5 for 2-stroke engines less than 25 Hp

Deterioration is capped at the end of an engine's median life (age factor = 1), under the assumption that an engine deteriorated to a point where any increased deterioration is offset by maintenance. For this analysis, all age factors were set to 1 ("fully deteriorated") in order to simplify the calculations.

Annual non-road emissions were estimated using the following equation from Page 1 of Reference 4

$$E_{Sta} = EF_{adj} * HP * Hours * Load\ Factor * \frac{Ton}{2000\ lb} * \frac{lb}{453.6\ g} \qquad \textbf{Equation 4}$$

E_{Sta} = Annual stationary source emissions in tons

EF_{adj} = Final adjusted emission factor (g/hp-hr)

HP = Rated horsepower hp

Hours = Annual operating hours of the equipment

Load Factor = fraction of available rated power

This equation was used for each non-road engine. The Caterpillar 627G scraper is the only piece of construction equipment which uses a dual engine setup. It contains an additional engine in the rear of the body. For this piece of equipment, the calculation was carried out once for each separate engine.

The load factor is an adjustment included in the model to avoid grossly over counting emissions. It is the average fraction of the rated power of an engine that is expected to be actually used in annual operation. This factor takes into account idling, partial load operation, and transient operation. For instance, a 100 hp diesel powered crane has a load factor of 0.43 from the NONROAD data table based on the SCC code. This means that in normal operation, the crane is expected to use an average of 43 hp for every available 100 hp capacity. These factors are based on surveys of equipment users.

One final adjustment that is special to VOC is the conversion from total hydrocarbons (HC). The NONROAD model steady state emission factors are all in terms of HC. This is so the model has a common basis to output emissions in terms of VOC, total organic gasses (TOG), or non-methane hydrocarbons (NMHC). Reference 5 gives the conversion from HC to VOC as 1.053 for diesel engines.

4.2 On-Road Vehicles

Estimation of construction related motor vehicle emissions was calculated with EPA's MOVES Vehicle Emission Modeling Software (Reference 6). The MOVES model was made available by EPA in the Federal Register on March 2, 2010, and is considered to be the most accurate and up to date emission estimation model available for on-road vehicles. This model was chosen in accordance with §93.159(b)(1) which requires that the motor vehicle emissions estimate use the most current version of the motor vehicle emissions model specified by EPA.

The activities modeled included the construction workforce commute to and from the project site, commercial and construction deliveries to the project site during the construction period, and non-road mobile sources onsite over the construction years. Both running and startup emissions were evaluated using the MOVES model. The MOVES model analysis was conducted using year specific data files for Luzerne County as made available through the PADEP. These data files included county specific meteorological data, fuel supply and formulation data, inspection & maintenance program information, and vehicle age distributions. Vehicle trip numbers and hours of operation were developed from the project's fuel consumption study, located in Appendix A. Years 1 and 2 of the construction period were calculated using 2013 as a representative year for commuting and delivery mobile source emissions purposes. Year 3 and later use 2014 as a representative year for commuting and delivery mobile source emissions purposes. Estimation of on-site on-road vehicles used 2013 as a representative year for estimating mobile source emissions.

In evaluating the construction workforce commute, vehicle miles traveled ("VMT") were calculated for the roadway links leading into the project site based on the roadway trip generation split provided in the traffic analysis conducted by KLD Engineering (Reference 1) and the maximum number of workforce vehicles, per year, accessing the project site. VMT for each roadway link was calculated by multiplying the number of vehicles on the link times the length of the link, resulting in vehicle-miles traveled. Based on the speed of each roadway link, the MOVES model was then executed using the representative year correspondent to the to construction year calculate an annual average VOC and NO_X emission factor for each roadway link (in grams/vehicle-mile traveled). This annual emission factor was then multiplied by the VMT for the link to determine VOC and NO_X emissions as follows:

$$E_R = \frac{EF_R * VMT}{453.6\frac{g}{lb} * 2000\frac{lb}{ton}}$$ **Equation 5**

Where: E_R is the annual VOC or NO_X emissions at a roadway link (tons/year)
EF_R is the VOC or NO_X emission factor from MOVES (grams/mile-vehicle)
VMT is the annual vehicle miles traveled on the roadway link (vehicle-miles/year)
1/453.6 is the conversion for grams to pounds
1/2000 is the conversion from pounds to tons

Summing over all roadway links in the ozone maintenance area provided total emissions of VOC and NO_X from the commute of construction workers. In addition to the emission estimates from running vehicles, emissions from vehicle start-ups were also calculated using MOVES as follows:

$$E_S = \frac{EF_S * SU}{453.6\frac{g}{lb} * 2000\frac{lb}{ton}}$$ **Equation 6**

Where: E_S is the annual VOC or NO_X emissions from vehicle startups (tons/year)
EF_S is the VOC or NO_X emission factor from MOVES (grams/start-vehicle)
SU is the annual number of construction workforce startups (vehicle-starts/year)
1/453.6 is the conversion for grams to pounds
1/2000 is the conversion from pounds to tons

Thus, both running emissions and start-up emissions from the construction workforce were considered. Emissions associated with the construction workforce are included in Table 3-1. In executing the MOVES model, annual average emission factors were based on running the MOVES model for twelve hours of the year and averaging these twelve values. (The MOVES model when run at the project level only allows for individual hours to be modeled. Further, the model does not allow the user to specify a specific day of the month, the model uses an average day of the month). The hours run were for the months of January, April, July and October using time periods from 7 to 8 AM, 4 to 5 PM, and Midnight to 1 AM. These hours coincide with the project's construction period shift times. Further the MOVES model results, for each of these hours, were weighted based on the fact that approximately 60% of the construction force will work the day shift, 35% will work the evening shift, and 5% will work the overnight shift.

Truck trips from commercial and construction deliveries were also analyzed for each of the seven years of the construction period. The construction fuel consumption study (see Appendix A), provides the total number of deliveries to the project site for the construction period. The number of deliveries for each individual year, by material delivered, was calculated by scaling total deliveries (over seven years) by the individual year's fuel use divided by the total fuel use over seven years. Vehicle miles traveled were then calculated for each year by multiplying the number of deliveries, for a specific year, times the average travel distance. (The fuel consumption study provides the average round trip by material delivery type.) Further, the fuel consumption study indicates that approximately 45% of the vehicle miles traveled (VMT) associated with deliveries will occur in the Scranton Wilkes-Barre Maintenance Area, 10% will

occur in the Reading Maintenance Area, and 45% of the VMT will occur in non-Maintenance Areas. Based on this trip scheme, a VMT was calculated for the commercial and construction delivery truck traffic in the Scranton Wilkes-Barre Maintenance Area for each year of the construction period. Similar to the construction workforce, annual emissions of VOC and NO_X were calculated for both run times and startups based on MOVES emission factors, VMT, and number of startups per year. MOVES emission factors were developed assuming half the deliveries were by short haul, single unit trucks and half the deliveries were by short haul, combination unit trucks. Annual VOC and NO_X emissions from delivery truck activity are shown in Table 3-1.

Also for the construction period, on-site on-road motor vehicles used onsite were evaluated with the MOVES model. These vehicles consist of Ford F-250 and F-650 trucks, and Mack MP6 trucks. These motor vehicles were included in the construction equipment fuel study with non-road construction equipment, but emissions are calculated separately using the MOVES model instead of the NONROAD model. Annual VOC and NO_X emissions from the operation and startup of these trucks were calculated. It was assumed that each vehicle will have 15 startups per day, and that 10% of the operating hours will be in idle mode and 90% of the operating hours will be in travel mode. Annual operating hours were determined from the construction fuel consumption study by scaling the total operating hours, over the construction years, by the fraction of fuel used in each year. Based on the annual hours of operation and the number of trucks, total annual VOC and NO_X emissions were calculated as follows:

$$\mathbf{E_T = (EF_{TR} * OPH * SP * 0.9) + (EF_i * OPH * 0.1) + \frac{EF_S * SU}{453.6\frac{g}{ton} * 2000\frac{lb}{ton}}} \qquad \textbf{Equation 7}$$

Where: E_T is the annual VOC or NO_X emissions from a non-road vehicle (tons/year)
EF_{TR} is the VOC or NO_X emission factor for travel mode (grams/mile-vehicle)
OPH is the annual operating hours (total operating hours/year)
SP is the operating speed (miles/hour)
0.9 is based on 90% of operating hours in travel mode
EF_I is the VOC or NOx emission factor for idle mode (grams/hour-vehicle)
0.1 is based on 10% of operating hours in idle mode
EF_S is the VOC or NOx emission factor for startups (grams/start-vehicle)
SU is the annual number of non-road vehicle startups (vehicle-starts/year)

This equation was used to calculate VOC and NO_X emissions for the F-250, F-650 and Mack MP6 trucks separately. These emissions were then summed for the vehicle types to calculate the total emissions reflected in Table 3-1. Total emission results from the onsite concrete trucks in safety-related construction are included in Table 3-2.

Table 3-1 also provides the total annual VOC and NO_X emissions from all of the motor vehicle sources for the construction period for the Scranton Wilkes-Barre Maintenance Area.

5.0 References

1. Traffic Impact Study Related to the Proposed Construction and Operation of the Bell Bend Nuclear Power Plant *Preliminary Findings Report*, KLD Engineering, September 14, 2011 Rev. 5A

2. EPA's "NONROAD08 Model (non-road engines, equipment, and vehicles)" http://www.epa.gov/otaq/nonrdmdl.htm

3. EPA's "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling—Compression-Ignition" NR-009c April 2004, EPA420-P-04-009.

4. EPA's "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling" NR-005c April 2004, EPA420-P-04-005

5. EPA's "Conversion Factors for Hydrocarbon Emission Components" NR-002c December 2005, EPA420-R-05-015

6. EPA's "MOVES Vehicle Emission Modeling Software" http://www.epa.gov/otaq/models/moves/index.htm

Appendix A

Sargent & Lundy Fuel Study

Construction Vehicle Fuel Consumption Study

Bell Bend Nuclear Power Plant

UniStar Nuclear Energy

Non-Safety-Related

Report No. SL-010055

Revision 2

Project No. 12198-434

August 30, 2011

Approval Page

BBNPP Construction Vehicle Fuel Consumption Study

Non-Safety-Related

Revision Summary

Rev. 0	Initial Issue
Rev. 1	Revised Earthwork Quantities (Report #SL-009450, Revision 8)
Rev 2	Revised earthwork quantities and updated installation detail per Joint Permit Application Issued for Use

Prepared By: _____ Date: 8/30/2011
E. R. Wendorf

Reviewed By: _____ Date: 8/30/2011
M. R. Dougherty

Approved By: _____ Date: 8/30/2011
D. L. Shamblin

Purpose/Objective

Direct and indirect vehicle emissions are to be included in the air quality applicability analysis for the Bell Bend Nuclear Power Plant (BBNPP) construction period. Construction period vehicle emissions include engine exhaust from non-road construction equipment, commercial vehicles used to deliver material, equipment and commodities, engine driven construction support equipment, and worker vehicles used for their commute to and from the plant construction site.

This report provides fuel consumption estimates for non-road (construction) equipment, worker commuting, and commercial deliveries and services deemed necessary to prepare the site and construct the BBNPP. The associated information and fuel use data (Attachment 1) includes equipment types and model numbers, horsepower ratings, and estimated and quantities of gasoline and diesel fuel usage. The fuel usage estimate is based on information in the Combined Operating License application (COLA), available preliminary design information and also from assumed nuclear project non-road equipment usage based on experience, construction sequencing, forecast construction durations, estimated site construction support, and projected material and equipment deliveries based on current preliminary plant construction quantities and information.

Background

BBNPP is a proposed 1600 MWe Evolutionary Power reactor (EPR) plant to be built near the Susquehanna Steam Electric Station site, close to the Susquehanna River. The proposed new Bell Bend plant site is located in the Scranton Wilkes-Barre ozone maintenance area which consists of the following counties:

- Luzerne
- Wyoming
- Lackawanna
- Monroe

The site is approximately 12 mi (19 km) northwest of Hazelton, Pennsylvania, 19 mi (31 km) southwest of Wilkes-Barre, Pennsylvania, 35 mi (56 km) southwest of Scranton, Pennsylvania, 47 mi (76 km) east, southeast of Williamsport, Pennsylvania; 50 mi (80 km) north of Reading, Pennsylvania, 70 mi (112 km) northeast of Harrisburg, Pennsylvania, and approximately 85 mi (137km) northwest of Philadelphia, Pennsylvania. R2

Inputs/Assumptions

1. Sargent & Lundy DIT-12198-11-002
2. RFI-EPR-11-039 RFI input and Revision 1 KLD Traffic Study Assumptions and clarifications R2
3. RFI SL-BBNPP-161 Construction duration and working shift information.
4. RFI SL-BBNPP-169 Bulking factor values
5. RFI SL-BBNPP-170 Power Block excavation quantities.
6. RFI SL-BBNPP-173 Cooling pond and towers over excavation quantities
7. RFI SL-BBNPP-189 Grading, drainage and earthwork imported quantities.
8. RFI SL-BBNPP-190 Lean fill concrete 200,000 cy
9. RFI SL-BBNPP-209 Validation of Quantities
10. Temporary electrical power is assumed available early in the project as the site is developed and the support infrastructure is built out to minimize temporary engine driven service and utility requirements. This eliminates the use of large (>50hp) temporary diesel generators. R1
11. To the maximum extent possible, work on the 4 equipment trains, their buildings and the Reactor Containment building are assumed to be performed in parallel.
12. Concrete is assumed to be produced at an on site batch plant or plants. The batch plant equipment is motor driven from temporary power electrical sources.

13. Detailed design information is not yet available for BBNPP, therefore fuel usage quantities are developed from information provided in the RFIs noted above, preliminary construction sequence estimates, typical construction equipment applications, and historical power plant construction experience. The selection of non-road equipment size, type and quantity is based on what a contractor would typically use for a power plant project the size and duration of BBNPP. R2
14. Assumed equipment availability and deployment in the estimated construction time frame will generally allow use of non-road equipment which meets the US EPA Tier III engine emission requirements. New equipment purchased after January 2011 with diesel powered engines from 175 to 750 hp is required to meet the interim Tier IV air quality standards. In 2012 engines from 75 to 175 hp will be required to meet the same Tier IV standard. However, new heavy construction equipment has a service life of 12-15 years and is very expensive. Therefore, new Tier III or IV equipment will be slow to enter into the contractor's fleet as existing equipment is replaced so Tier III equipment is assumed for the purpose of this study. R1 R2
15. Non-road vehicles and equipment driven by engines less than 50 hp are not included.
16. Based on procurement and receiving experience at power plant sites (fossil plants) recently constructed, much of the current generation of power plant material and equipment is manufactured and shipped from outside the United States. The port of entry for this equipment is assumed to be the Baltimore – Philadelphia area.
17. The BBNPP site is located about four miles from the western edge of Luzerne County, bordering Columbia County.
18. Based on the plant's location relative to major highways and population centers, it is estimated that approximately 45% of the commercial delivery vehicle miles will be traveled in the counties of Wyoming, Lackawanna, Luzerne, and Monroe. (The Scranton Wilkes-Barre ozone maintenance area). It is estimated that 45 % of the commercial delivery and workforce commuter vehicle miles will be traveled on routes within Columbia County, which is not a designated ozone maintenance area. The remaining 10% are assumed to originate or travel through the Reading ozone maintenance area (Berks County) and the Allentown-Bethlehem-Easton ozone maintenance area (Lehigh, Carbon, and Northampton, counties). These percentages are judgments based on geographical location of BBNPP, the relative distribution of hotels and housing for a temporary workforce, and area population centers as well as interpretation of the demography data and information found in RFI EPR-11-39 revision 1 and the COLA, revision 2,Part 3, section 4.4.2.3 (See Attachment 3). R1 R2
19. The KLD Traffic Study as part of RFI EPR-11-39 was used to determine the construction workforce distribution for determining workforce commute quantities. Workforce data from the report was averaged over an entire year. From the KLD traffic study, a baseline of 1.3 workers per car was used to determine the number of commuter vehicles. It is estimated that approximately 8% will drive diesel vehicles. R2
20. The Fuel Usage table (Attachment 1 Tab 2) contains an estimate of the fuel used to support the construction of the Safety Related systems, structures and components. The first column in the Safety Related Fuel Use Data worksheet indicates the percentage of work estimated to be safety-related for that sub-section or activity. The total estimated fuel use for an activity is then multiplied by that percentage to determine the quantity of fuel used to construct the safety related portions of that activity which is then summed up for the Project. R1
21. Pick-up trucks and vehicles that may at times be used for off site, on the road purposes, such as running errands, picking up parts and local material, and making service runs are included in the Fuel Usage worksheets and noted as "licensed for off-site use." We expect the percent of time that they would be off-site to be less than 30%of the total usage. Most of these vehicles will be gasoline driven as indicated in the Fuel Usage worksheets. R1

Methodology and Criteria

Detailed design and planning information regarding the construction of the BBNPP was unavailable at this time, therefore the equipment use and fuel consumption information were determined using the following process:

1. Where commodity quantities are available, unit production rates and contractor experience were used to determine equipment needs, durations, and usage.
2. Where commodity quantities are unavailable, typical construction units, rates and durations are used based on past nuclear construction experience, current fossil plant construction experience, and commercially available estimating tools.

The fuel consumption totals were developed from the estimated equipment needs and usage using consumption rates provided by the equipment manufacturer, or from published equipment specifications and information available for the specific type and make of equipment using the engine size (horsepower) and published fuel usage factors. The typical information provided is the horsepower rating of the engine driving the equipment which is converted into consumption rates using standard gallons per hour per horsepower (gal/hr/hp) ratings for the types of equipment being used (References 12 through 22).

Total non-road consumption was estimated from the consumption rate multiplied by the anticipated duration (hours used) for the equipment multiplied by the net effective operating time or efficiency. Construction equipment does not run continuously at 100% power. Column J on the Fuel Usage worksheets represents the effective percentage of time the equipment will be operating during a normal shift which reduces the overall rate of fuel consumption. R1 R2

Total commuter fuel consumption was determined based on an estimated 50 miles/day round trip commute in a vehicle that averages 20 miles/gallon of gasoline and 18 miles/gallon of diesel fuel. 8% of the commuter vehicles are assumed to be diesel trucks based on national averages and construction experienced.

Evaluation

Attachment 1 includes a detailed table which identifies and quantifies estimated fuel consumption sources, totals and usage by construction year.

The decision to retain and redistribute all cut and excavated soil on site reduced the consumption of fuel for site preparation by almost one-half, about two million gallons, thereby greatly reducing the volume of fuel emissions and significantly lowering the impact of semi-truck traffic through the neighboring communities. R2

Conclusions and Recommendations

Non-road Equipment

Attachment 1, Section 1, identifies by equipment type and model number, the estimated quantity and type of fuel used during the construction phase from early site preparation through plant startup. The information presented includes:

- Type, brand, and model number of non-road construction equipment typically used for the anticipated construction quantities and type of construction.
- Engine size - Horsepower.
- Expected activity duration.
- Total and yearly fuel consumption.
- Fuel type – Diesel or Gasoline.

- EPA engine emissions type (Tier) for the type and model of diesel equipment to be used.
- Quantification of Project use of construction highway vehicles – pickup trucks, service vehicles, delivery trucks.

Site Deliveries & Service Calls

Attachment 1, Section 2 estimates the quantity, distance, total consumption and anticipated year of consumption for commercial deliveries of commodities, material and equipment, service calls, vendor deliveries and visits, delivery distance, and estimated consumption from origin. Pickup trucks and other on site vehicles licensed for highway use are included in Section 1.

Construction Workforce Commuters

Attachment 1, Section 3 estimates the fuel consumed by construction workforce commuters. Based on experience an estimated 8% of the construction workforce drives diesel driven trucks to and from work. That percentage is captured in the estimates for worker commute fuel usage.

Summary of Estimate by Counties

See the attached Excel spreadsheet (Attachment 1) for the consumption of fuel by the categories described above. R1

Estimate of Permanent Fuel Storage Tanks

Equipment refueling needs could be handled by permanent a 10,000 gallon storage tank for diesel fuel and a 5,000 gallon tank for gasoline.

It's possible that the contractor performing the site preparation and dirt work will use a fueling service thereby reducing the diesel storage tank size needed to 5,000 gallons.

Limitations

This study was developed using preliminary site information and assumptions based on recent participation in new fossil construction, current planning for new nuclear construction, and past nuclear plant construction experience. However, the quantities of construction equipment needed, the durations that the equipment is needed, and the size of equipment may vary from the material presented here based on final design, design quantities, site configuration, and on the techniques and process chosen by the construction contractor who will be performing the work.

References

1. E-mail dated Friday, August 7, 2009 5:58 PM from Robert Iwanchuk to Frederico R Perdomo (Attachment 4)
2. Sargent & Lundy DIT-12198-11-002
3. RFI-EPR-11-039 Revision 1 KLD Traffic Study Assumptions
4. RFI SL-BBNPP-161 Construction duration and working shift information. R2
5. RFI SL-BBNPP-169 Bulking factor values
6. RFI SL-BBNPP-170 Power Block excavation quantities.
7. RFI SL-BBNPP-173 Cooling pond and towers over excavation quantities
8. RFI SL-BBNPP-189 Grading, drainage and earthwork imported quantities.
9. RFI SL-BBNPP-190 Lean fill concrete 200,000 cy
10. RFI SL-BBNPP-209 Validation of Quantities
11. Bell Bend Nuclear Power Plant, Combined License Application (COLA), Revision 2, Part 3, Section 4.4, Socioeconomic Impacts Table 4.4.3,
12. RSMeans Heavy Construction Cost Data, Senior Editor Eugene Spencer, 23rd Annual Edition (2009), R. S. Means Company, Inc., 2008

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14. Manitowoc fuel consumption Excel spreadsheet from Amy J. Crouse, Business Systems Analyst - Web Sites, Manitowoc Cranes in response S&L request by E. E. Falb.
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18. Grove Cranes Product Specifications (Internet Resource) available at http://www.manitowoccranes.com/MCG_GRO/Products/EN/BrandRange.asp
19. Ford construction and commercial vehicles (Internet Resource), Available at http://www.commtruck.ford.com/
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21. Mack Truck product information (Internet resource) http://www.macktrucks.com/assets/MackMarketing/Brochures/BulDgLnBro/4601_BulDgLnBro.pdf
22. Putzmeister Concrete pumps, Product information (Internet resource) http://www.putzmeister.com/products/boompumps/index.cfm

Attachments

1. Attachment 1 – Construction Fuel Consumption Information Tables
   Worksheet 1 – Total Fuel Usage (Safety and Non-safety related work)
   Worksheet 2 – Safety-related Fuel Usage R2
2. Attachment 2 – RFI EPR 11-039 Revision 1 Origins of the Construction Workforce (numbers by direction – North, South, etc.) table from RFI input (KLD Traffic Study).
3. Attachment 3 – Pennsylvania map of 8 hour ozone maintenance areas
4. Attachment 4 – E-mail sent Friday, August 7, 2009 5:58 PM from Robert Iwanchuk to Frederico R Perdomo requesting information for BBNPP Air Quality applicability analysis

Attachment 1

BBNPP Construction Fuel Consumption Data – Excel Spreadsheet

Worksheet 1 of 2 – Total Fuel Usage (Safety and Non-safety related work)
Worksheet 2 of 2 – Safety-related Fuel Usage

All work included	Section 1 Non-Road Construction Equipment	Equipment	Class/Model #	HP	Tier	Qnty	On Site	Wk%	Hours or Distance	g/h	g/h/hp	Average Fuel Rate	Fuel	Total Fuel (Gal)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year7
	IA. Early Site Preparation																				
100%	Clearing, Deforesting, Grubbing & Grading																				
	Including:	Tracked Dozer	Cat D10	700 Hp	III	4	5 Mo	75%	3300 hr	20		20.0 gal/hr	Diesel	66,000	66,000	0	0	0	0	0	0
	Access Roads	Tracked Loader	CAT 973C	263 Hp	III	3	5 Mo	75%	2475 hr	10		10.0 gal/hr	Diesel	24,750	24,750	0	0	0	0	0	0
	Topsoil cut & stockpile	Excavator - Medium	Cat 321D	148 Hp	III	3	5 Mo	60%	1980 hr	5		5.0 gal/hr	Diesel	9,900	9,900	0	0	0	0	0	0
	Topsoil Removal- 503414 cy	Excavator - With tree attachment	Cat 345D L	380 Hp	III	1	5 Mo	60%	660 hr	10		10.0 gal/hr	Diesel	6,600	6,600	0	0	0	0	0	0
	Used for final grading - 128,000 cy	Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	5 Mo	40%	880 hr		0.028	4.5 gal/hr	Diesel	3,942	3,942	0	0	0	0	0	0
	Topsoil Stockpiled - 376257cy	Semi-Trailer Dump	Mack MP8	450 Hp	III	10	5 Mo	50%	5500 hr		0.026	11.7 gal/hr	Diesel	64,350	64,350	0	0	0	0	0	0
		Motor Grader	Cat 14M	259 Hp	III	2	5 Mo	45%	990 hr	11		11.0 gal/hr	Diesel	10,890	10,890	0	0	0	0	0	0
		Scraper	Cat 631G	462 Hp	III	8	5 Mo	60%	5280 hr	16		16.0 gal/hr	Diesel	84,480	84,480	0	0	0	0	0	0
		Scraper	Cat 631G	462 Hp	III	3	5 Mo	60%	1980 hr	16		16.0 gal/hr	Diesel	31,680	31,680	0	0	0	0	0	0
		Vibratory Soil Compactor	Cat CS74	156 Hp	III	1	5 Mo	60%	660 hr	6		6.0 gal/hr	Diesel	3,960	3,960	0	0	0	0	0	0
		Water Trucks	Mack MP6	150 Hp	II	1	5 Mo	40%	440 hr	3.5		3.5 gal/hr	Diesel	1,540	1,540	0	0	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		2	5 Mo	50%	1100 hr	3		3.0 gal/hr	Diesel	3,300	3,300	0	0	0	0	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		2	5 Mo	50%	1100 hr	3.5		3.5 gal/hr	Gas	3,850	3,850	0	0	0	0	0	0
		Fuel Truck	Mack MP6	150 Hp	II	2	5 Mo	20%	440 hr	3.5		3.5 gal/hr	Diesel	1,540	1,540	0	0	0	0	0	0
		Mechanic's Truck 2-1/2 ton	F-650	270 Hp	III	1	5 Mo	30%	300 hr	4	0.026	4.0 gal/hr	Diesel	1,200	1,200	0	0	0	0	0	0
	IB. Site Development & Excavation																				
100%	Excavating/Backfilling/Earth/Soil/Rock Remove & Disposal - **Intake Area, Switchyard, Northeast Laydown, West Laydown**																				
	Estimated Quantities:	Tracked Dozer/Ripper	Cat D10	700 Hp	III	7	4 Mo	75%	4200 hr	20		20.0 gal/hr	Diesel	84,000	25,200	58,800	0	0	0	0	0
	Removal - 870,471cy	Scraper	Cat 637G (dual engine)	962 Hp	III	6	4 Mo	50%	2400 hr	32		32.0 gal/hr	Diesel	76,800	23,040	53,760	0	0	0	0	0
	Placement - 881,664cy	Excavator - Medium	Cat 321D	148 Hp	III	1	4 Mo	60%	480 hr	5		5.0 gal/hr	Diesel	2,400	720	1,680	0	0	0	0	0
		Tracked Loader	CAT 973C	263 Hp	III	6	4 Mo	70%	3360 hr	10		10.0 gal/hr	Diesel	33,600	10,080	23,520	0	0	0	0	0
		Motor Grader	Cat 14M	259 Hp	III	1	4 Mo	50%	400 hr	11		11.0 gal/hr	Diesel	4,400	1,320	3,080	0	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		1	4 Mo	35%	280 hr	3		3.0 gal/hr	Diesel	840	252	588	0	0	0	0	0
		Water Trucks	Mack MP6	150 Hp	II	1	4 Mo	50%	400 hr	3.5		3.5 gal/hr	Diesel	1,400	420	980	0	0	0	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		2	4 Mo	40%	640 hr	3.5		3.5 gal/hr	Gas	2,240	672	1,568	0	0	0	0	0
100%	Excavating/Backfilling/Earth/Soil/Rock Remove & Disposal - **Powerblock (Includes GIS, Switchyard, Cooling towers and North central laydown area)**																				
	Estimated Quantities:	Tracked Dozer/Ripper	Cat D10	700 Hp	III	4	13 Mo	60%	6240 hr	20		20.0 gal/hr	Diesel	124,800	62,400	62,400	0	0	0	0	0
	Removal - 10,837,579 cy	Tracked Dozer/Disk	Cat D9	410 Hp	III	1	13 Mo	60%	1560 hr	15		15.0 gal/hr	Diesel	23,400	9,360	9,360	4,680	0	0	0	0
	Placement - 2,681,000 cy	Tracked Loader	CAT 973C	263 Hp	III	2	13 Mo	60%	3120 hr	10		10.0 gal/hr	Diesel	31,200	12,480	12,480	6,240	0	0	0	0
		Scraper	Cat 637G (dual engine)	962 Hp	III	15	13 Mo	50%	19500 hr	32		32.0 gal/hr	Diesel	624,000	312,000	312,000	0	0	0	0	0
		Vibratory Soil Compactor	Cat CS74	156 Hp	III	2	13 Mo	45%	2340 hr	6		6.0 gal/hr	Diesel	14,040	2,808	5,616	5,616	0	0	0	0
		Soil Compactor	Cat 825H	400 Hp	III	2	13 Mo	45%	2340 hr	18		18.0 gal/hr	Diesel	42,120	8,424	16,848	16,848	0	0	0	0
		Excavator - Medium	Cat 321D	148 Hp	III	2	13 Mo	60%	3120 hr	5		5.0 gal/hr	Diesel	15,600	6,240	6,240	3,120	0	0	0	0
		Tracked Loader	CAT 973C	263 Hp	III	6	13 Mo	70%	10920 hr	10		10.0 gal/hr	Diesel	109,200	43,680	43,680	21,840	0	0	0	0
		Motor Grader	Cat 14M	259 Hp	III	2	13 Mo	50%	2600 hr	11		11.0 gal/hr	Diesel	28,600	8,580	11,440	8,580	0	0	0	0
		Excavator - Large	Cat 375L	428 Hp	III	5	13 Mo	60%	7800 hr	16		16.0 gal/hr	Diesel	124,800	62,400	62,400	0	0	0	0	0
		Off Road Truck (80 ton payload)	Cat 773	650 Hp	III	30	13 Mo	45%	35100 hr	16		16.0 gal/hr	Diesel	561,600	224,640	224,640	112,320	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		3	13 Mo	35%	2730 hr	3		3.0 gal/hr	Diesel	8,190	3,276	3,276	1,638	0	0	0	0
		Water Trucks	Mack MP6	150 Hp	II	2	13 Mo	50%	2600 hr	3.5		3.5 gal/hr	Diesel	9,100	2,730	3,640	2,730	0	0	0	0
		Water Wagon 8000 gal	Cat 631G	462 Hp	II	1	13 Mo	50%	1300 hr	16		16.0 gal/hr	Diesel	20,800	6,240	8,320	6,240	0	0	0	0
		Mechanic's Truck 2-1/2 ton	F-650	270 Hp	III	2	13 Mo	30%	1560 hr	4	0.026	4.0 gal/hr	Diesel	6,240	2,496	2,496	1,248	0	0	0	0
		End Loader (Batch Plant)	Cat 966H	262 Hp	III	2	4 Mo	50%	704 hr	5		5.0 gal/hr	Diesel	3,520	0	2,640	880	0	0	0	0
		Concrete Truck	Mack MP6	150 Hp	III	15	4 Mo	33%	3485 hr	3.5		3.5 gal/hr	Diesel	12,197	0	9,148	3,049	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		1	13 Mo	50%	1300 hr	3		3.0 gal/hr	Diesel	3,900	1,560	1,560	780	0	0	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		2	13 Mo	40%	2080 hr	3.5		3.5 gal/hr	Gas	7,280	2,912	2,912	1,456	0	0	0	0
		Fuel Truck	Mack MP6	150 Hp	II	4	13 Mo	20%	2080 hr	3.5		3.5 gal/hr	Diesel	7,280	2,912	2,912	1,456	0	0	0	0
100%	Excavating/Backfilling/Earth/Soil/Rock Remove & Disposal - **Parking**																				
	Estimated Quantities:	Tracked Dozer	Cat D7E	235 Hp	III	2	5 Mo	75%	1500 hr	9		9.0 gal/hr	Diesel	13,500	0	8,100	5,400	0	0	0	0
	Removal 287,820cy	Scraper	Cat 631G	462 Hp	III	1	5 Mo	50%	500 hr	16		16.0 gal/hr	Diesel	8,000	0	4,800	3,200	0	0	0	0
	Placement 1,413,639 cy	Vibratory Soil Compactor	Cat CS74	156 Hp	III	2	5 Mo	45%	900 hr	6		6.0 gal/hr	Diesel	5,400	0	3,240	2,160	0	0	0	0
		Soil Compactor	Cat 825H	400 Hp	III	2	5 Mo	45%	900 hr	18		18.0 gal/hr	Diesel	16,200	0	9,720	6,480	0	0	0	0
		Excavator - Medium	Cat 321D	148 Hp	III	1	5 Mo	60%	600 hr	5		5.0 gal/hr	Diesel	3,000	0	1,800	1,200	0	0	0	0
		Tracked Loader	CAT 973C	263 Hp	III	1	5 Mo	70%	700 hr	10		10.0 gal/hr	Diesel	7,000	0	4,200	2,800	0	0	0	0
		Motor Grader	Cat 14M	259 Hp	III	1	5 Mo	50%	500 hr	11		11.0 gal/hr	Diesel	5,500	0	3,300	2,200	0	0	0	0
		Asphalt Paver	Barber GreeneAP-1000	174 Hp	III	1	5 Mo	50%	500 hr	6		6.0 gal/hr	Diesel	3,000	0	1,800	1,200	0	0	0	0
		Asphalt Compactor	Cat CB434C	107 Hp	III	1	5 Mo	50%	500 hr	4		4.0 gal/hr	Diesel	2,000	0	1,200	800	0	0	0	0
		Water Trucks	Mack MP6	150 Hp	II	1	5 Mo	50%	500 hr	3.5		3.5 gal/hr	Diesel	1,750	0	1,050	700	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		1	5 Mo	35%	350 hr	3		3.0 gal/hr	Diesel	1,050	0	630	420	0	0	0	0
		Fuel Truck	Mack MP6	150 Hp	II	1	5 Mo	20%	200 hr	3.5		3.5 gal/hr	Diesel	700	0	420	280	0	0	0	0

100%	Excavating/Backfilling/Earth/Soil/Rock Remove & Disposal - **Support road (Includes Quarry, Batch plant, Central laydown)**																			
	Estimated Quantities:	Tracked Dozer	Cat D7E	235 Hp	III	4	15	Mo	75%	9000 hr	9		9.0 gal/hr	Diesel	81,000	24,300	40,500	16,200	0	0	0	0
	Removal - 364,572 cy	Scraper	Cat 637G (dual engine)	962 Hp	III	3	15	Mo	50%	4500 hr	32		32.0 gal/hr	Diesel	144,000	72,000	64,800	7,200	0	0	0	0
	Placement - 2,819,652 cy	Vibratory Soil Compactor	Cat CS74	156 Hp	III	1	15	Mo	45%	1350 hr	6		6.0 gal/hr	Diesel	8,100	2,430	4,050	1,620	0	0	0	0
		Soil Compactor	Cat 825H	400 Hp	III	2	15	Mo	45%	2700 hr	18		18.0 gal/hr	Diesel	48,600	14,580	24,300	9,720	0	0	0	0
		Excavator - Medium	Cat 321D	148 Hp	III	2	15	Mo	60%	3600 hr	5		5.0 gal/hr	Diesel	18,000	5,400	9,000	3,600	0	0	0	0
		Tracked Loader	CAT 973C	263 Hp	III	2	15	Mo	70%	4200 hr	10		10.0 gal/hr	Diesel	42,000	12,600	21,000	8,400	0	0	0	0
		Motor Grader	Cat 14M	259 Hp	III	2	8	Mo	50%	1600 hr	11		11.0 gal/hr	Diesel	17,600	5,280	8,800	3,520	0	0	0	0
		Asphalt Paver	Barber GreeneAP-1000	174 Hp	III	1	5	Mo	50%	500 hr	6		6.0 gal/hr	Diesel	3,000	0	1,800	1,200	0	0	0	0
		Asphalt Compactor	Cat CB434C	107 Hp	III	1	5	Mo	50%	500 hr	4		4.0 gal/hr	Diesel	2,000	0	1,200	800	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		1	15	Mo	35%	1050 hr	3		3.0 gal/hr	Diesel	3,150	945	1,575	630	0	0	0	0
		Water Trucks	Mack MP6	150 Hp	II	2	15	Mo	40%	2400 hr	3.5		3.5 gal/hr	Diesel	8,400	2,520	4,200	1,680	0	0	0	0
		Water Wagon 8000 gal	Cat 631G	462 Hp	II	1	15	Mo	40%	1200 hr	18		18.0 gal/hr	Diesel	21,600	6,480	10,800	4,320	0	0	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		2	15	Mo	50%	3000 hr	3.5		3.5 gal/hr	Gas	10,500	3,150	5,250	2,100	0	0	0	0
100%	Excavating/Backfilling/Earth/Soil/Rock Remove & Disposal - **South Laydown**																			
	Estimated Quantities:	Tracked Dozer	Cat D10	700 Hp	III	4	4	Mo	75%	2400 hr	20		20.0 gal/hr	Diesel	48,000	14,400	24,000	9,600	0	0	0	0
	Removal - 142,188cy	Soil Compactor	Cat 825H	400 Hp	III	1	4	Mo	45%	360 hr	18		18.0 gal/hr	Diesel	6,480	1,944	3,240	1,296	0	0	0	0
	Placement - 3,815,583cy	Excavator - Medium	Cat 321D	148 Hp	III	3	4	Mo	60%	1440 hr	5		5.0 gal/hr	Diesel	7,200	2,160	3,600	1,440	0	0	0	0
		Motor Grader	Cat 14M	259 Hp	III	1	4	Mo	50%	400 hr	11		11.0 gal/hr	Diesel	4,400	1,320	2,200	880	0	0	0	0
		Water Trucks	Mack MP6	150 Hp	II	1	4	Mo	50%	400 hr	3.5		3.5 gal/hr	Diesel	1,400	420	700	280	0	0	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	4	Mo	50%	400 hr	3.5		3.5 gal/hr	Gas	1,400	420	700	280	0	0	0	0
100%	Boring/Soils investigation																			
	Includes Wells & Dewatering	Schramm T64 Well Drilling Rig	Cat 3406 diesel	420 Hp	II	1	4	Mo	35%	246 hr		0.026	10.9 gal/hr	Diesel	2,691	2,691	0	0	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		1	4	Mo	50%	352 hr	3		3.0 gal/hr	Diesel	1,056	1,056	0	0	0	0	0	0
100%	Underground utilities, piping, duct runs, grounding																			
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	8	Mo	40%	1126 hr		0.026	4.2 gal/hr	Diesel	4,686	0	2,343	2,343	0	0	0	0
		Tracked Dozer	Cat D7E	235 Hp	III	2	8	Mo	60%	1690 hr	9		9.0 gal/hr	Diesel	15,206	0	7,603	7,603	0	0	0	0
		Backhoe	Cat 430E	102 Hp	III	6	8	Mo	60%	5069 hr		0.028	2.9 gal/hr	Diesel	14,476	0	5,791	4,343	4,343	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		8	8	Mo	40%	4506 hr	3		3.0 gal/hr	Diesel	13,517	0	5,407	5,407	2,703	0	0	0
		Excavator - Medium	Cat 321D	148 Hp	III	2	8	Mo	60%	1690 hr	5		5.0 gal/hr	Diesel	8,448	0	5,069	3,379	0	0	0	0
		Semi-Trailer Dump	Mack E8	400 Hp	III	1	8	Mo	60%	845 hr		0.026	10.4 gal/hr	Diesel	8,786	0	4,393	3,514	879	0	0	0
100%	Warehouse & Storage																			
	Construction & Operation	Fork Lift - 15,000 Lb capacity	Cat DP70E	94 Hp	III	2	68	Mo	35%	8378 hr		0.033	3.1 gal/hr	Diesel	25,987	0	2,599	5,197	7,796	6,497	2,599	1,299
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	68	Mo	40%	9574 hr		0.026	4.2 gal/hr	Diesel	39,830	0	3,983	7,966	11,949	9,957	3,983	1,991
		Pickup Truck 3/4 ton	F-250	300 Hp		2	68	Mo	50%	11968 hr	3		3.0 gal/hr	Diesel	35,904	0	3,590	7,181	10,771	8,976	3,590	1,795
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	68	Mo	30%	3590 hr	3.5		3.5 gal/hr	Gas	12,566	0	1,257	2,513	3,770	3,142	1,257	628
		Material truck 2-1/2 ton	F-650	270 Hp	III	1	68	Mo	25%	2992 hr		0.026	7.0 gal/hr	Diesel	21,004	0	2,100	4,201	6,301	5,251	2,100	1,050
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	1	68	Mo	45%	5386 hr		0.026	3.0 gal/hr	Diesel	16,103	0	1,610	3,221	4,831	4,026	1,610	805
	PART 1 PRE-CONSTRUCTION GAS														37,836	11,004	11,687	6,349	3,770	3,142	1,257	628
	PART 1 PRE-CONSTRUCTION DIESEL														3,027,883	1,317,916	1,254,017	350,846	49,573	34,707	13,883	6,941
	IIA. Civil/Concrete structure Work																			
100%	Bridge Construction **(7 Bridges)**																			
		Tracked Dozer	Cat D10	700 Hp	III	3	12	Mo	50%	3600 hr	20		20.0 gal/hr	Diesel	72,000	0	14,400	21,600	21,600	14,400	0	0
		Tracked Dozer	Cat D8	305 Hp	III	2	12	Mo	50%	2400 hr	11.5		11.5 gal/hr	Diesel	27,600	0	5,520	8,280	8,280	5,520	0	0
		Soil Compactor	Cat 825H	400 Hp	III	2	12	Mo	45%	2160 hr	18		18.0 gal/hr	Diesel	38,880	0	7,776	11,664	11,664	7,776	0	0
		Excavator - Medium	Cat 321D	148 Hp	III	4	12	Mo	50%	4800 hr	5		5.0 gal/hr	Diesel	24,000	0	4,800	7,200	7,200	2,400	2,400	0
		Motor Grader	Cat 14M	259 Hp	III	1	12	Mo	40%	960 hr	11		11.0 gal/hr	Diesel	10,560	0	2,112	3,168	3,168	2,112	0	0
		Water Trucks	Mack MP6	150 Hp	II	1	12	Mo	50%	1200 hr	3.5		3.5 gal/hr	Diesel	4,200	0	840	1,260	1,260	840	0	0
		Concrete Truck	Mack MP6	150 Hp	III	5	12	Mo	45%	4752 hr	3.5		3.5 gal/hr	Diesel	16,632	0	3,326	4,990	4,990	3,326	0	0
		Tractor Loader/Backhoe	Case 580	80 Hp	III	3	12	Mo.	60%	3802 hr		0.028	2.2 gal/hr	Diesel	8,516	0	1,703	2,555	2,555	852	852	0
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	4	12	Mo	50%	4224 hr		0.026	4.2 gal/hr	Diesel	17,572	0	3,514	5,272	5,272	1,757	1,757	0
		Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	2	12	Mo	50%	2112 hr	6.3		6.3 gal/hr	Diesel	13,306	0	2,661	3,992	3,992	2,661	0	0
		Truck Mtd Boom 200 yds/hr Concrete Pump	Putzmeister 47Z-Meter	300 Hp	III	1	12	Mo	25%	528 hr		0.028	8.4 gal/hr	Diesel	4,435	0	444	1,331	1,331	887	444	0
		Pickup Truck 3/4 ton	F-250	300 Hp		2	12	Mo	25%	1056 hr	3		3.0 gal/hr	Diesel	3,168	0	317	950	950	634	317	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	12	Mo	25%	528 hr	3.5		3.5 gal/hr	Gas	1,848	0	185	554	554	370	185	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	2	12	Mo	45%	1901 hr		0.026	3.0 gal/hr	Diesel	5,683	0	568	1,705	1,705	1,137	568	0
		End Loader (Batch Plant)	Cat 966H	262 Hp	III	1	12	Mo	50%	1056 hr	5		5.0 gal/hr	Diesel	5,280	0	528	1,584	1,584	1,056	528	0
100%	Sheet Piling																			
		Crane - Lattice Boom+Hammer	Manitowoc 111 - 80t	205 Hp	III	1	4	Mo	50%	352 hr	5.3		5.3 gal/hr	Diesel	1,866	0	933	933	0	0	0	0
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	4	Mo	35%	493 hr		0.026	4.2 gal/hr	Diesel	2,050	0	1,025	1,025	0	0	0	0

100%	Structural concrete																				
		Truck Mtd Boom 200 yds/hr Concrete Pump	Putzmeister 47Z-Meter	300 Hp	III	5	2000	Hr	75%	7500 hr		0.028	8.4 gal/hr	Diesel	63,000	0	6,300	18,900	18,900	12,600	3,150	3,150
		Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	5	36	Mo	25%	7920 hr	6.3		6.3 gal/hr	Diesel	49,896	0	4,990	14,969	14,969	9,979	2,495	2,495
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	5	36	Mo	30%	9504 hr		0.026	4.2 gal/hr	Diesel	39,537	0	3,954	11,861	11,861	7,907	1,977	1,977
		Pickup Truck 3/4 ton	F-250	300 Hp		12	36	Mo	25%	19008 hr	3		3.0 gal/hr	Diesel	57,024	0	5,702	17,107	17,107	11,405	2,851	2,851
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		4	36	Mo	25%	6336 hr	3.5		3.5 gal/hr	Gas	22,176	0	2,218	6,653	6,653	4,435	1,109	1,109
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	6	36	Mo	45%	17107 hr		0.026	3.0 gal/hr	Diesel	51,151	0	5,115	15,345	15,345	10,230	2,558	2,558
		End Loader (Batch Plant)	Cat 966H	262 Hp	III	2	36	Mo	50%	6336 hr	5		5.0 gal/hr	Diesel	31,680	0	3,168	9,504	9,504	6,336	1,584	1,584
		Concrete Truck	Mack MP6	150 Hp	III	10	36	Mo	33%	20909 hr	3.5		3.5 gal/hr	Diesel	73,181	0	7,318	21,954	21,954	14,636	3,659	3,659
		Tractor Loader/Backhoe	Case 580	80 Hp	III	4	36	Mo.	50%	12672 hr		0.028	2.2 gal/hr	Diesel	28,385	0	2,839	8,516	8,516	5,677	1,419	1,419
100%	Non Power Block - Pump House, Switchyard, Cooling Towers, Pump House																				
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	36	Mo	67%	8490 hr		0.026	4.2 gal/hr	Diesel	35,319	0		24,724	10,596	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		2	36	Mo	40%	5069 hr	3		3.0 gal/hr	Diesel	15,206	0	0	10,644	4,562	0	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	36	Mo	40%	2534 hr	3.5		3.5 gal/hr	Gas	8,870	0	0	6,209	2,661	0	0	0
		Material truck 2-1/2 ton (Licensed for off site use	F-650	270 Hp	III	1	36	Mo	25%	1584 hr	4		4.0 gal/hr	Diesel	6,336	0	0	4,435	1,901	0	0	0
		Truck Mounted Boom Concrete Pump	Putzmeister 47Z-Meter	300 Hp	III	3	12	Mo	30%	1901 hr		0.028	8.4 gal/hr	Diesel	15,967	0	0	11,177	4,790	0	0	0
		Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	2	36	Mo	50%	6336 hr	6.3		6.3 gal/hr	Diesel	39,917	0	0	27,942	11,975	0	0	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	1	24	Mo	45%	1901 hr		0.026	3.0 gal/hr	Diesel	5,683	0	0	3,978	1,705	0	0	0
100%	Switchyard																				
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	18	Mo	50%	3168 hr		0.026	4.2 gal/hr	Diesel	13,179	0	0	6,589	5,272	1,318	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		2	18	Mo	40%	2534 hr	3.5		3.5 gal/hr	Gas	8,870	0	0	4,435	3,548	887	0	0
		Material truck 2-1/2 ton	F-650	270 Hp	III	1	18	Mo	25%	792 hr		0.026	7.0 gal/hr	Diesel	5,560	0	0	2,780	2,224	556	0	0
		Truck Mounted Boom Concrete Pump	Putzmeister 47Z-Meter	300 Hp	III	3	18	Mo	10%	950 hr		0.028	8.4 gal/hr	Diesel	7,983	0	0	5,988	1,996	0	0	0
		Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	1	18	Mo	25%	792 hr	6.3		6.3 gal/hr	Diesel	4,990	0		3,742	1,247	0	0	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	1	18	Mo	45%	1426 hr		0.026	3.0 gal/hr	Diesel	4,263	0		3,197	1,066	0	0	0
100%	Cooling Tower																				
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	4	18	Mo	67%	8490 hr		0.026	4.2 gal/hr	Diesel	35,319	0	0	0	10,596	24,724	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		3	18	Mo	40%	3802 hr	3		3.0 gal/hr	Diesel	11,405	0	0	0	3,421	7,983	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	18	Mo	40%	1267 hr	3.5		3.5 gal/hr	Gas	4,435	0	0	0	1,331	3,105	0	0
		Material truck 2-1/2 ton	F-650	270 Hp	III	1	18	Mo	25%	792 hr		0.026	7.0 gal/hr	Diesel	5,560	0	0	0	1,668	3,892	0	0
		Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	2	18	Mo	25%	1584 hr	6.3		6.3 gal/hr	Diesel	9,979	0	0	0	2,994	6,985	0	0
		Truck Mounted Boom Concrete Pump	Putzmeister 47Z-Meter	300 Hp	III	3	12	Mo	30%	1901 hr		0.028	8.4 gal/hr	Diesel	15,967	0	0	0	4,790	11,177	0	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	1	36	Mo	45%	2851 hr		0.026	3.0 gal/hr	Diesel	8,525	0	0	0	2,558	5,968	0	0
	PART IIA GAS														46,200	0	2,402	17,852	14,747	370	185	0
	PART IIA DIESEL														890,758	0	89,853	300,859	75,549	45,358	6,865	0
100%	**IIB. Superstructure & Structural Steel**																				
	Structural and building steel																				
		Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	5	12	Mo	50%	5280 hr	6.3		6.3 gal/hr	Diesel	33,264	0	0	6,653	24,948	1,663	0	0
		Crane - Lattice Boom	Manitowoc 999 - 275t	400 Hp	III	4	12	Mo	50%	4224 hr	8.2		8.2 gal/hr	Diesel	34,637	0	0	6,927	25,978	1,732	0	0
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	7	12	Mo	67%	9905 hr		0.026	4.2 gal/hr	Diesel	41,206	0	0	8,241	30,904	2,060	0	0
		Crane - Picker	Grove RT600E - 50t	173 Hp	III	7	12	Mo	60%	8870 hr		0.026	4.5 gal/hr	Diesel	39,899	0	0	7,980	29,924	1,995	0	0
		Boom Lift	JLG 800AJ	65 Hp	III	8	12	Mo	60%	10138 hr		0.026	1.7 gal/hr	Diesel	17,133	0	0	3,427	12,849	857	0	0
		Boom Lift - 80 ft	Genie S-80	74 Hp	III	8	12	Mo	60%	10138 hr		0.026	1.9 gal/hr	Diesel	19,505	0	0	3,901	14,629	975	0	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	8	12	Mo	60%	10138 hr		0.026	3.0 gal/hr	Diesel	30,311	0	0	6,062	22,734	1,516	0	0
	Building Modules & Heavy Lifts																				
		Crane - Manitowoc	21000 - 1000t	600 Hp	III	1	24	Mo	20%	845 hr	12.6		12.6 gal/hr	Diesel	10,644	0	0	0	5,322	5,322	0	0
		Crane - Manitowoc	31000 - 2300t	1,200 Hp	III	1	12	Mo	20%	422 hr	24		24.0 gal/hr	Diesel	10,138	0	0	5,069	5,069	0	0	0
	Building Siding/Insulated Panels																				
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	6	Mo	50%	1056 hr		0.026	4.2 gal/hr	Diesel	4,393	0	0	0	1,318	3,075	0	0
		Boom Lift - 80 ft	Genie S-80	74 Hp	III	3	6	Mo	70%	2218 hr		0.026	1.9 gal/hr	Diesel	4,267	0	0	0	1,280	2,987	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		2	6	Mo	40%	845 hr	3		3.0 gal/hr	Diesel	2,534	0	0	0	760	1,774	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	6	Mo	40%	422 hr	3.5		3.5 gal/hr	Gas	1,478	0	0	0	444	1,035	0	0
		Material truck 2-1/2 ton	F-650	270 Hp	III	1	6	Mo	50%	528 hr		0.026	7.0 gal/hr	Diesel	3,707	0	0	0	1,112	2,595	0	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	2	6	Mo	50%	1056 hr		0.026	3.0 gal/hr	Diesel	3,157	0	0	0	947	2,210	0	0
	Roofing																				
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	6	Mo	45%	950 hr		0.026	4.2 gal/hr	Diesel	3,954	0	0	0	0	3,954	0	0
		Boom Lift - 80 ft	Genie S-80	74 Hp	III	3	6	Mo	45%	1426 hr		0.026	1.9 gal/hr	Diesel	2,743	0	0	0	0	2,743	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		1	6	Mo	40%	422 hr	3		3.0 gal/hr	Diesel	1,267	0	0	0	0	1,267	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	6	Mo	40%	422 hr	3.5		3.5 gal/hr	Gas	1,478	0	0	0	0	1,478	0	0
		Material truck 2-1/2 ton	F-650	270 Hp	III	1	6	Mo	50%	528 hr		0.026	7.0 gal/hr	Diesel	3,707	0	0	0	0	3,707	0	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	2	6	Mo	45%	950 hr		0.026	3.0 gal/hr	Diesel	2,842	0	0	0	0	2,842	0	0
	PART IIB GAS														2,957	0	0	0	444	2,513	0	0
	PART IIB DIESEL														269,307	0	0	48,260	177,774	43,273	0	0

	IIIA. Mechanical Installation																			
100%	Mechanical Installation																			
	Including:	Crane - Picker	Grove RT530E-2 30t	160 Hp	III	5	42	Mo	40%	14784 hr		0.026	4.2 gal/hr	Diesel	61,501	0	0	12,300	30,751	12,300	6,150	0
	Piping, Hangers & Pipe Specialties	Crane - Picker	Grove RT600E - 50t	173 Hp	III	3	12	Mo	40%	2534 hr		0.026	4.5 gal/hr	Diesel	11,400	0	0	2,280	5,700	2,280	1,140	0
	Valves and Actuators	Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	5	12	Mo	40%	4224 hr	6.3		6.3 gal/hr	Diesel	26,611	0	0	5,322	13,306	5,322	2,661	0
	HVAC Ductwork, Dampers, Actuators, Fans	Crane - Lattice Boom	Manitowoc 999 - 275t	400 Hp	III	2	12	Mo	40%	1690 hr	8.2		8.2 gal/hr	Diesel	13,855	0	0	2,771	6,927	2,771	1,385	0
	Pump, chillers, coolers, Hx, Equipment	Crane - Lattice Boom	Manitowoc16000 - 440t	500 Hp	III	1	12	Mo	40%	845 hr	10.4		10.4 gal/hr	Diesel	8,786	0	0	1,757	4,393	1,757	879	0
	Air compressors	Boom Lift	JLG 800AJ	65 Hp	III	5	12	Mo	50%	5280 hr		0.026	1.7 gal/hr	Diesel	8,923	0	0	1,785	4,462	1,785	892	0
	Examination, Testing & Start-up	Boom Lift - 80 ft	Genie S-80	74 Hp	III	5	12	Mo	50%	5280 hr		0.026	1.9 gal/hr	Diesel	10,159	0	0	2,032	5,079	2,032	1,016	0
		Pickup Truck 3/4 ton	F-250	300 Hp		4	24	Mo	30%	5069 hr	3		3.0 gal/hr	Diesel	15,206	0	0	3,041	7,603	3,041	1,521	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	42	Mo	30%	2218 hr	3.5		3.5 gal/hr	Gas	7,762	0	0	1,552	3,881	1,552	776	0
		Material truck 2-1/2 ton	F-650	270 Hp	III	2	42	Mo	30%	4435 hr		0.026	7.0 gal/hr	Diesel	31,135	0	0	6,227	15,568	6,227	3,114	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	2	42	Mo	40%	5914 hr		0.026	3.0 gal/hr	Diesel	17,682	0	0	5,304	7,073	2,652	2,652	0
	PART IIIA GAS														7,762	0	0	1,552	3,881	1,552	776	0
	PART IIIA DIESEL														187,576	0	0	37,515	93,788	37,515	18,758	0
	IIIB. Electrical Installation																			
100%	Electrical Installation																			
	Including:	Crane - Picker	Grove RT530E-2 30t	160 Hp	III	5	42	Mo	60%	4435.2		0.026	4.2 gal/hr	Diesel	18,450	0	0	2,768	7,380	3,690	2,768	1,845
	Conduit, Cable Tray Raceway & Supports	Crane - Picker	Grove RT600E - 50t	173 Hp	III	3	12	Mo	50%	3168 hr		0.026	4.5 gal/hr	Diesel	14,250	0	0	2,137	5,700	2,850	2,137	1,425
	Instrumentation (Racks, mounting, transmitters...)	Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	5	12	Mo	50%	5280 hr	6.3		6.3 gal/hr	Diesel	33,264	0	0	4,990	13,306	6,653	4,990	3,326
	Power & Control Cable & Terminations	Crane - Lattice Boom	Manitowoc 999 - 275t	400 Hp	III	2	12	Mo	50%	2112 hr	8.2		8.2 gal/hr	Diesel	17,318	0	0	2,598	6,927	3,464	2,598	1,732
	Isophase and nonsegregated bus duct	Crane - Lattice Boom	Manitowoc16000 - 440t	500 Hp	III	1	12	Mo	50%	1056 hr	10.4		10.4 gal/hr	Diesel	10,982	0	0	1,647	4,393	2,196	1,647	1,098
	Control room panels, wiring and termination	Boom Lift	JLG 800AJ	65 Hp	III	5	12	Mo	50%	5280 hr		0.026	1.7 gal/hr	Diesel	8,923	0	0	1,338	3,569	1,785	1,338	892
	Local Instrument and control equipment	Boom Lift - 80 ft	Genie S-80	74 Hp	III	5	12	Mo	50%	5280 hr		0.026	1.9 gal/hr	Diesel	10,159	0	0	1,524	4,063	2,032	1,524	1,016
	Switchyard Breakers & Equipment	Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	III	1	12	Mo	40%	845 hr	6.3		6.3 gal/hr	Diesel	5,322	0	0	798	2,129	1,064	798	532
	Equipment and site grounding	Pickup Truck 3/4 ton	F-250	300 Hp		3	24	Mo	40%	5069 hr	3		3.0 gal/hr	Diesel	15,206	0	0	2,281	6,083	3,041	2,281	1,521
	Communications and data systems	Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	42	Mo	30%	2218 hr	3.5		3.5 gal/hr	Gas	7,762	0	0	1,164	3,105	1,552	1,164	776
	Examination, Testing & Start-up	Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	2	42	Mo	40%	5914 hr		0.026	3.0 gal/hr	Diesel	17,682	0	0	2,652	7,073	3,536	2,652	1,768
	PART IIIB GAS														7,762	0	0	1,164	3,105	1,552	1,164	776
	PART IIIB DIESEL														151,557	0	0	22,734	60,623	30,311	22,734	15,156
100%	**IV. Major equipment (heavy) lift and movement**																			
	Including:																			
	Transformers and switchgear	Crane - Lattice Boom	Manitowoc16000 - 440t	500 Hp	III	1	12	Mo	25%	528 hr	10.4		10.4 gal/hr	Diesel	5,491	0	0	549	1,647	2,746	275	275
	Large Motor installations	Crane - Lattice Boom	Manitowoc21000 - 1000t	600 Hp	III	1	12	Mo	25%	528 hr	12.6		12.6 gal/hr	Diesel	6,653	0	0	665	1,996	3,326	333	333
	Reactor vessel, S/G, Containment Liner assemblies	Heavy Transporter	Goldhoffer	600 Hp	III	2	300	Hr	75%	300 hr		0.025	15.0 gal/hr	Diesel	4,500	0	0	0	1,800	2,700	0	0
	Turbine and generator parts and pieces	Heavy Transporter	Goldhoffer	600 Hp	III	1	300	Hr	75%	300 hr		0.025	15.0 gal/hr	Diesel	4,500	0	0	0	1,800	2,700	0	0
	Moisture separators, FW Heaters,	Heavy Transporter	Goldhoffer	600 Hp	III	1	300	Hr	75%	300 hr		0.025	15.0 gal/hr	Diesel	4,500	0	0	0	1,800	2,700	0	0
	PART IV GAS														0	0	0	0	0	0	0	0
	PART IV DIESEL														25,644	0	0	1,214	9,043	14,172	607	607
100%	**V. Construction & Site Support**																			
	Including:	Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	68	Mo	50%	11968 hr		0.026	4.2 gal/hr	Diesel	49,787	0	2,489	7,468	9,957	9,957	9,957	9,957
	Service vehicles	Boom Lift - 80 ft	Genie S-80	74 Hp	III	3	68	Mo	25%	8976 hr		0.026	1.9 gal/hr	Diesel	17,270	0	863	2,590	3,454	3,454	3,454	3,454
	Janitorial / Garbage collection	Pickup Truck 3/4 ton	F-250	300 Hp		3	68	Mo	25%	8976 hr	3		3.0 gal/hr	Diesel	26,928	0	1,346	4,039	5,386	5,386	5,386	5,386
	Snow plowing and road maintenance	Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	68	Mo	10%	1197 hr	3.5		3.5 gal/hr	Gas	4,189	0	209	628	1,047	838	838	628
	Portable lighting	Material truck 2-1/2 ton	F-650	270 Hp	III	1	68	Mo	25%	2992 hr		0.026	7.0 gal/hr	Diesel	21,004	0	1,050	3,151	5,251	4,201	4,201	3,151
	Portable generators	RR switch engine	Estimated 600 Hp	600 Hp	II	1	68	Mo	10%	1197 hr		0.026	15.6 gal/hr	Diesel	18,670	0	934	2,801	4,668	3,734	3,734	2,801
	Welders	Welders		<50 Hp											0							
	Air compressors	Air Compressors		<50 Hp											0							
	Portable lighting	Portable Lighting		<50 Hp											0							
															0							
	PART V GAS														4,189	0	209	628	1,047	838	838	628
	PART V DIESEL														133,659	0	6,683	20,049	28,715	26,732	26,732	24,748
100%	**VI. Final site work/Grading**																			
	Topsoil Restoration - 124,200 cy	Tracked Dozer	Cat D9	410 Hp	III	3	8	Mo	60%	2534 hr	15		15.0 gal/hr	Diesel	38,016	0	0	0	0	0	7,603	30,413
		Tracked Dozer	Cat D7	235 Hp	III	3	8	Mo	60%	2534 hr	9		9.0 gal/hr	Diesel	22,810	0	0	0	0	0	4,562	18,248
		Excavator - Medium	Cat 321D	148 Hp	III	1	8	Mo	50%	704 hr	5		5.0 gal/hr	Diesel	3,520	0	0	0	0	0	704	2,816
		Semi-Trailer Dump	Mack E8	400 Hp	III	6	8	Mo	50%	4224 hr		0.026	10.4 gal/hr	Diesel	43,930	0	0	0	0	0	8,786	35,144
		Motor Grader	Cat 14M	259 Hp	III	2	8	Mo	60%	1690 hr	11		11.0 gal/hr	Diesel	18,586	0	0	0	0	0	3,717	14,868
		Vibratory Soil Compactor	Cat CS74	156 Hp	III	3	8	Mo	60%	2534 hr	6		6.0 gal/hr	Diesel	15,206	0	0	0	0	0	3,041	12,165
		Pickup Truck 3/4 ton	F-250	300 Hp		2	8	Mo	30%	845 hr	3		3.0 gal/hr	Diesel	2,534	0	0	0	0	0	507	2,028
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	8	Mo	50%	704 hr	3.5		3.5 gal/hr	Gas	2,464	0	0	0	0	0	493	1,971
		Fuel Truck	Mack MP6	150 Hp	II	1	8	Mo	10%	141 hr	3.5		3.5 gal/hr	Diesel	493	0	0	0	0	0	99	394
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	2	8	Mo	30%	845 hr		0.026	3.0 gal/hr	Diesel	2,526	0	0	0	0	0	505	2,021
		Material truck 2-1/2 ton	F-650	270 Hp	III	1	8	Mo	30%	422 hr		0.026	7.0 gal/hr	Diesel	2,965	0	0	0	0	0	593	2,372
	PART VI GAS														2,464	0	0	0	0	0	493	1,971
	PART VI DIESEL														150,586	0	0	0	0	0	30,117	120,468

	Section 2 Commercial/Construction Deliveries	Deliveries	Quantity		Units		Distance		Fuel rate mi/gal	Fuel	Total Fuel	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year7
	Construction deliveries and related traffic	**15 Tons per Shipment**																
	Civil Material																	
100%	Construction Equipment Mobilization/Removal	500 moves on + 500 off	1,000		shipments		50 mi		6.5 mi/gal	Diesel	7,692 gal	1,538	2,308	1,154	385	385	769	1,154
100%	Concrete Material (Sand, stone, cement, admixtures)	848,362 tons	56,557		shipments		50 mi		6.5 mi/gal	Diesel	435,057 gal	21,753	87,011	130,517	108,764	43,506	21,753	21,753
100%	Lean Concrete Materials	200,000 cy	13,333		shipments		50 mi		6.5 mi/gal	Diesel	102,564 gal	0	51,282	51,282	0	0	0	0
100%	Engineered fill	500,000 cy	33,333		shipments		50 mi		6.5 mi/gal	Diesel	256,410 gal	0	128,205	128,205	0	0	0	0
100%	Cohesive fill	800,000 cy	53,333		shipments		50 mi		6.5 mi/gal	Diesel	410,256 gal	0	205,128	205,128	0	0	0	0
100%	Formwork	2,393 tons	160		shipments		50 mi		6.5 mi/gal	Diesel	1,227 gal	61	245	430	307	61	61	61
100%	Rebar	55,331 tons	3,689		shipments		50 mi		6.5 mi/gal	Diesel	28,375 gal	1,419	5,675	9,931	7,094	1,419	1,419	1,419
100%	Structural Steel	6,261 tons	417		shipments		75 mi		6.5 mi/gal	Diesel	4,816 gal	0	482	1,926	1,926	241	241	0
100%	Misc. Steel	1,016 tons	68		shipments		75 mi		6.5 mi/gal	Diesel	782 gal	0	0	234	234	78	117	117
100%	Mod Steel	225 tons	15		shipments		75 mi		6.5 mi/gal	Diesel	173 gal	0	0	43	43	52	17	17
100%	Steel Liner	1,412 tons	94		shipments		75 mi		6.5 mi/gal	Diesel	1,086 gal	0	0	434	434	217	0	0
100%	Embedded Steel	1,903 tons	127		shipments		75 mi		6.5 mi/gal	Diesel	1,464 gal	0	220	439	439	293	73	0
100%	Siding & Roofing	2,056 tons	137		shipments		50 mi		6.5 mi/gal	Diesel	1,054 gal	0	0	53	527	474	0	0
100%	Asphalt	21,850 tons	1,457		shipments		50 mi		6.5 mi/gal	Diesel	11,205 gal	0	3,362	3,362	0	0	1,681	2,801
100%	Pre engineered building	60 tons	4		shipments		50 mi		6.5 mi/gal	Diesel	31 gal	0	31	0	0	0	0	0
100%	Construction Debris	12,000 tons	800		shipments		50 mi		6.5 mi/gal	Diesel	6,154 gal	615	615	923	1,231	923	923	923
	Piping and Mechanical Material	7,500 tons	500															
100%	Large and Small bore pipe	7,500 tons	500		shipments		75 mi		6.5 mi/gal	Diesel	5,769 gal	0	0	1,154	2,019	1,731	577	288
100%	Large bore hangers	2,788 tons	186		shipments		75 mi		6.5 mi/gal	Diesel	2,145 gal	0	0	429	751	643	214	107
100%	Nuclear Island EM package equipment	15,377 tons	1,025		shipments		150 mi		6.5 mi/gal	Diesel	23,657 gal	0	0	4,731	8,280	7,097	2,366	1,183
100%	Turbine Island and BOP Mechanical Equipment	Estimated	1000		shipments		150 mi		6.5 mi/gal	Diesel	23,077 gal	0	0	4,615	8,077	6,923	2,308	1,154
100%	Consumables	Estimated	1000		shipments		50 mi		8.0 mi/gal	Gas	6,250 gal	0	0	1,250	2,188	1,875	625	313
	Electrical Equipment																	
100%	Conduit	1,356 tons	90		shipments		50 mi		6.5 mi/gal	Diesel	692 gal	0	0	104	242	208	69	69
100%	Cable Tray	75 tons	49		shipments		50 mi		6.5 mi/gal	Diesel	377 gal	0	0	57	132	113	38	38
100%	Power & Control wire	4,406 tons	294		shipments		75 mi		6.5 mi/gal	Diesel	3,389 gal	0	0	508	1,017	1,186	339	339
100%	NI Electrical Equipment	5,000 tons	333		shipments		150 mi		8.0 mi/gal	Gas	6,250 gal	0	0	938	1,875	2,188	625	625
100%	TI Electrical Equipment	5,000 tons	333		shipments		150 mi		8.0 mi/gal	Gas	6,250 gal	0	0	938	1,875	2,188	625	625
	Site Support Services																	
100%	Fuel deliveries	Based on fuel usage from Section 1	827		shipments		50 mi		6.5 mi/gal	Diesel	6,364 gal	1,273	1,591	955	636	636	636	636
100%	Vendor deliveries	4 /day	5984		trips		50 mi		15.0 mi/gal	Gas	19,947 gal	0	997	4,987	4,987	4,987	1,995	1,995
100%	Equipment service calls	3 /day	4488		trips		50 mi		18.0 mi/gal	Gas	12,467 gal	0	623	623	1,870	1,870	3,740	3,740
	COMMERCIAL/DELIVERIES GAS										51,163	0	1,621	8,735	12,794	13,107	7,610	7,297
	COMMERCIAL/DELIVERIES DIESEL										1,333,817	26,660	486,155	546,615	142,539	66,187	33,602	32,060

100%	Section 3 Workforce Commute	Average Workforce KLD Traffic Study Const Staffing Profile RFI EPR-11-039	Commuters = 1.3 person/car	Average Round trip Distance	Average Fuel rate (mi/gal)	Fuel	Total Fuel	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year7
	Year 1	150	115	50 mi	20.0 mi/gal	Gas	82,800	82,800						
				50 mi	18.0 mi/gal	Diesel	8,000	8,000						
	Year 2	550	423	50 mi	20.0 mi/gal	Gas	303,600		303,600					
				50 mi	18.0 mi/gal	Diesel	29,333		29,333					
	Year 3	1950	1,500	50 mi	20.0 mi/gal	Gas	1,076,400			1,076,400				
				50 mi	18.0 mi/gal	Diesel	104,000			104,000				
	Year 4	3800	2,923	50 mi	20.0 mi/gal	Gas	2,097,600				2,097,600			
				50 mi	18.0 mi/gal	Diesel	202,667				202,667			
	Year 5	3800	2,923	50 mi	20.0 mi/gal	Gas	2,097,600					2,097,600		
				50 mi	18.0 mi/gal	Diesel	202,667					202,667		
	Year 6	2000	1,538	50 mi	20.0 mi/gal	Gas	1,104,000						1,104,000	
				50 mi	18.0 mi/gal	Diesel	106,667						106,667	
	Year 7	400	308	50 mi	20.0 mi/gal	Gas	220,800							220,800
				50 mi	18.0 mi/gal	Diesel	21,333							21,333
	WORK FORCE COMMUTE GAS						6,762,000	82,800	303,600	1,076,400	2,097,600	2,097,600	1,104,000	0
	WORK FORCE COMMUTE DIESEL						653,333	8,000	29,333	104,000	202,667	202,667	106,667	0

Fuel Consumption Summary

Non-Road Equipment Summary		Fuel	Total Fuel	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year7
Luzern County	100%	Diesel	4,854,651	1,317,916	1,350,552	786,782	693,655	376,093	142,040	187,613
		Gas	109,169	11,004	14,298	27,546	26,993	18,394	5,821	5,113
Construction Deliveries Summary		**Fuel**	**Total Fuel**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year7**
Wyoming, Lackawanna, Luzern, and Monroe	45%	Diesel	600,218	11,997	218,770	245,977	64,143	29,784	15,121	14,427
		Gas	23,024	0	729	3,931	5,757	5,898	3,424	3,284
Lehigh, Carbon, Northampton, and Lancaster	10%	Diesel	133,382	2,666	48,615	54,662	14,254	6,619	3,360	3,206
		Gas	5,116	0	162	874	1,279	1,311	761	730
Columbia, Schuykill	45%	Diesel	600,218	11,997	218,770	245,977	64,143	29,784	15,121	14,427
		Gas	23,024	0	729	3,931	5,757	5,898	3,424	3,284
Total		Diesel	1,333,817	26,660	486,155	546,615	142,539	66,187	33,602	32,060
		Gas	51,163	0	1,621	8,735	12,794	13,107	7,610	7,297
Workforce Commute		**Fuel**	**Total Fuel**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year7**
Carbon	16%	Diesel	107,947	1,280	4,693	16,640	32,427	32,427	17,067	3,413
		Gas	1,117,248	13,248	48,576	172,224	335,616	335,616	176,640	35,328
Columbia	15%	Diesel	101,200	1,200	4,400	15,600	30,400	30,400	16,000	3,200
		Gas	1,047,420	12,420	45,540	161,460	314,640	314,640	165,600	33,120
Lackawanna	8%	Diesel	53,973	640	2,347	8,320	16,213	16,213	8,533	1,707
		Gas	558,624	6,624	24,288	86,112	167,808	167,808	88,320	17,664
Luzerne	44%	Diesel	296,853	3,520	12,907	45,760	89,173	89,173	46,933	9,387
		Gas	3,072,432	36,432	133,584	473,616	922,944	922,944	485,760	97,152
Montour	4%	Diesel	26,987	320	1,173	4,160	8,107	8,107	4,267	853
		Gas	279,312	3,312	12,144	43,056	83,904	83,904	44,160	8,832
Northumberland	3%	Diesel	20,240	240	880	3,120	6,080	6,080	3,200	640
		Gas	209,484	2,484	9,108	32,292	62,928	62,928	33,120	6,624
Schuykill	10%	Diesel	67,467	800	2,933	10,400	20,267	20,267	10,667	2,133
		Gas	698,280	8,280	30,360	107,640	209,760	209,760	110,400	22,080
Wyoming	1%	Diesel	6,747	80	293	1,040	2,027	2,027	1,067	213
		Gas	69,828	828	3,036	10,764	20,976	20,976	11,040	2,208
Total		Diesel	674,667	8,000	29,333	104,000	202,667	202,667	106,667	21,333
		Gas	6,982,800	82,800	303,600	1,076,400	2,097,600	2,097,600	1,104,000	220,800
Project Fuel Usage Summary		**Fuel**	**Total Fuel**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year7**
		Diesel	6,863,136	1,352,576	1,866,040	1,437,397	1,038,861	644,946	282,309	241,007
		Gas	7,143,133	93,804	319,519	1,112,681	2,137,387	2,129,100	1,117,431	233,210

% Safety-Related	Section 1 Non-Road Construction Equipment	Equipment	Class/Model #	HP	Tier	Qnty	On Site	Wk%	Hours or Distance	g/h	g/h/hp	Average Fuel Rate	Fuel	Total Fuel (Gal)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year7
	IA. Early Site Preparation																				
0%	Clearing, Deforesting, Grubbing & Grading																				
	Including:	Tracked Dozer	Cat D10	700 Hp	III	4	5 Mo	75%	3300 hr	20		20.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Access Roads	Tracked Loader	CAT 973C	263 Hp	III	3	5 Mo	75%	2475 hr	10		10.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Topsoil cut & stockpile	Excavator - Medium	Cat 321D	148 Hp	III	3	5 Mo	60%	1980 hr	5		5.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Topsoil Removal- 503414 cy	Excavator - With tree attachment	Cat 345D L	380 Hp	III	1	5 Mo	60%	660 hr	10		10.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Used for final grading - 128,000 cy	Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	5 Mo	40%	880 hr		0.028	4.5 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Topsoil Stockpiled - 376257cy	Semi-Trailer Dump	Mack MP8	450 Hp	III	10	5 Mo	50%	5500 hr		0.026	11.7 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Motor Grader	Cat 14M	259 Hp	III	2	5 Mo	45%	990 hr	11		11.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Scraper	Cat 631G	462 Hp	III	8	5 Mo	60%	5280 hr	16		16.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Scraper	Cat 631G	462 Hp	III	3	5 Mo	60%	1980 hr	16		16.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Vibratory Soil Compactor	Cat CS74	156 Hp	III	1	5 Mo	60%	660 hr	6		6.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Water Trucks	Mack MP6	150 Hp	II	1	5 Mo	40%	440 hr	3.5		3.5 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		2	5 Mo	50%	1100 hr	3		3.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		2	5 Mo	50%	1100 hr	3.5		3.5 gal/hr	Gas	0	0	0	0	0	0	0	0
		Fuel Truck	Mack MP6	150 Hp	II	2	5 Mo	20%	440 hr	3.5		3.5 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Mechanic's Truck 2-1/2 ton	F-650	270 Hp	III	1	5 Mo	30%	300 hr	4	0.026	4.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	IB. Site Development & Excavation																				
0%	Excavating/Backfilling/Earth/Soil/Rock Remove & Disposal - **Intake Area, Switchyard, Northeast Laydown, West Laydown**																				
	Estimated Quantities:	Tracked Dozer/Ripper	Cat D10	700 Hp	III	7	4 Mo	75%	4200 hr	20		20.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Removal - 870,471cy	Scraper	Cat 637G (dual engine)	962 Hp	III	6	4 Mo	50%	2400 hr	32		32.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Placement - 881,664cy	Excavator - Medium	Cat 321D	148 Hp	III	1	4 Mo	60%	480 hr	5		5.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Tracked Loader	CAT 973C	263 Hp	III	6	4 Mo	70%	3360 hr	10		10.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Motor Grader	Cat 14M	259 Hp	III	1	4 Mo	50%	400 hr	11		11.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		1	4 Mo	35%	280 hr	3		3.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Water Trucks	Mack MP6	150 Hp	II	1	4 Mo	50%	400 hr	3.5		3.5 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		2	4 Mo	40%	640 hr	3.5		3.5 gal/hr	Gas	0	0	0	0	0	0	0	0
0%	Excavating/Backfilling/Earth/Soil/Rock Remove & Disposal - **Powerblock (Includes GIS, Switchyard, Cooling towers and North central laydown area)**																				
	Estimated Quantities:	Tracked Dozer/Ripper	Cat D10	700 Hp	III	4	13 Mo	60%	6240 hr	20		20.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Removal - 10,837,579 cy	Tracked Dozer/Disk	Cat D9	410 Hp	III	1	13 Mo	60%	1560 hr	15		15.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Placement - 2,681,000 cy	Tracked Loader	CAT 973C	263 Hp	III	2	13 Mo	60%	3120 hr	10		10.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Scraper	Cat 637G (dual engine)	962 Hp	III	15	13 Mo	50%	19500 hr	32		32.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
10%		Vibratory Soil Compactor	Cat CS74	156 Hp	III	2	13 Mo	45%	2340 hr	6		6.0 gal/hr	Diesel	1,404	281	562	562	0	0	0	0
10%		Soil Compactor	Cat 825H	400 Hp	III	2	13 Mo	45%	2340 hr	18		18.0 gal/hr	Diesel	4,212	842	1,685	1,685	0	0	0	0
		Excavator - Medium	Cat 321D	148 Hp	III	2	13 Mo	60%	3120 hr	5		5.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Tracked Loader	CAT 973C	263 Hp	III	6	13 Mo	70%	10920 hr	10		10.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Motor Grader	Cat 14M	259 Hp	III	2	13 Mo	50%	2600 hr	11		11.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Excavator - Large	Cat 375L	428 Hp	III	5	13 Mo	60%	7800 hr	16		16.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Off Road Truck (80 ton payload)	Cat 773	650 Hp	III	30	13 Mo	45%	35100 hr	16		16.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		3	13 Mo	35%	2730 hr	3		3.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Water Trucks	Mack MP6	150 Hp	II	2	13 Mo	50%	2600 hr	3.5		3.5 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Water Wagon 8000 gal	Cat 631G	462 Hp	II	1	13 Mo	50%	1300 hr	16		16.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Mechanic's Truck 2-1/2 ton	F-650	270 Hp	III	2	13 Mo	30%	1560 hr	4	0.026	4.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
80%		End Loader (Batch Plant)	Cat 966H	262 Hp	III	2	4 Mo	50%	704 hr	5		5.0 gal/hr	Diesel	2,816	0	2,112	704	0	0	0	0
80%		Concrete Truck	Mack MP6	150 Hp	III	15	4 Mo	33%	3485 hr	3.5		3.5 gal/hr	Diesel	9,757	0	7,318	2,439	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		1	13 Mo	50%	1300 hr	3		3.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		2	13 Mo	40%	2080 hr	3.5		3.5 gal/hr	Gas	0	0	0	0	0	0	0	0
		Fuel Truck	Mack MP6	150 Hp	II	4	13 Mo	20%	2080 hr	3.5		3.5 gal/hr	Diesel	0	0	0	0	0	0	0	0
0%	Excavating/Backfilling/Earth/Soil/Rock Remove & Disposal - **Parking**																				
	Estimated Quantities:	Tracked Dozer	Cat D7E	235 Hp	III	2	5 Mo	75%	1500 hr	9		9.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Removal 287,820cy	Scraper	Cat 631G	462 Hp	III	1	5 Mo	50%	500 hr	16		16.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Placement 1,413,639 cy	Vibratory Soil Compactor	Cat CS74	156 Hp	III	2	5 Mo	45%	900 hr	6		6.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Soil Compactor	Cat 825H	400 Hp	III	2	5 Mo	45%	900 hr	18		18.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Excavator - Medium	Cat 321D	148 Hp	III	1	5 Mo	60%	600 hr	5		5.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Tracked Loader	CAT 973C	263 Hp	III	1	5 Mo	70%	700 hr	10		10.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Motor Grader	Cat 14M	259 Hp	III	1	5 Mo	50%	500 hr	11		11.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Asphalt Paver	Barber GreeneAP-1000	174 Hp	III	1	5 Mo	50%	500 hr	6		6.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Asphalt Compactor	Cat CB434C	107 Hp	III	1	5 Mo	50%	500 hr	4		4.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Water Trucks	Mack MP6	150 Hp	II	1	5 Mo	50%	500 hr	3.5		3.5 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		1	5 Mo	35%	350 hr	3		3.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Fuel Truck	Mack MP6	150 Hp	II	1	5 Mo	20%	200 hr	3.5		3.5 gal/hr	Diesel	0	0	0	0	0	0	0	0

0%	Excavating/Backfilling/Earth/Soil/Rock Remove & Disposal - Support road (Includes Quarry, Batch plant, Central laydown)																				
	Estimated Quantities:	Tracked Dozer	Cat D7E	235 Hp	III	4	15	Mo	75%	9000 hr	9		9.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Removal - 364,572 cy	Scraper	Cat 637G (dual engine)	962 Hp	III	3	15	Mo	50%	4500 hr	32		32.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Placement - 2,819,652 cy	Vibratory Soil Compactor	Cat CS74	156 Hp	III	1	15	Mo	45%	1350 hr	6		6.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Soil Compactor	Cat 825H	400 Hp	III	2	15	Mo	45%	2700 hr	18		18.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Excavator - Medium	Cat 321D	148 Hp	III	2	15	Mo	60%	3600 hr	5		5.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Tracked Loader	CAT 973C	263 Hp	III	2	15	Mo	70%	4200 hr	10		10.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Motor Grader	Cat 14M	259 Hp	III	2	8	Mo	50%	1600 hr	11		11.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Asphalt Paver	Barber GreeneAP-1000	174 Hp	III	1	5	Mo	50%	500 hr	6		6.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Asphalt Compactor	Cat CB434C	107 Hp	III	1	5	Mo	50%	500 hr	4		4.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		1	15	Mo	35%	1050 hr	3		3.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Water Trucks	Mack MP6	150 Hp	II	2	15	Mo	40%	2400 hr	3.5		3.5 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Water Wagon 8000 gal	Cat 631G	462 Hp	II	1	15	Mo	40%	1200 hr	18		18.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		2	15	Mo	50%	3000 hr	3.5		3.5 gal/hr	Gas	0	0	0	0	0	0	0	0
0%	Excavating/Backfilling/Earth/Soil/Rock Remove & Disposal - South Laydown																				
	Estimated Quantities:	Tracked Dozer	Cat D10	700 Hp	III	4	4	Mo	75%	2400 hr	20		20.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Removal - 142,188cy	Soil Compactor	Cat 825H	400 Hp	III	1	4	Mo	45%	360 hr	18		18.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Placement - 3,815,583cy	Excavator - Medium	Cat 321D	148 Hp	III	3	4	Mo	60%	1440 hr	5		5.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Motor Grader	Cat 14M	259 Hp	III	1	4	Mo	50%	400 hr	11		11.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Water Trucks	Mack MP6	150 Hp	II	1	4	Mo	50%	400 hr	3.5		3.5 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	4	Mo	50%	400 hr	3.5		3.5 gal/hr	Gas	0	0	0	0	0	0	0	0
0%	Boring/Soils investigation																				
	Includes Wells & Dewatering	Schramm T64 Well Drilling Rig	Cat 3406 diesel	420 Hp	II	1	4	Mo	35%	246 hr		0.026	10.9 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		1	4	Mo	50%	352 hr	3		3.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
50%	Underground utilities, piping, duct runs, grounding																				
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	8	Mo	40%	1126 hr		0.026	4.2 gal/hr	Diesel	2,343	0	1,171	1,171	0	0	0	0
		Tracked Dozer	Cat D7E	235 Hp	III	2	8	Mo	60%	1690 hr	9		9.0 gal/hr	Diesel	7,603	0	3,802	3,802	0	0	0	0
		Backhoe	Cat 430E	102 Hp	III	6	8	Mo	60%	5069 hr		0.028	2.9 gal/hr	Diesel	7,238	0	2,895	2,171	2,171	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		8	8	Mo	40%	4506 hr	3		3.0 gal/hr	Diesel	6,758	0	2,703	2,703	1,352	0	0	0
		Excavator - Medium	Cat 321D	148 Hp	III	2	8	Mo	60%	1690 hr	5		5.0 gal/hr	Diesel	4,224	0	2,534	1,690	0	0	0	0
		Semi-Trailer Dump	Mack E8	400 Hp	III	1	8	Mo	60%	845 hr		0.026	10.4 gal/hr	Diesel	4,393	0	2,196	1,757	439	0	0	0
50%	Warehouse & Storage																				
	Construction & Operation	Fork Lift - 15,000 Lb capacity	Cat DP70E	94 Hp	III	2	68	Mo	35%	8378 hr		0.033	3.1 gal/hr	Diesel	12,994	0	1,299	2,599	3,898	3,248	1,299	650
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	68	Mo	40%	9574 hr		0.026	4.2 gal/hr	Diesel	19,915	0	1,991	3,983	5,974	4,979	1,991	996
		Pickup Truck 3/4 ton	F-250	300 Hp		2	68	Mo	50%	11968 hr	3		3.0 gal/hr	Diesel	17,952	0	1,795	3,590	5,386	4,488	1,795	898
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	68	Mo	30%	3590 hr	3.5		3.5 gal/hr	Gas	6,283	0	628	1,257	1,885	1,571	628	314
		Material truck 2-1/2 ton	F-650	270 Hp	III	1	68	Mo	25%	2992 hr		0.026	7.0 gal/hr	Diesel	10,502	0	1,050	2,100	3,151	2,625	1,050	525
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	1	68	Mo	45%	5386 hr		0.026	3.0 gal/hr	Diesel	8,051	0	805	1,610	2,415	2,013	805	403
	PART 1 PRE-CONSTRUCTION GAS														6,283	0	628	1,257	1,885	1,571	628	314
	PART 1 PRE-CONSTRUCTION DIESEL														120,163	1,123	33,920	32,567	24,787	17,353	6,941	3,471
	IIIA. Civil/Concrete structure Work																				
0%	Bridge Construction (7 Bridges)																				
		Tracked Dozer	Cat D10	700 Hp	III	3	12	Mo	50%	3600 hr	20		20.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Tracked Dozer	Cat D8	305 Hp	III	2	12	Mo	50%	2400 hr	11.5		11.5 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Soil Compactor	Cat 825H	400 Hp	III	2	12	Mo	45%	2160 hr	18		18.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Excavator - Medium	Cat 321D	148 Hp	III	4	12	Mo	50%	4800 hr	5		5.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Motor Grader	Cat 14M	259 Hp	III	1	12	Mo	40%	960 hr	11		11.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Water Trucks	Mack MP6	150 Hp	II	1	12	Mo	50%	1200 hr	3.5		3.5 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Concrete Truck	Mack MP6	150 Hp	III	5	12	Mo	45%	4752 hr	3.5		3.5 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Tractor Loader/Backhoe	Case 580	80 Hp	III	3	12	Mo.	60%	3802 hr		0.028	2.2 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	4	12	Mo	50%	4224 hr		0.026	4.2 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	2	12	Mo	50%	2112 hr	6.3		6.3 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Truck Mtd Boom 200 yds/hr Concrete Pump	Putzmeister 47Z-Meter	300 Hp	III	1	12	Mo	25%	528 hr		0.028	6.4 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		2	12	Mo	25%	1056 hr	3		3.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	12	Mo	25%	528 hr	3.5		3.5 gal/hr	Gas	0	0	0	0	0	0	0	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	2	12	Mo	45%	1901 hr		0.026	3.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		End Loader (Batch Plant)	Cat 966H	262 Hp	III	1	12	Mo	50%	1056 hr	5		5.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
0%	Sheet Piling																				
		Crane - Lattice Boom+Hammer	Manitowoc 111 - 80t	205 Hp	III	1	4	Mo	50%	352 hr	5.3		5.3 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	4	Mo	35%	493 hr		0.026	4.2 gal/hr	Diesel	0	0	0	0	0	0	0	0

50%	Structural concrete																				
		Truck Mtd Boom 200 yds/hr Concrete Pump	Putzmeister 47Z-Meter	300 Hp	III	5	2000	Hr	75%	7500 hr		0.028	8.4 gal/hr	Diesel	31,500	0	3,150	9,450	9,450	6,300	1,575	1,575
		Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	5	36	Mo	25%	7920 hr	6.3		6.3 gal/hr	Diesel	24,948	0	2,495	7,484	7,484	4,990	1,247	1,247
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	5	36	Mo	30%	9504 hr		0.026	4.2 gal/hr	Diesel	19,768	0	1,977	5,930	5,930	3,954	988	988
		Pickup Truck 3/4 ton	F-250	300 Hp		12	36	Mo	25%	19008 hr	3		3.0 gal/hr	Diesel	28,512	0	2,851	8,554	8,554	5,702	1,426	1,426
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		4	36	Mo	25%	6336 hr	3.5		3.5 gal/hr	Gas	11,088	0	1,109	3,326	3,326	2,218	554	554
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	6	36	Mo	45%	17107 hr		0.026	3.0 gal/hr	Diesel	25,575	0	2,558	7,673	7,673	5,115	1,279	1,279
		End Loader (Batch Plant)	Cat 966H	262 Hp	III	2	36	Mo	50%	6336 hr	5		5.0 gal/hr	Diesel	15,840	0	1,584	4,752	4,752	3,168	792	792
		Concrete Truck	Mack MP6	150 Hp	III	10	36	Mo	33%	20909 hr	3.5		3.5 gal/hr	Diesel	36,590	0	3,659	10,977	10,977	7,318	1,830	1,830
		Tractor Loader/Backhoe	Case 580	80 Hp	III	4	36	Mo.	50%	12672 hr		0.028	2.2 gal/hr	Diesel	14,193	0	1,419	4,258	4,258	2,839	710	710
0%	Non Power Block - Pump House, Switchyard, Cooling Towers, Pump House																				
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	36	Mo	67%	8490 hr		0.026	4.2 gal/hr	Diesel	0	0		0	0	0	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		2	36	Mo	40%	5069 hr	3		3.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	36	Mo	40%	2534 hr	3.5		3.5 gal/hr	Gas	0	0	0	0	0	0	0	0
		Material truck 2-1/2 ton (Licensed for off site use	F-650	270 Hp	III	1	36	Mo	25%	1584 hr	4		4.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Truck Mounted Boom Concrete Pump	Putzmeister 47Z-Meter	300 Hp	III	3	12	Mo	30%	1901 hr		0.028	8.4 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	2	36	Mo	50%	6336 hr	6.3		6.3 gal/hr	Diesel	0	0	0	0	0	0	0	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	1	24	Mo	45%	1901 hr		0.026	3.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
25%	Switchyard																				
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	18	Mo	50%	3168 hr		0.026	4.2 gal/hr	Diesel	3,295	0	0	1,647	1,318	329	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		2	18	Mo	40%	2534 hr	3.5		3.5 gal/hr	Gas	2,218	0	0	1,109	887	222	0	0
		Material truck 2-1/2 ton	F-650	270 Hp	III	1	18	Mo	25%	792 hr		0.026	7.0 gal/hr	Diesel	1,390	0	0	695	556	139	0	0
		Truck Mounted Boom Concrete Pump	Putzmeister 47Z-Meter	300 Hp	III	3	18	Mo	10%	950 hr		0.028	8.4 gal/hr	Diesel	1,996	0	0	1,497	499	0	0	0
		Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	1	18	Mo	25%	792 hr	6.3		6.3 gal/hr	Diesel	1,247	0		936	312	0	0	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	1	18	Mo	45%	1426 hr		0.026	3.0 gal/hr	Diesel	1,066	0		799	266	0	0	0
10%	Cooling Tower																				
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	4	18	Mo	67%	8490 hr		0.026	4.2 gal/hr	Diesel	3,532	0	0	0	1,060	2,472	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		3	18	Mo	40%	3802 hr	3		3.0 gal/hr	Diesel	1,140	0	0	0	342	798	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	18	Mo	40%	1267 hr	3.5		3.5 gal/hr	Gas	444	0	0	0	133	310	0	0
		Material truck 2-1/2 ton	F-650	270 Hp	III	1	18	Mo	25%	792 hr		0.026	7.0 gal/hr	Diesel	556	0	0	0	167	389	0	0
		Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	2	18	Mo	25%	1584 hr	6.3		6.3 gal/hr	Diesel	998	0	0	0	299	699	0	0
		Truck Mounted Boom Concrete Pump	Putzmeister 47Z-Meter	300 Hp	III	3	12	Mo	30%	1901 hr		0.028	8.4 gal/hr	Diesel	1,597	0	0	0	479	1,118	0	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	1	36	Mo	45%	2851 hr		0.026	3.0 gal/hr	Diesel	853	0	0	0	256	597	0	0
	PART IIA GAS														13,748	0	1,109	4,435	4,346	0	0	0
	PART IIA DIESEL														214,596	0	19,693	64,652	0	0	0	0
40%	**IIB. Superstructure & Structural Steel**																				
	Structural and building steel																				
		Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	5	12	Mo	50%	5280 hr	6.3		6.3 gal/hr	Diesel	13,306	0	0	2,661	9,979	665	0	0
		Crane - Lattice Boom	Manitowoc 999 - 275t	400 Hp	III	4	12	Mo	50%	4224 hr	8.2		8.2 gal/hr	Diesel	13,855	0	0	2,771	10,391	693	0	0
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	7	12	Mo	67%	9905 hr		0.026	4.2 gal/hr	Diesel	16,482	0	0	3,296	12,362	824	0	0
		Crane - Picker	Grove RT600E - 50t	173 Hp	III	7	12	Mo	60%	8870 hr		0.026	4.5 gal/hr	Diesel	15,960	0	0	3,192	11,970	798	0	0
		Boom Lift	JLG 800AJ	65 Hp	III	8	12	Mo	60%	10138 hr		0.026	1.7 gal/hr	Diesel	6,853	0	0	1,371	5,140	343	0	0
		Boom Lift - 80 ft	Genie S-80	74 Hp	III	8	12	Mo	60%	10138 hr		0.026	1.9 gal/hr	Diesel	7,802	0	0	1,560	5,851	390	0	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	8	12	Mo	60%	10138 hr		0.026	3.0 gal/hr	Diesel	12,125	0	0	2,425	9,093	606	0	0
	Building Modules & Heavy Lifts																				
		Crane - Manitowoc	21000 - 1000t	600 Hp	III	1	24	Mo	20%	845 hr	12.6		12.6 gal/hr	Diesel	4,258	0	0	0	2,129	2,129	0	0
		Crane - Manitowoc	31000 - 2300t	1,200 Hp	III	1	12	Mo	20%	422 hr	24		24.0 gal/hr	Diesel	4,055	0	0	2,028	2,028	0	0	0
	Building Siding/Insulated Panels																				
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	6	Mo	50%	1056 hr		0.026	4.2 gal/hr	Diesel	1,757	0	0	0	527	1,230	0	0
		Boom Lift - 80 ft	Genie S-80	74 Hp	III	3	6	Mo	70%	2218 hr		0.026	1.9 gal/hr	Diesel	1,707	0	0	0	512	1,195	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		2	6	Mo	40%	845 hr	3		3.0 gal/hr	Diesel	1,014	0	0	0	304	710	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	6	Mo	40%	422 hr	3.5		3.5 gal/hr	Gas	591	0	0	0	177	414	0	0
		Material truck 2-1/2 ton	F-650	270 Hp	III	1	6	Mo	50%	528 hr		0.026	7.0 gal/hr	Diesel	1,483	0	0	0	445	1,038	0	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	2	6	Mo	50%	1056 hr		0.026	3.0 gal/hr	Diesel	1,263	0	0	0	379	884	0	0
	Roofing																				
		Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	6	Mo	45%	950 hr		0.026	4.2 gal/hr	Diesel	1,581	0	0	0	0	1,581	0	0
		Boom Lift - 80 ft	Genie S-80	74 Hp	III	3	6	Mo	45%	1426 hr		0.026	1.9 gal/hr	Diesel	1,097	0	0	0	0	1,097	0	0
		Pickup Truck 3/4 ton	F-250	300 Hp		1	6	Mo	40%	422 hr	3		3.0 gal/hr	Diesel	507	0	0	0	0	507	0	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	6	Mo	40%	422 hr	3.5		3.5 gal/hr	Gas	591	0	0	0	0	591	0	0
		Material truck 2-1/2 ton	F-650	270 Hp	III	1	6	Mo	50%	528 hr		0.026	7.0 gal/hr	Diesel	1,483	0	0	0	0	1,483	0	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	2	6	Mo	45%	950 hr		0.026	3.0 gal/hr	Diesel	1,137	0	0	0	0	1,137	0	0
	PART IIB GAS														1,183	0	0	0	177	1,005	0	0
	PART IIB DIESEL														107,723	0	0	19,304	71,110	17,309	0	0

	IIIA. Mechanical Installation																			
50%	Mechanical Installation																			
	Including:	Crane - Picker	Grove RT530E-2 30t	160 Hp	III	5	42	Mo	40%	14784 hr		0.026	4.2 gal/hr	Diesel	30,751	0	0	6,150	15,375	6,150	3,075	0
	Piping, Hangers & Pipe Specialties	Crane - Picker	Grove RT600E - 50t	173 Hp	III	3	12	Mo	40%	2534 hr		0.026	4.5 gal/hr	Diesel	5,700	0	0	1,140	2,850	1,140	570	0
	Valves and Actuators	Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	5	12	Mo	40%	4224 hr	6.3		6.3 gal/hr	Diesel	13,306	0	0	2,661	6,653	2,661	1,331	0
	HVAC Ductwork, Dampers, Actuators, Fans	Crane - Lattice Boom	Manitowoc 999 - 275t	400 Hp	III	2	12	Mo	40%	1690 hr	8.2		8.2 gal/hr	Diesel	6,927	0	0	1,385	3,464	1,385	693	0
	Pump, chillers, coolers, Hx, Equipment	Crane - Lattice Boom	Manitowoc16000 - 440t	500 Hp	III	1	12	Mo	40%	845 hr	10.4		10.4 gal/hr	Diesel	4,393	0	0	879	2,196	879	439	0
	Air compressors	Boom Lift	JLG 800AJ	65 Hp	III	5	12	Mo	50%	5280 hr		0.026	1.7 gal/hr	Diesel	4,462	0	0	892	2,231	892	446	0
	Examination, Testing & Start-up	Boom Lift - 80 ft	Genie S-80	74 Hp	III	5	12	Mo	50%	5280 hr		0.026	1.9 gal/hr	Diesel	5,079	0	0	1,016	2,540	1,016	508	0
		Pickup Truck 3/4 ton	F-250	300 Hp		4	24	Mo	30%	5069 hr	3		3.0 gal/hr	Diesel	7,603	0	0	1,521	3,802	1,521	760	0
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	42	Mo	30%	2218 hr	3.5		3.5 gal/hr	Gas	3,881	0	0	776	1,940	776	388	0
		Material truck 2-1/2 ton	F-650	270 Hp	III	2	42	Mo	30%	4435 hr		0.026	7.0 gal/hr	Diesel	15,568	0	0	3,114	7,784	3,114	1,557	0
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	2	42	Mo	40%	5914 hr		0.026	3.0 gal/hr	Diesel	8,841	0	0	2,652	3,536	1,326	1,326	0
	PART IIIA GAS														3,881	0	0	776	1,940	776	388	0
	PART IIIA DIESEL														93,786	0	0	18,758	46,894	18,758	9,379	0
	IIIB. Electrical Installation																			
50%	Electrical Installation																			
	Including:	Crane - Picker	Grove RT530E-2 30t	160 Hp	III	5	42	Mo	60%	4435.2		0.026	4.2 gal/hr	Diesel	9,225	0	0	1,384	3,690	1,845	1,384	923
	Conduit, Cable Tray Raceway & Supports	Crane - Picker	Grove RT600E - 50t	173 Hp	III	3	12	Mo	50%	3168 hr		0.026	4.5 gal/hr	Diesel	7,125	0	0	1,069	2,850	1,425	1,069	712
	Instrumentation (Racks, mounting, transmitters...)	Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	II	5	12	Mo	50%	5280 hr	6.3		6.3 gal/hr	Diesel	16,632	0	0	2,495	6,653	3,326	2,495	1,663
	Power & Control Cable & Terminations	Crane - Lattice Boom	Manitowoc 999 - 275t	400 Hp	III	2	12	Mo	50%	2112 hr	8.2		8.2 gal/hr	Diesel	8,659	0	0	1,299	3,464	1,732	1,299	866
	Isophase and nonsegregated bus duct	Crane - Lattice Boom	Manitowoc16000 - 440t	500 Hp	III	1	12	Mo	50%	1056 hr	10.4		10.4 gal/hr	Diesel	5,491	0	0	824	2,196	1,098	824	549
	Control room panels, wiring and termination	Boom Lift	JLG 800AJ	65 Hp	III	5	12	Mo	50%	5280 hr		0.026	1.7 gal/hr	Diesel	4,462	0	0	669	1,785	892	669	446
	Local Instrument and control equipment	Boom Lift - 80 ft	Genie S-80	74 Hp	III	5	12	Mo	50%	5280 hr		0.026	1.9 gal/hr	Diesel	5,079	0	0	762	2,032	1,016	762	508
	Switchyard Breakers & Equipment	Crane - Lattice Boom	Manitowoc 555 - 150t	355 Hp	III	1	12	Mo	40%	845 hr	6.3		6.3 gal/hr	Diesel	2,661	0	0	399	1,064	532	399	266
	Equipment and site grounding	Pickup Truck 3/4 ton	F-250	300 Hp		3	24	Mo	40%	5069 hr	3		3.0 gal/hr	Diesel	7,603	0	0	1,140	3,041	1,521	1,140	760
	Communications and data systems	Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	42	Mo	30%	2218 hr	3.5		3.5 gal/hr	Gas	3,881	0	0	582	1,552	776	582	388
	Examination, Testing & Start-up	Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	2	42	Mo	40%	5914 hr		0.026	3.0 gal/hr	Diesel	8,841	0	0	1,326	3,536	1,768	1,326	884
	PART IIIB GAS														3,881	0	0	582	1,552	776	582	388
	PART IIIB DIESEL														75,779	0	0	11,367	30,311	15,156	11,367	7,578
75%	**IV. Major equipment (heavy) lift and movement**																			
	Including:																			
	Transformers and switchgear	Crane - Lattice Boom	Manitowoc16000 - 440t	500 Hp	III	1	12	Mo	25%	528 hr	10.4		10.4 gal/hr	Diesel	4,118	0	0	412	1,236	2,059	206	206
	Large Motor installations	Crane - Lattice Boom	Manitowoc21000 - 1000t	600 Hp	III	1	12	Mo	25%	528 hr	12.6		12.6 gal/hr	Diesel	4,990	0	0	499	1,497	2,495	249	249
	Reactor vessel, S/G, Containment Liner assemblies	Heavy Transporter	Goldhoffer	600 Hp	III	2	300	Hr	75%	300 hr		0.025	15.0 gal/hr	Diesel	3,375	0	0	0	1,350	2,025	0	0
	Turbine and generator parts and pieces	Heavy Transporter	Goldhoffer	600 Hp	III	1	300	Hr	75%	300 hr		0.025	15.0 gal/hr	Diesel	3,375	0	0	0	1,350	2,025	0	0
	Moisture separators, FW Heaters,	Heavy Transporter	Goldhoffer	600 Hp	III	1	300	Hr	75%	300 hr		0.025	15.0 gal/hr	Diesel	3,375	0	0	0	1,350	2,025	0	0
	PART IV GAS														0	0	0	0	0	0	0	0
	PART IV DIESEL														19,233	0	0	911	6,782	10,629	455	455
0%	**V. Construction & Site Support**																			
	Including:	Crane - Picker	Grove RT530E-2 30t	160 Hp	III	2	68	Mo	50%	11968 hr		0.026	4.2 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Service vehicles	Boom Lift - 80 ft	Genie S-80	74 Hp	III	3	68	Mo	25%	8976 hr		0.026	1.9 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Janitorial / Garbage collection	Pickup Truck 3/4 ton	F-250	300 Hp		3	68	Mo	25%	8976 hr	3		3.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Snow plowing and road maintenance	Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	68	Mo	10%	1197 hr	3.5		3.5 gal/hr	Gas	0	0	0	0	0	0	0	0
	Portable lighting	Material truck 2-1/2 ton	F-650	270 Hp	III	1	68	Mo	25%	2992 hr		0.026	7.0 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Portable generators	RR switch engine	Estimated 600 Hp	600 Hp	II	1	68	Mo	10%	1197 hr		0.026	15.6 gal/hr	Diesel	0	0	0	0	0	0	0	0
	Welders	Welders		<50 Hp											0							
	Air compressors	Air Compressors		<50 Hp											0							
	Portable lighting	Portable Lighting		<50 Hp											0							
															0							
	PART V GAS														0	0	0	0	0	0	0	0
	PART V DIESEL														0	0	0	0	0	0	0	0
10%	**VI. Final site work/Grading**																			
	Topsoil Restoration - 124,200 cy	Tracked Dozer	Cat D9	410 Hp	III	3	8	Mo	60%	2534 hr	15		15.0 gal/hr	Diesel	3,802	0	0	0	0	0	760	3,041
		Tracked Dozer	Cat D7	235 Hp	III	3	8	Mo	60%	2534 hr	9		9.0 gal/hr	Diesel	2,281	0	0	0	0	0	456	1,825
		Excavator - Medium	Cat 321D	148 Hp	III	1	8	Mo	50%	704 hr	5		5.0 gal/hr	Diesel	352	0	0	0	0	0	70	282
		Semi-Trailer Dump	Mack E8	400 Hp	III	6	8	Mo	50%	4224 hr		0.026	10.4 gal/hr	Diesel	4,393	0	0	0	0	0	879	3,514
		Motor Grader	Cat 14M	259 Hp	III	2	8	Mo	60%	1690 hr	11		11.0 gal/hr	Diesel	1,859	0	0	0	0	0	372	1,487
		Vibratory Soil Compactor	Cat CS74	156 Hp	III	3	8	Mo	60%	2534 hr	6		6.0 gal/hr	Diesel	1,521	0	0	0	0	0	304	1,217
		Pickup Truck 3/4 ton	F-250	300 Hp		2	8	Mo	30%	845 hr	3		3.0 gal/hr	Diesel	253	0	0	0	0	0	51	203
		Pickup Truck 3/4 ton (Licensed for offsite use)	F-250	300 Hp		1	8	Mo	50%	704 hr	3.5		3.5 gal/hr	Gas	246	0	0	0	0	0	49	197
		Fuel Truck	Mack MP6	150 Hp	II	1	8	Mo	10%	141 hr	3.5		3.5 gal/hr	Diesel	49	0	0	0	0	0	10	39
		Rough Terrain Extended Forklift	Lull 1044C-54	115 Hp	III	2	8	Mo	30%	845 hr		0.026	3.0 gal/hr	Diesel	253	0	0	0	0	0	51	202
		Material truck 2-1/2 ton	F-650	270 Hp	III	1	8	Mo	30%	422 hr		0.026	7.0 gal/hr	Diesel	297	0	0	0	0	0	59	237
	PART VI GAS														246	0	0	0	0	0	49	197
	PART VI DIESEL														15,059	0	0	0	0	0	3,012	12,047

	Section 2 Commercial/Construction Deliveries	Deliveries	Quantity		Units			Distance		Fuel rate mi/gal	Fuel	Total Fuel	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year7
40%	**Construction deliveries and related traffic**	**15 Tons per Shipment**																	
50%	**Civil Material**																		
100%	Construction Equipment Mobilization/Removal	500 moves on + 500 off	1,000		shipments			50 mi		6.5 mi/gal	Diesel	7,692 gal	1,538	2,308	1,154	385	385	769	1,154
100%	Concrete Material (Sand, stone, cement, admixtures)	848,362 tons	56,557		shipments			50 mi		6.5 mi/gal	Diesel	435,057 gal	21,753	87,011	130,517	108,764	43,506	21,753	21,753
100%	Lean Concrete Materials	200,000 cy	13,333		shipments			50 mi		6.5 mi/gal	Diesel	102,564 gal	0	51,282	51,282	0	0	0	0
50%	Engineered fill	500,000 cy	33,333		shipments			50 mi		6.5 mi/gal	Diesel	128,205 gal	0	64,103	64,103	0	0	0	0
60%	Cohesive fill	800,000 cy	53,333		shipments			50 mi		6.5 mi/gal	Diesel	246,154 gal	0	123,077	123,077	0	0	0	0
50%	Formwork	2,393 tons	160		shipments			50 mi		6.5 mi/gal	Diesel	614 gal	31	123	215	153	31	31	31
50%	Rebar	55,331 tons	3,689		shipments			50 mi		6.5 mi/gal	Diesel	14,187 gal	709	2,837	4,966	3,547	709	709	709
50%	Structural Steel	6,261 tons	417		shipments			75 mi		6.5 mi/gal	Diesel	2,408 gal	0	241	963	963	120	120	0
100%	Misc. Steel	1,016 tons	68		shipments			75 mi		6.5 mi/gal	Diesel	782 gal	0	0	234	234	78	117	117
50%	Mod Steel	225 tons	15		shipments			75 mi		6.5 mi/gal	Diesel	87 gal	0	0	22	22	26	9	9
30%	Steel Liner	1,412 tons	94		shipments			75 mi		6.5 mi/gal	Diesel	326 gal	0	0	130	130	65	0	0
0%	Embedded Steel	1,903 tons	127		shipments			75 mi		6.5 mi/gal	Diesel	0 gal	0	0	0	0	0	0	0
0%	Siding & Roofing	2,056 tons	137		shipments			50 mi		6.5 mi/gal	Diesel	0 gal	0	0	0	0	0	0	0
0%	Asphalt	21,850 tons	1,457		shipments			50 mi		6.5 mi/gal	Diesel	0 gal	0	0	0	0	0	0	0
	Pre engineered building	60 tons	4		shipments			50 mi		6.5 mi/gal	Diesel	0 gal	0	0	0	0	0	0	0
50%	Construction Debris	12,000 tons	800		shipments			50 mi		6.5 mi/gal	Diesel	3,077 gal	308	308	462	615	462	462	462
	Piping and Mechanical Material	7,500 tons	500																
100%	Large and Small bore pipe	7,500 tons	500		shipments			75 mi		6.5 mi/gal	Diesel	5,769 gal	0	0	1,154	2,019	1,731	577	288
15%	Large bore hangers	2,788 tons	186		shipments			75 mi		6.5 mi/gal	Diesel	322 gal	0	0	64	113	97	32	16
50%	Nuclear Island EM package equipment	15,377 tons	1,025		shipments			150 mi		6.5 mi/gal	Diesel	11,828 gal	0	0	2,366	4,140	3,549	1,183	591
	Turbine Island and BOP Mechanical Equipment	Estimated	1000		shipments			150 mi		6.5 mi/gal	Diesel	0 gal	0	0	0	0	0	0	0
50%	Consumables	Estimated	1000		shipments			50 mi		8.0 mi/gal	Gas	3,125 gal	0	0	625	1,094	938	313	156
	Electrical Equipment																		
50%	Conduit	1,356 tons	90		shipments			50 mi		6.5 mi/gal	Diesel	346 gal	0	0	52	121	104	35	35
100%	Cable Tray	75 tons	49		shipments			50 mi		6.5 mi/gal	Diesel	377 gal	0	0	57	132	113	38	38
10%	Power & Control wire	4,406 tons	294		shipments			75 mi		6.5 mi/gal	Diesel	339 gal	0	0	51	102	119	34	34
	NI Electrical Equipment	5,000 tons	333		shipments			150 mi		8.0 mi/gal	Gas	0 gal	0	0	0	0	0	0	0
25%	TI Electrical Equipment	5,000 tons	333		shipments			150 mi		8.0 mi/gal	Gas	1,563 gal	0	0	234	469	547	156	156
50%	**Site Support Services**																		
	Fuel deliveries	Based on fuel usage from Section 1	114		shipments			50 mi		6.5 mi/gal	Diesel	0 gal	0	0	0	0	0	0	0
	Vendor deliveries	4 /day	5984		trips			50 mi		15.0 mi/gal	Gas	0 gal	0	0	0	0	0	0	0
	Equipment service calls	3 /day	4488		trips			50 mi		18.0 mi/gal	Gas	0 gal	0	0	0	0	0	0	0
	COMMERCIAL/DELIVERIES GAS											4,688	0	0	859	1,563	1,484	469	313
	COMMERCIAL/DELIVERIES DIESEL											960,134	24,339	331,289	380,867	121,441	51,093	25,868	25,236

	Section 3 Workforce Commute	Average Workforce KLD Traffic Study Const Staffing Profile RFI EPR-11-039	Commuters = 1.3 person/car						Average Round trip Distance		Average Fuel rate (mi/gal)	Fuel	Total Fuel	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year7
45%																				
5%	**Year 1**	150	115						50 mi		20.0 mi/gal	Gas	4,140	4,140						
5%									50 mi		18.0 mi/gal	Diesel	400	400						
20%	**Year 2**	550	423						50 mi		20.0 mi/gal	Gas	60,720		60,720					
20%									50 mi		18.0 mi/gal	Diesel	5,867		5,867					
	Year 3	1950	1,500						50 mi		20.0 mi/gal	Gas	484,380			484,380				
									50 mi		18.0 mi/gal	Diesel	46,800			46,800				
	Year 4	3800	2,923						50 mi		20.0 mi/gal	Gas	943,920				943,920			
									50 mi		18.0 mi/gal	Diesel	91,200				91,200			
	Year 5	3800	2,923						50 mi		20.0 mi/gal	Gas	943,920					943,920		
									50 mi		18.0 mi/gal	Diesel	91,200					91,200		
	Year 6	2000	1,538						50 mi		20.0 mi/gal	Gas	496,800						496,800	
									50 mi		18.0 mi/gal	Diesel	48,000						48,000	
	Year 7	400	308						50 mi		20.0 mi/gal	Gas	99,360							99,360
									50 mi		18.0 mi/gal	Diesel	9,600							9,600
	WORK FORCE COMMUTE GAS												2,933,880	4,140	60,720	484,380	943,920	943,920	496,800	0
	WORK FORCE COMMUTE DIESEL												283,467	400	5,867	46,800	91,200	91,200	48,000	0

Fuel Consumption Summary

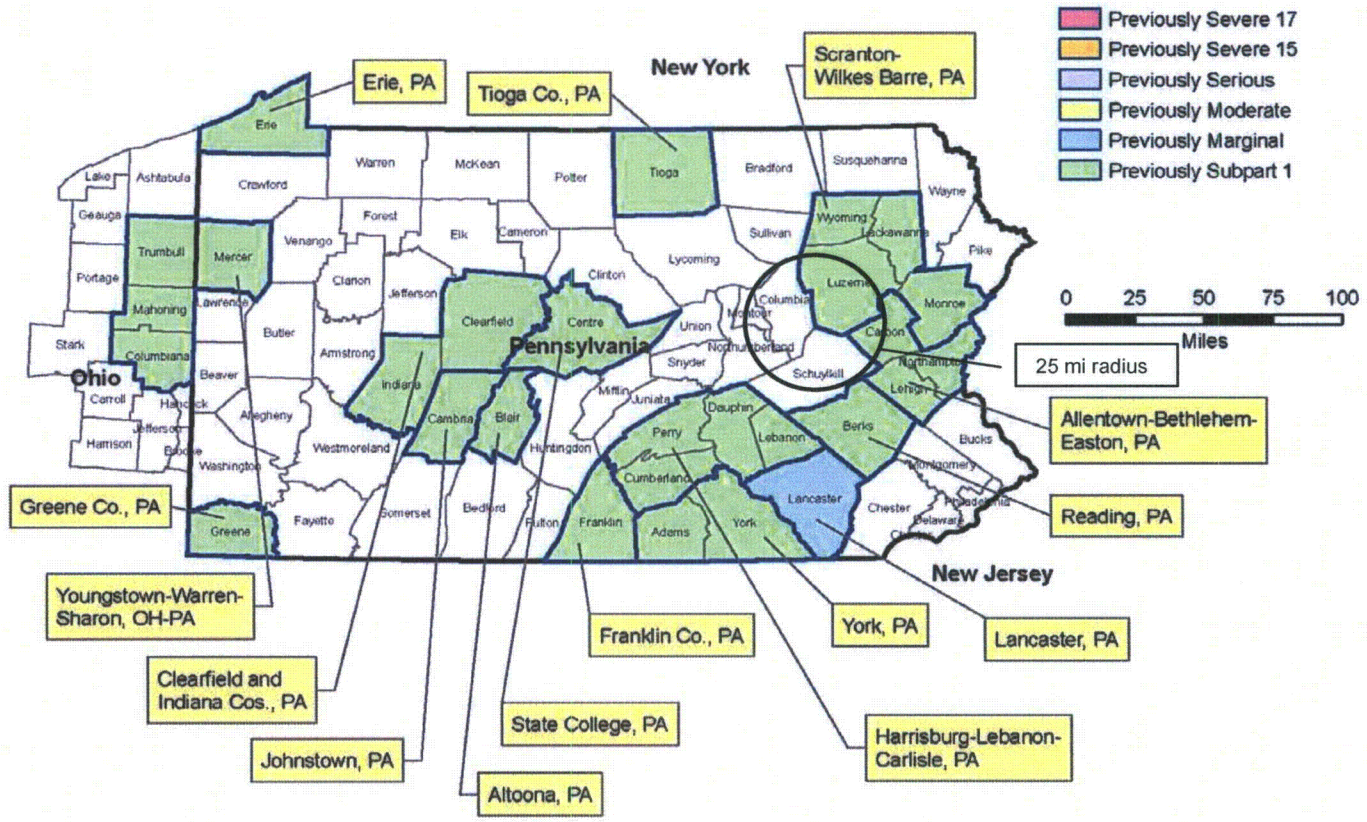
Non-Road Equipment Summary			Fuel	Total Fuel	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year7
Luzern County	100%		Diesel	655,180	1,123	53,613	150,211	248,052	126,458	42,327	33,397
			Gas	29,223	0	1,737	7,050	9,902	6,878	2,202	1,454
Construction Deliveries Summary			**Fuel**	**Total Fuel**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year7**
Wyoming, Lackawanna, Luzern, and Monroe	45%		Diesel	432,060	10,953	149,080	171,390	54,648	22,992	11,641	11,356
			Gas	2,109	0	0	387	703	668	211	141
Lehigh, Carbon, Northampton, and Lancaster	10%		Diesel	96,013	2,434	33,129	38,087	12,144	5,109	2,587	2,524
			Gas	469	0	0	86	156	148	47	31
Columbia, Schuykill	45%		Diesel	432,060	10,953	149,080	171,390	54,648	22,992	11,641	11,356
			Gas	2,109	0	0	387	703	668	211	141
Total			Diesel	960,134	24,339	331,289	380,867	121,441	51,093	25,868	25,236
			Gas	4,688	0	0	859	1,563	1,484	469	313
Workforce Commute			**Fuel**	**Total Fuel**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year7**
Carbon	16%		Diesel	46,891	64	939	7,488	14,592	14,592	7,680	1,536
			Gas	485,318	662	9,715	77,501	151,027	151,027	79,488	15,898
Columbia	15%		Diesel	43,960	60	880	7,020	13,680	13,680	7,200	1,440
			Gas	454,986	621	9,108	72,657	141,588	141,588	74,520	14,904
Lackawanna	8%		Diesel	23,445	32	469	3,744	7,296	7,296	3,840	768
			Gas	242,659	331	4,858	38,750	75,514	75,514	39,744	7,949
Luzerne	44%		Diesel	128,949	176	2,581	20,592	40,128	40,128	21,120	4,224
			Gas	1,334,626	1,822	26,717	213,127	415,325	415,325	218,592	43,718
Montour	4%		Diesel	11,723	16	235	1,872	3,648	3,648	1,920	384
			Gas	121,330	166	2,429	19,375	37,757	37,757	19,872	3,974
Northumberland	3%		Diesel	8,792	12	176	1,404	2,736	2,736	1,440	288
			Gas	90,997	124	1,822	14,531	28,318	28,318	14,904	2,981
Schuykill	10%		Diesel	29,307	40	587	4,680	9,120	9,120	4,800	960
			Gas	303,324	414	6,072	48,438	94,392	94,392	49,680	9,936
Wyoming	1%		Diesel	2,931	4	59	468	912	912	480	96
			Gas	30,332	41	607	4,844	9,439	9,439	4,968	994
Total			Diesel	293,067	400	5,867	46,800	91,200	91,200	48,000	9,600
			Gas	3,033,240	4,140	60,720	484,380	943,920	943,920	496,800	99,360
Project Fuel Usage Summary			**Fuel**	**Total Fuel**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year7**
			Diesel	1,908,381	25,862	390,769	577,878	460,693	268,751	116,195	68,233
			Gas	3,067,151	4,140	62,457	492,289	955,384	952,283	499,471	101,126

Attachment 2

From RFI EPR 11-039 request		
Origin of workforce table		
Direction	Population	Census Distribution (%)
N	38,458	3.77%
NW	19,451	1.91%
W	117,235	11.50%
SW	87,884	8.62%
S	121,621	11.92%
SE	158,518	15.54%
E	96,586	9.47%
NE	380,169	37.27%
Total	1,019,922	100.00%

R2

Attachment 3 – Pennsylvania map of 8 hour ozone maintenance areas



Attachment 4 – E-mail requesting information for BBNPP Air Quality applicability analysis

From: Iwanchuk, Robert [mailto:Robert.Iwanchuk@aecom.com]
Sent: Friday, August 07, 2009 5:28 PM
To: Perdomo, Federico R
Cc: Sullivan, David; Miller, Ian
Subject: RE: UniStar Bell Bend

Fred –

Here are the data needs for the Bell Bend applicability analysis specific to NOx and VOC emissions:

- Identification of and quantity of each non-road (non-highway vehicle) engine associated with construction work (including site preparation) including the following information. This is the information contained in CCNPP file 25237-000-G65-HPYA-00001)
  - fuel type (diesel or gasoline)
  - engine motor size (Hp) (CCNPP did not consider small equipment less than 50 Hp)
  - combined engine hours of use and fuel consumption (broken down by projected construction year)
  - If known or estimated, model year or EPA engine emissions tier, (i.e. Tier 1, Tier 2)

  Examples:
  2 Caterpillar D6 bulldozers; diesel; 185 Hp (each); Tier 3-Model year 2009; combined 5200 hrs/51,110 gallons in 2011, 2600 hrs/25,555 gallons in 2012

  10 Kenworth t-800 dump trucks; diesel; 250 Hp (each); Tier 2-Model year 2003; combined 6500 hrs/38,995 gallons in 2011, 13000 hrs/77,911 gallons in 2012

- Identification (numbers and sizes) of on-site gasoline & diesel storage tanks

- Identification of expected highway vehicles for on-site use (expected to be mostly pickup trucks). Please also provide a gross estimate of either annual miles traveled or fuel consumption.

- Plot plan showing layout of major construction areas, parking areas, and roadways (including internal to the site).

These next three have certain data elements which may only be best guesses. They are requested since Bell Bend in located at the edge of the Scranton-Wilkes Barre ozone maintenance area. We may be able to exclude emissions generated outside of that area.

- Estimate of commercial deliveries (deliveries/day), delivery distance (from origin to site), and approximate origin by county.

- Estimate of commuter vehicles (vehicles/day), commuting distance (from home to site), and approximate origin by county.

- Estimate of concrete deliveries, delivery distance (from origin to site), and approximate origin by county. (if no batch plant on-site)

Let me know if you need more information or have any questions.

Bob

Appendix B

Emissions Calculations

Table B-1a **Total Construction NOx and VOC Emissions from Non-road Engines**

Equipment Type[1]	SCC[1]	Engine Technology Type	No.of Equipment #	Equipment Horsepower hp	Fuel Type	Total Hours	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7	
							[Operation] %	Hours	[Operation] %	Hours	[Operation] %	Hours	[Operation] %	Hours	[Operation] %	Hours	[Operation] %	Hours	[Operation] %	Hours
IA. Early Site Prepatration																				
Crawler Tractors	2270002069	T3	4	700 Hp	Diesel	3,300	100%	3,300	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	3	263 Hp	Diesel	2,475	100%	2,475	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	3	148 Hp	Diesel	1,980	100%	1,980	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	1	380 Hp	Diesel	660	100%	660	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Crane	2270002045	T3	2	160 Hp	Diesel	880	100%	880	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Dumper/Tener	2270002078	T3	10	450 Hp	Diesel	5,500	100%	5,500	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Grader	2270002048	T3	2	259 Hp	Diesel	990	100%	990	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Scraper	2270002018	T3	8	462 Hp	Diesel	5,280	100%	5,280	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Scraper	2270002018	T3	3	462 Hp	Diesel	1,980	100%	1,980	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	1	156 Hp	Diesel	660	100%	660	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
IA. Site Development and Excavation																				
Intake area, Switchyard, NE/&W laydown areas																				
Crawler Tractors	2270002069	T3	7	700 Hp	Diesel	4,200	30%	1,260	70%	2,940	0%	0	0%	0	0%	0	0%	0	0%	0
Scraper (dual engine 1/2)	2270002018	T3	6	500 Hp	Diesel	2,400	30%	720	70%	1,680	0%	0	0%	0	0%	0	0%	0	0%	0
Scraper (dual engine 2/2)	2270002018	T3	6	462 Hp	Diesel	2,400	30%	720	70%	1,680	0%	0	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	1	148 Hp	Diesel	480	30%	144	70%	336	0%	0	0%	0	0%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	6	263 Hp	Diesel	3,360	30%	1,008	70%	2,352	0%	0	0%	0	0%	0	0%	0	0%	0
Grader	2270002048	T3	1	259 Hp	Diesel	400	30%	120	70%	280	0%	0	0%	0	0%	0	0%	0	0%	0
Powerblock (inc. cooling towers &INC laydown)																				
Crawler Tractors	2270002069	T3	4	700 Hp	Diesel	6,240	50%	3,120	50%	3,120	0%	0	0%	0	0%	0	0%	0	0%	0
Crawler Tractors	2270002069	T3	1	410 Hp	Diesel	1,560	40%	624	40%	624	20%	312	0%	0	0%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	2	263 Hp	Diesel	3,120	40%	1,248	40%	1,248	20%	624	0%	0	0%	0	0%	0	0%	0
Scraper (dual engine 1/2)	2270002018	T3	15	500 Hp	Diesel	19,500	50%	9,750	50%	9,750	0%	0	0%	0	0%	0	0%	0	0%	0
Scraper (dual engine 2/2)	2270002018	T3	15	462 Hp	Diesel	19,500	50%	9,750	50%	9,750	0%	0	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	2	156 Hp	Diesel	2,340	20%	468	40%	936	40%	936	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	2	400 Hp	Diesel	2,340	20%	468	40%	936	40%	936	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	2	148 Hp	Diesel	3,120	40%	1,248	40%	1,248	20%	624	0%	0	0%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	6	263 Hp	Diesel	10,920	40%	4,368	40%	4,368	20%	2,184	0%	0	0%	0	0%	0	0%	0
Grader	2270002048	T3	2	259 Hp	Diesel	2,600	30%	780	40%	1,040	30%	780	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	5	428 Hp	Diesel	7,800	50%	3,900	50%	3,900	0%	0	0%	0	0%	0	0%	0	0%	0
Off-Highway Truck	2270002051	T3	30	650 Hp	Diesel	35,100	40%	14,040	40%	14,040	20%	7,020	0%	0	0%	0	0%	0	0%	0
Off-Highway Truck	2270002051	T2	1	462 Hp	Diesel	1,300	30%	390	40%	520	30%	390	0%	0	0%	0	0%	0	0%	0
Rubber tire loader	2270002060	T3	2	262 Hp	Diesel	704	0%	0	75%	528	25%	176	0%	0	0%	0	0%	0	0%	0
Parking																				
Crawler Tractors	2270002069	T3	2	235 Hp	Diesel	1,500	0%	0	60%	900	40%	600	0%	0	0%	0	0%	0	0%	0
Scraper	2270002018	T3	1	462 Hp	Diesel	500	0%	0	60%	300	40%	200	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	2	156 Hp	Diesel	900	0%	0	60%	540	40%	360	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	2	400 Hp	Diesel	900	0%	0	60%	540	40%	360	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	1	148 Hp	Diesel	600	0%	0	60%	360	40%	240	0%	0	0%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	1	263 Hp	Diesel	700	0%	0	60%	420	40%	280	0%	0	0%	0	0%	0	0%	0
Grader	2270002048	T3	1	259 Hp	Diesel	500	0%	0	60%	300	40%	200	0%	0	0%	0	0%	0	0%	0
Paving Equipment	2270002021	T3	1	174 Hp	Diesel	500	0%	0	60%	300	40%	200	0%	0	0%	0	0%	0	0%	0
Paving Equipment	2270002021	T3	1	107 Hp	Diesel	500	0%	0	60%	300	40%	200	0%	0	0%	0	0%	0	0%	0
Support Road (inc. Quarry, Batch Plant, Central laydown)																				
Crawler Tractors	2270002069	T3	4	235 Hp	Diesel	9,000	30%	2,700	50%	4,500	20%	1,800	0%	0	0%	0	0%	0	0%	0
Scraper (dual engine 1/2)	2270002018	T3	3	500 Hp	Diesel	4,500	50%	2,250	45%	2,025	5%	225	0%	0	0%	0	0%	0	0%	0
Scraper (dual engine 2/2)	2270002018	T3	3	462 Hp	Diesel	4,500	50%	2,250	45%	2,025	5%	225	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	1	156 Hp	Diesel	1,350	30%	405	50%	675	20%	270	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	2	400 Hp	Diesel	2,700	30%	810	50%	1,350	20%	540	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	2	148 Hp	Diesel	3,600	30%	1,080	50%	1,800	20%	720	0%	0	0%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	2	263 Hp	Diesel	4,200	30%	1,260	50%	2,100	20%	840	0%	0	0%	0	0%	0	0%	0
Grader	2270002048	T3	2	259 Hp	Diesel	1,600	30%	480	50%	800	20%	320	0%	0	0%	0	0%	0	0%	0
Paving Equipment	2270002021	T3	1	174 Hp	Diesel	500	0%	0	60%	300	40%	200	0%	0	0%	0	0%	0	0%	0
Paving Equipment	2270002021	T3	1	107 Hp	Diesel	500	0%	0	60%	300	40%	200	0%	0	0%	0	0%	0	0%	0
Off-Highway Truck	2270002051	T2	1	462 Hp	Diesel	1,200	30%	360	50%	600	20%	240	0%	0	0%	0	0%	0	0%	0

Table B-1a **Total Construction NOx and VOC Emissions from Non-road Engines**

Equipment Type[1]	Criteria Pollutants EFss (g/hp-hr)[2]		Load Factor[2]	Median Life[3] Hours	Age Factor[4]	"A"[4]		Deterioration factor[4]		Adjusted EF (g/hp-hr)[5]		Emissions (tons)[6]													
												HC							NOx						
	HC	NOx				HC	NOx	HC	NOx	HC	NOx	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
IA Early Site Prepatratio																									
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.26	0.00	0.00	0.00	0.00	0.00	0.00	3.95	0.00	0.00	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.03	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.054	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00
Excavator	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00
Dumper/Tener	0.38	3.03	0.21	7000	> 1	0.027	0.008	1.027	1.008	0.390	3.054	0.22	0.00	0.00	0.00	0.00	0.00	0.00	1.75	0.00	0.00	0.00	0.00	0.00	0.00
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.28	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.10	0.00	0.00	0.00	0.00	0.00	0.00	1.57	0.00	0.00	0.00	0.00	0.00	0.00
Surfacing	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00
IA Site Development an																									
Intake area, Switchya																									
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.10	0.23	0.00	0.00	0.00	0.00	0.00	1.51	3.52	0.00	0.00	0.00	0.00	0.00
Scraper (dual engine 1/2)	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.04	0.10	0.00	0.00	0.00	0.00	0.00	0.62	1.44	0.00	0.00	0.00	0.00	0.00
Scraper (dual engine 2/2)	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.04	0.09	0.00	0.00	0.00	0.00	0.00	0.57	1.33	0.00	0.00	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.09	0.00	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.03	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.054	0.03	0.06	0.00	0.00	0.00	0.00	0.00	0.19	0.44	0.00	0.00	0.00	0.00	0.00
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.12	0.00	0.00	0.00	0.00	0.00
Powerblock (inc. coo																									
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.25	0.25	0.00	0.00	0.00	0.00	0.00	3.74	3.74	0.00	0.00	0.00	0.00	0.00
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.03	0.03	0.01	0.00	0.00	0.00	0.00	0.44	0.44	0.22	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.03	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.054	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.23	0.23	0.12	0.00	0.00	0.00	0.00
Scraper (dual engine 1/2)	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.55	0.55	0.00	0.00	0.00	0.00	0.00	8.34	8.34	0.00	0.00	0.00	0.00	0.00
Scraper (dual engine 2/2)	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.51	0.51	0.00	0.00	0.00	0.00	0.00	7.71	7.71	0.00	0.00	0.00	0.00	0.00
Surfacing	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.01	0.02	0.02	0.00	0.00	0.00	0.00	0.12	0.25	0.25	0.00	0.00	0.00	0.00
Surfacing	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.02	0.04	0.04	0.00	0.00	0.00	0.00	0.32	0.64	0.64	0.00	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.32	0.32	0.16	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.03	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.054	0.11	0.11	0.06	0.00	0.00	0.00	0.00	0.81	0.81	0.41	0.00	0.00	0.00	0.00
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.03	0.03	0.03	0.00	0.00	0.00	0.00	0.35	0.46	0.35	0.00	0.00	0.00	0.00
Excavator	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.19	0.19	0.00	0.00	0.00	0.00	0.00	2.86	2.86	0.00	0.00	0.00	0.00	0.00
Off-Highway Truck	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	1.04	1.04	0.52	0.00	0.00	0.00	0.00	15.61	15.61	7.81	0.00	0.00	0.00	0.00
Off-Highway Truck	0.17	4.11	0.59	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.147	0.02	0.03	0.02	0.00	0.00	0.00	0.00	0.49	0.65	0.49	0.00	0.00	0.00	0.00
Rubber tire loader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.24	0.08	0.00	0.00	0.00	0.00
Parking																									
Crawler Tractors	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.36	0.24	0.00	0.00	0.00	0.00
Scraper	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.24	0.16	0.00	0.00	0.00	0.00
Surfacing	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.14	0.10	0.00	0.00	0.00	0.00
Surfacing	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.37	0.25	0.00	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.06	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.03	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.054	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.08	0.05	0.00	0.00	0.00	0.00
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.13	0.09	0.00	0.00	0.00	0.00
Paving Equipment	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.06	0.00	0.00	0.00	0.00
Paving Equipment	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.04	0.00	0.00	0.00	0.00
Support Road (inc. C																									
Crawler Tractors	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.08	0.13	0.05	0.00	0.00	0.00	0.00	1.09	1.81	0.72	0.00	0.00	0.00	0.00
Scraper (dual engine 1/2)	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.13	0.11	0.01	0.00	0.00	0.00	0.00	1.92	1.73	0.19	0.00	0.00	0.00	0.00
Scraper (dual engine 2/2)	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.12	0.11	0.01	0.00	0.00	0.00	0.00	1.78	1.60	0.18	0.00	0.00	0.00	0.00
Surfacing	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.11	0.18	0.07	0.00	0.00	0.00	0.00
Surfacing	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.04	0.06	0.02	0.00	0.00	0.00	0.00	0.55	0.92	0.37	0.00	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.27	0.46	0.18	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.03	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.054	0.03	0.06	0.02	0.00	0.00	0.00	0.00	0.23	0.39	0.16	0.00	0.00	0.00	0.00
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.21	0.35	0.14	0.00	0.00	0.00	0.00
Paving Equipment	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.06	0.00	0.00	0.00	0.00
Paving Equipment	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.04	0.00	0.00	0.00	0.00
Off-Highway Truck	0.17	4.11	0.59	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.147	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.45	0.75	0.30	0.00	0.00	0.00	0.00

Table B-1a **Total Construction NOx and VOC Emissions from Non-road Engines**

Equipment Type	SCC[1]	Engine Technology Type[2]	No. of Equipment #	Equipment Horsepower hp	Fuel Type	Total Hours	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7	
							Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours
South Laydown																				
Crawler Tractors	2270002069	T3	4	700 Hp	Diesel	2,400	30%	720	50%	1,200	20%	480	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	1	400 Hp	Diesel	360	30%	108	50%	180	20%	72	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	3	148 Hp	Diesel	1,440	30%	432	50%	720	20%	288	0%	0	0%	0	0%	0	0%	0
Grader	2270002048	T3	1	259 Hp	Diesel	400	30%	120	50%	200	20%	80	0%	0	0%	0	0%	0	0%	0
Boring/Soils investigation																				
Bore/Drill Rig	2270002033	T2	1	420 Hp	Diesel	246	100%	246	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Underground utilities, piping, ductruns, grounding																				
Crane	2270002045	T3	2	160 Hp	Diesel	1,126	0%	0	50%	563	50%	563	0%	0	0%	0	0%	0	0%	0
Crawler Tractors	2270002069	T3	2	235 Hp	Diesel	1,690	0%	0	50%	845	50%	845	0%	0	0%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	6	102 Hp	Diesel	5,069	0%	0	40%	2,028	30%	1,521	30%	1,521	0%	0	0%	0	0%	0
Excavator	2270002036	T3	2	148 Hp	Diesel	1,690	0%	0	60%	1,014	40%	676	0%	0	0%	0	0%	0	0%	0
Dumper/Tener	2270002078	T3	1	400 Hp	Diesel	845	0%	0	50%	422	40%	338	10%	84	0%	0	0%	0	0%	0
Warehouse & Storage																				
Forklift	2270003020	T3	2	94 Hp	Diesel	8,378	0%	0	10%	838	20%	1,676	30%	2,513	25%	2,094	10%	838	5%	419
Crane	2270002045	T3	2	160 Hp	Diesel	9,574	0%	0	10%	957	20%	1,915	30%	2,872	25%	2,394	10%	957	5%	479
Forklift (rough)	2270002057	T3	1	115 Hp	Diesel	5,386	0%	0	10%	539	20%	1,077	30%	1,616	25%	1,346	10%	539	5%	269
IIA Civil / Concrete Structure Work																				
Bridge Construction																				
Crawler Tractors	2270002069	T3	3	700 Hp	Diesel	3,600	0%	0	20%	720	30%	1,080	30%	1,080	20%	720	0%	0	0%	0
Crawler Tractors	2270002069	T3	2	305 Hp	Diesel	2,400	0%	0	20%	480	30%	720	30%	720	20%	480	0%	0	0%	0
Surfacing	2270002024	T3	2	400 Hp	Diesel	2,160	0%	0	20%	432	30%	648	30%	648	20%	432	0%	0	0%	0
Excavator	2270002036	T3	4	148 Hp	Diesel	4,800	0%	0	20%	960	30%	1,440	30%	1,440	10%	480	10%	480	0%	0
Grader	2270002048	T3	1	259 Hp	Diesel	960	0%	0	20%	192	30%	288	30%	288	20%	192	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	3	80 Hp	Diesel	3,802	0%	0	20%	760	30%	1,140	30%	1,140	10%	380	10%	380	0%	0
Crane	2270002045	T3	4	160 Hp	Diesel	4,224	0%	0	20%	845	30%	1,267	30%	1,267	10%	422	10%	422	0%	0
Crane	2270002045	T2	2	355 Hp	Diesel	2,112	0%	0	20%	422	30%	634	30%	634	20%	422	0%	0	0%	0
Pump	2270006010	T3	1	300 Hp	Diesel	528	0%	0	10%	53	30%	158	30%	158	20%	106	10%	53	0%	0
Forklift (rough)	2270002057	T3	2	115 Hp	Diesel	1,901	0%	0	10%	190	30%	570	30%	570	20%	380	10%	190	0%	0
Rubber tire loader	2270002060	T3	1	262 Hp	Diesel	1,056	0%	0	10%	106	30%	317	30%	317	20%	211	10%	106	0%	0
Sheet Piling																				
Crane	2270002045	T3	1	205 Hp	Diesel	352	0%	0	50%	176	50%	176	0%	0	0%	0	0%	0	0%	0
Crane	2270002045	T3	2	160 Hp	Diesel	493	0%	0	50%	246	50%	246	0%	0	0%	0	0%	0	0%	0
Structural Concrete																				
Pump	2270006010	T3	5	300 Hp	Diesel	7,500	0%	0	10%	750	30%	2,250	30%	2,250	20%	1,500	5%	375	5%	375
Crane	2270002045	T2	5	355 Hp	Diesel	7,920	0%	0	10%	792	30%	2,376	30%	2,376	20%	1,584	5%	396	5%	396
Crane	2270002045	T3	5	160 Hp	Diesel	9,504	0%	0	10%	950	30%	2,851	30%	2,851	20%	1,901	5%	475	5%	475
Forklift (rough)	2270002057	T3	6	115 Hp	Diesel	17,107	0%	0	10%	1,711	30%	5,132	30%	5,132	20%	3,421	5%	855	5%	855
Rubber tire loader	2270002060	T3	2	262 Hp	Diesel	6,336	0%	0	10%	634	30%	1,901	30%	1,901	20%	1,267	5%	317	5%	317
Tractor/Loader/Backhoe	2270002066	T3	4	80 Hp	Diesel	12,672	0%	0	10%	1,267	30%	3,802	30%	3,802	20%	2,534	5%	634	5%	634
Non-Power Block (Oump House, Switchyard, Cooling Towers)																				
Crane	2270002045	T3	2	160 Hp	Diesel	8,490	0%	0	0%	0	70%	5,943	30%	2,547	0%	0	0%	0	0%	0
Pump	2270006010	T3	3	300 Hp	Diesel	1,901	0%	0	0%	0	70%	1,331	30%	570	0%	0	0%	0	0%	0
Crane	2270002045	T2	2	355 Hp	Diesel	6,336	0%	0	0%	0	70%	4,435	30%	1,901	0%	0	0%	0	0%	0
Forklift (rough)	2270002057	T3	1	115 Hp	Diesel	1,901	0%	0	0%	0	70%	1,331	30%	570	0%	0	0%	0	0%	0
Switchyard																				
Crane	2270002045	T3	2	160 Hp	Diesel	3,168	0%	0	0%	0	50%	1,584	40%	1,267	10%	317	0%	0	0%	0
Pump	2270006010	T3	3	300 Hp	Diesel	950	0%	0	0%	0	75%	713	25%	238	0%	0	0%	0	0%	0
Crane	2270002045	T2	1	355 Hp	Diesel	792	0%	0	0%	0	75%	594	25%	198	0%	0	0%	0	0%	0
Forklift (rough)	2270002057	T3	1	115 Hp	Diesel	1,426	0%	0	0%	0	75%	1,069	25%	356	0%	0	0%	0	0%	0
Cooling Tower																				
Crane	2270002045	T3	4	160 Hp	Diesel	8,490	0%	0	0%	0	0%	0	30%	2,547	70%	5,943	0%	0	0%	0
Crane	2270002045	T2	2	355 Hp	Diesel	1,584	0%	0	0%	0	0%	0	30%	475	70%	1,109	0%	0	0%	0
Pump	2270006010	T3	3	300 Hp	Diesel	1,901	0%	0	0%	0	0%	0	30%	570	70%	1,331	0%	0	0%	0
Forklift (rough)	2270002057	T3	1	115 Hp	Diesel	2,851	0%	0	0%	0	0%	0	30%	855	70%	1,996	0%	0	0%	0

Table B-1a **Total Construction NOx and VOC Emissions from Non-road Engines**

Equipment Type [1]	Criteria Pollutants EFss (g/hp-hr) [2]		Load Factor [2]	Median Life [3] Hours	Age Factor [4]	"A" [4]		Deterioration factor [4]		Adjusted EF (g/hp-hr) [5]		Emissions (tons) [6]													
												HC							NOx						
	HC	NOx				HC	NOx	HC	NOx	HC	NOx	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
South Laydown																									
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.06	0.10	0.04	0.00	0.00	0.00	0.00	0.86	1.44	0.57	0.00	0.00	0.00	0.00
Surfacing	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.07	0.12	0.05	0.00	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.11	0.18	0.07	0.00	0.00	0.00	0.00
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.09	0.04	0.00	0.00	0.00	0.00
Boring/Soils investig																									
Bore/Drill Rig	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00
Underground utilities																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.11	0.11	0.00	0.00	0.00	0.00
Crawler Tractors	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.34	0.34	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.03	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.054	0.00	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.15	0.11	0.11	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.26	0.17	0.00	0.00	0.00	0.00
Dumper/Tener	0.38	3.03	0.21	7000	> 1	0.027	0.008	1.027	1.008	0.390	3.054	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.12	0.10	0.02	0.00	0.00	0.00
Warehouse & Storag																									
Forklift	0.19	3.13	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	3.155	0.00	0.01	0.02	0.03	0.02	0.01	0.00	0.00	0.16	0.32	0.48	0.40	0.16	0.08
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.01	0.03	0.04	0.03	0.01	0.01	0.00	0.18	0.37	0.55	0.46	0.18	0.09
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.02	0.02	0.02	0.01	0.00	0.00	0.11	0.21	0.32	0.26	0.11	0.05
IIA Civil / Concrete Stru																									
Bridge Construction																									
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.06	0.09	0.09	0.06	0.00	0.00	0.00	0.86	1.29	1.29	0.86	0.00	0.00
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.25	0.38	0.38	0.25	0.00	0.00
Surfacing	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.02	0.03	0.03	0.02	0.00	0.00	0.00	0.30	0.44	0.44	0.30	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.02	0.03	0.03	0.01	0.01	0.00	0.00	0.24	0.36	0.36	0.12	0.12	0.00
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.09	0.13	0.13	0.09	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.05	0.08	0.08	0.03	0.03	0.00
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.01	0.02	0.02	0.01	0.01	0.00	0.00	0.16	0.24	0.24	0.08	0.08	0.00
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.01	0.02	0.02	0.01	0.00	0.00	0.00	0.31	0.47	0.47	0.31	0.00	0.00
Pump	0	0	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.04	0.11	0.11	0.07	0.04	0.00
Rubber tire loader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.05	0.14	0.14	0.09	0.05	0.00
Sheet Piling																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.00
Structural Concrete																									
Pump	0	0	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.02	0.07	0.07	0.05	0.01	0.01	0.00	0.58	1.75	1.75	1.17	0.29	0.29
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.01	0.04	0.04	0.03	0.01	0.01	0.00	0.18	0.54	0.54	0.36	0.09	0.09
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.02	0.07	0.07	0.05	0.01	0.01	0.00	0.34	1.01	1.01	0.67	0.17	0.17
Rubber tire loader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.02	0.06	0.06	0.04	0.01	0.01	0.00	0.28	0.85	0.85	0.57	0.14	0.14
Tractor/Loader/Backhoe	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.01	0.03	0.03	0.02	0.01	0.01	0.00	0.09	0.26	0.26	0.17	0.04	0.04
Non-Power Block (Ou																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.08	0.04	0.00	0.00	0.00	0.00	0.00	1.14	0.49	0.00	0.00	0.00
Pump	0	0	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.00	0.13	0.06	0.00	0.00	0.00	0.00	0.00	3.27	1.40	0.00	0.00	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.26	0.11	0.00	0.00	0.00
Switchyard																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.30	0.24	0.06	0.00	0.00
Pump	0	0	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.44	0.15	0.00	0.00	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.21	0.07	0.00	0.00	0.00
Cooling Tower																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.04	0.08	0.00	0.00	0.00	0.00	0.00	0.49	1.14	0.00	0.00
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.35	0.82	0.00	0.00
Pump	0	0	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.17	0.39	0.00	0.00

Table B-1a **Total Construction NOx and VOC Emissions from Non-road Engines**

Equipment Type[1]	SCC[1]	Engine Technology Type	No. of Equipment #	Equipment Horsepower hp	Fuel Type	Total Hours	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7	
							(Operation %)	Hours	(Operation %)	Hours	(Operation %)	Hours	(Operation %)	Hours	(Operation %)	Hours	(Operation %)	Hours	(Operation %)	Hours
IIB. Superstructure & Structual Steel																				
Structural & Building Steel																				
Crane	2270002045	T2	5	355 Hp	Diesel	5,280	0%	0	0%	0	20%	1,056	75%	3,960	5%	264	0%	0	0%	0
Crane	2270002045	T3	4	400 Hp	Diesel	4,224	0%	0	0%	0	20%	845	75%	3,168	5%	211	0%	0	0%	0
Crane	2270002045	T3	7	160 Hp	Diesel	9,905	0%	0	0%	0	20%	1,981	75%	7,429	5%	495	0%	0	0%	0
Crane	2270002045	T3	7	173 Hp	Diesel	8,870	0%	0	0%	0	20%	1,774	75%	6,653	5%	444	0%	0	0%	0
Aerial Lift	2270003010	T3	8	65 Hp	Diesel	10,138	0%	0	0%	0	20%	2,028	75%	7,603	5%	507	0%	0	0%	0
Aerial Lift	2270003010	T3	8	74 Hp	Diesel	10,138	0%	0	0%	0	20%	2,028	75%	7,603	5%	507	0%	0	0%	0
Forklift (rough)	2270002057	T3	8	115 Hp	Diesel	10,138	0%	0	0%	0	20%	2,028	75%	7,603	5%	507	0%	0	0%	0
Building Modules & Heavy Lifts																				
Crane	2270002045	T3	1	600 Hp	Diesel	845	0%	0	0%	0	0%	0	50%	422	50%	422	0%	0	0%	0
Crane	2270002045	T3	1	1,200 Hp	Diesel	422	0%	0	0%	0	50%	211	50%	211	0%	0	0%	0	0%	0
Building Siding / Insulated Panels																				
Crane	2270002045	T3	2	160 Hp	Diesel	1,056	0%	0	0%	0	0%	0	30%	317	70%	739	0%	0	0%	0
Aerial Lift	2270003010	T3	3	74 Hp	Diesel	2,218	0%	0	0%	0	0%	0	30%	665	70%	1,552	0%	0	0%	0
Forklift (rough)	2270002057	T3	2	115 Hp	Diesel	1,056	0%	0	0%	0	0%	0	30%	317	70%	739	0%	0	0%	0
Roofing																				
Crane	2270002045	T3	2	160 Hp	Diesel	950	0%	0	0%	0	0%	0	0%	0	100%	950	0%	0	0%	0
Aerial Lift	2270003010	T3	3	74 Hp	Diesel	1,426	0%	0	0%	0	0%	0	0%	0	100%	1,426	0%	0	0%	0
Forklift (rough)	2270002057	T3	2	115 Hp	Diesel	950	0%	0	0%	0	0%	0	0%	0	100%	950	0%	0	0%	0
IIIA. Mechanical Installation																				
Mechanical Installation																				
Crane	2270002045	T3	5	160 Hp	Diesel	14,784	0%	0	0%	0	20%	2,957	50%	7,392	20%	2,957	10%	1,478	0%	0
Crane	2270002045	T3	3	173 Hp	Diesel	2,534	0%	0	0%	0	20%	507	50%	1,267	20%	507	10%	253	0%	0
Crane	2270002045	T2	5	355 Hp	Diesel	4,224	0%	0	0%	0	20%	845	50%	2,112	20%	845	10%	422	0%	0
Crane	2270002045	T3	2	400 Hp	Diesel	1,690	0%	0	0%	0	20%	338	50%	845	20%	338	10%	169	0%	0
Crane	2270002045	T3	1	500 Hp	Diesel	845	0%	0	0%	0	20%	169	50%	422	20%	169	10%	84	0%	0
Aerial Lift	2270003010	T3	5	65 Hp	Diesel	5,280	0%	0	0%	0	20%	1,056	50%	2,640	20%	1,056	10%	528	0%	0
Aerial Lift	2270003010	T3	5	74 Hp	Diesel	5,280	0%	0	0%	0	20%	1,056	50%	2,640	20%	1,056	10%	528	0%	0
Forklift (rough)	2270002057	T3	2	115 Hp	Diesel	5,914	0%	0	0%	0	30%	1,774	40%	2,365	15%	887	15%	887	0%	0
IIIB. Electrical Installation																				
Electrical Installation																				
Crane	2270002045	T3	5	160 Hp	Diesel	4,435	0%	0	0%	0	15%	665	40%	1,774	20%	887	15%	665	10%	444
Crane	2270002045	T3	3	173 Hp	Diesel	3,168	0%	0	0%	0	15%	475	40%	1,267	20%	634	15%	475	10%	317
Crane	2270002045	T2	5	355 Hp	Diesel	5,280	0%	0	0%	0	15%	792	40%	2,112	20%	1,056	15%	792	10%	528
Crane	2270002045	T3	2	400 Hp	Diesel	2,112	0%	0	0%	0	15%	317	40%	845	20%	422	15%	317	10%	211
Crane	2270002045	T3	1	500 Hp	Diesel	1,056	0%	0	0%	0	15%	158	40%	422	20%	211	15%	158	10%	106
Aerial Lift	2270003010	T3	5	65 Hp	Diesel	5,280	0%	0	0%	0	15%	792	40%	2,112	20%	1,056	15%	792	10%	528
Aerial Lift	2270003010	T3	5	74 Hp	Diesel	5,280	0%	0	0%	0	15%	792	40%	2,112	20%	1,056	15%	792	10%	528
Crane	2270002045	T3	1	355 Hp	Diesel	845	0%	0	0%	0	15%	127	40%	338	20%	169	15%	127	10%	84
Forklift (rough)	2270002057	T3	2	115 Hp	Diesel	5,914	0%	0	0%	0	15%	887	40%	2,365	20%	1,183	15%	887	10%	591
IV. Major Equipment (heavy) lift and movement																				
Crane	2270002045	T3	1	500 Hp	Diesel	528	0%	0	0%	0	10%	53	30%	158	50%	264	5%	26	5%	26
Crane	2270002045	T3	1	600 Hp	Diesel	528	0%	0	0%	0	10%	53	30%	158	50%	264	5%	26	5%	26
Roller	2270002015	T3	2	600 Hp	Diesel	300	0%	0	0%	0	0%	0	40%	120	60%	180	0%	0	0%	0
Roller	2270002015	T3	1	600 Hp	Diesel	300	0%	0	0%	0	0%	0	40%	120	60%	180	0%	0	0%	0
Roller	2270002015	T3	1	600 Hp	Diesel	300	0%	0	0%	0	0%	0	40%	120	60%	180	0%	0	0%	0

Table B-1a Total Construction NOx and VOC Emissions from Non-road Engines

Equipment Type[1]	Criteria Pollutants EFss (g/hp-hr)[2]		Load Factor[2]	Median Life[3] Hours	Age Factor[4]	"A"[4]		Deterioration factor[4]		Adjusted EF (g/hp-hr)[5]		Emissions (tons)[6]													
												HC							NOx						
	HC	NOx				HC	NOx	HC	NOx	HC	NOx	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
IIB. Superstructure & St																									
Structural & Building																									
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.00	0.03	0.12	0.01	0.00	0.00	0.00	0.00	0.78	2.92	0.19	0.00	0.00
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.03	0.10	0.01	0.00	0.00	0.00	0.00	0.40	1.51	0.10	0.00	0.00
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.03	0.10	0.01	0.00	0.00	0.00	0.00	0.38	1.42	0.09	0.00	0.00
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.03	0.10	0.01	0.00	0.00	0.00	0.00	0.37	1.37	0.09	0.00	0.00
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.11	0.42	0.03	0.00	0.00
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.13	0.48	0.03	0.00	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.03	0.11	0.01	0.00	0.00	0.00	0.00	0.40	1.50	0.10	0.00	0.00
Building Modules & I																									
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.30	0.30	0.00	0.00
Crane	0.17	4.1	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	4.133	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00	0.00
Building Siding / Insu																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.06	0.14	0.00	0.00
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.10	0.00	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.06	0.15	0.00	0.00
Roofing																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00
IIIA. Nechanical Installat																									
Mechanical Installati																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.04	0.10	0.04	0.02	0.00	0.00	0.00	0.57	1.41	0.57	0.28	0.00
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.10	0.26	0.10	0.05	0.00
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.00	0.02	0.06	0.02	0.01	0.00	0.00	0.00	0.62	1.56	0.62	0.31	0.00
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.01	0.03	0.01	0.01	0.00	0.00	0.00	0.16	0.40	0.16	0.08	0.00
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.10	0.25	0.10	0.05	0.00
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.06	0.15	0.06	0.03	0.00
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.07	0.17	0.07	0.03	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.03	0.03	0.01	0.01	0.00	0.00	0.00	0.35	0.47	0.17	0.17	0.00
IIIB. Electrical Installatio																									
Electrical Installation																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.13	0.34	0.17	0.13	0.08
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.10	0.26	0.13	0.10	0.07
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.00	0.02	0.06	0.03	0.02	0.02	0.00	0.00	0.58	1.56	0.78	0.58	0.39
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.01	0.03	0.01	0.01	0.01	0.00	0.00	0.15	0.40	0.20	0.15	0.10
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.09	0.25	0.13	0.09	0.06
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.04	0.12	0.06	0.04	0.03
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.05	0.13	0.07	0.05	0.03
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.14	0.07	0.05	0.04
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.01	0.03	0.02	0.01	0.01	0.00	0.00	0.17	0.47	0.23	0.17	0.12
IV. Major Equipment (he																									
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.09	0.16	0.02	0.02
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.04	0.11	0.19	0.02	0.02
Roller	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.12	0.18	0.00	0.00
Roller	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.12	0.18	0.00	0.00
Roller	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.12	0.18	0.00	0.00

Table B-1a Total Construction NOx and VOC Emissions from Non-road Engines

Equipment Type [1]	SCC [1]	Engine Technology Type	No.of Equipment #	Equipment Horsepower hp	Fuel Type	Total Hours	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7	
							Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours
V. Construction & Site Support																				
Crane	2270002045	T3	2	160 Hp	Diesel	11,968	0%	0	5%	598	15%	1,795	20%	2,394	20%	2,394	20%	2,394	20%	2,394
Aerial Lift	2270003010	T3	3	74 Hp	Diesel	8,976	0%	0	5%	449	15%	1,346	20%	1,795	20%	1,795	20%	1,795	20%	1,795
Generator Set	2270006005	T2	1	600 Hp	Diesel	1,197	0%	0	5%	60	15%	180	25%	299	20%	239	20%	239	15%	180
Welder	2270006025			<50 Hp	Diesel			0		0		0		0		0		0		0
Air Compressor	2270006015			<50 Hp	Diesel			0		0		0		0		0		0		0
Portable Lighting				<50 Hp	Diesel			0		0		0		0		0		0		0
VI. Final Restoration																				
Crawler Tractors	2270002069	T3	3	410 Hp	Diesel	2,534	0%	0	0%	0	0%	0	0%	0	0%	0	20%	507	80%	2,028
Crawler Tractors	2270002069	T3	3	235 Hp	Diesel	2,534	0%	0	0%	0	0%	0	0%	0	0%	0	20%	507	80%	2,028
Excavator	2270002036	T3	1	148 Hp	Diesel	704	0%	0	0%	0	0%	0	0%	0	0%	0	20%	141	80%	563
Dumper/Tener	2270002078	T3	6	400 Hp	Diesel	4,224	0%	0	0%	0	0%	0	0%	0	0%	0	20%	845	80%	3,379
Grader	2270002048	T3	2	259 Hp	Diesel	1,690	0%	0	0%	0	0%	0	0%	0	0%	0	20%	338	80%	1,352
Surfacing	2270002024	T3	3	156 Hp	Diesel	2,534	0%	0	0%	0	0%	0	0%	0	0%	0	20%	507	80%	2,028
Forklift (rough)	2270002057	T3	2	115 Hp	Diesel	845	0%	0	0%	0	0%	0	0%	0	0%	0	20%	169	80%	676

NOTES:

Note 1: Equipment type and SCC code based on Appendix A of "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", April 2004, EPA-420-P-04-005.

Note 2: Zero hour steady state emission factor (EFss; g/hp-hr), and load factor are from NMIM/NONROAD08 model factors dated April 5, 2009.

Note 3: Median life is taken from Table 1 of "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", April 2004, EPA-420-P-04-005.
EFss from NMIM/NONROAD08 have transient adjustment factors built in.

Note 4: Age factor and Deterioration factors calculated using Equation 4 from "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition", April 2004, EPA-420-P-04-009.

Age Factor = LF * cumulative hours / median life {where Age factor is capped at 1. For this calculation, age factor is assumed to be 1 for simplification purposes}.
Deterioration Factor = 1 + (A * Age Factor^b), where b = 1 for desel engines and A is taken from Table A4 from source

Note 5: Adjusted Emission Factors for HC and NOx are calculated using Equation 1 from, "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition", April 2004, EPA-420-P-04-009.
Adjusted EF = Efss * TAF * DF (as stated in Note 2, EFss have TAFs built in)

Note 6: Annual VOC Emissions are calculated using the following calculation (1.053 * Adj. HC emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

1.053 is the ratio of VOC to HC from "Conversion Factors for Hydrocarbon Components", December 2005, EPA-420-P-05-015.

Annual NOx Emissions are calculated using the following calculation (Adj. NOx emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

Table B-1a Total Construction NOx and VOC Emissions from Non-road Engines

Equipment Type [1]	Criteria Pollutants EFss (g/hp-hr) [2]		Load Factor [2]	Median Life [3] Hours	Age Factor [4]	"A" [4]		Deterioration factor [4]		Adjusted EF (g/hp-hr) [5]		Emissions (tons) [6]													
												HC							NOx						
	HC	NOx				HC	NOx	HC	NOx	HC	NOx	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
V. Construction & Site S																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.01	0.03	0.03	0.03	0.03	0.03	0.00	0.11	0.34	0.46	0.46	0.46	0.46
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.03	0.08	0.11	0.11	0.11	0.11
Generator Set	0.17	4.1	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.137	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.07	0.21	0.35	0.28	0.28	0.21
Welder	0	0	0.21	0	> 1	0	0	1.000	1.000	0.000	0.000														
Air Compressor	0	0	0.43	0	> 1	0	0	1.000	1.000	0.000	0.000														
Portable Lighting	0	0	0	0	> 1	0	0	1.000	1.000	0.000	0.000														
VI. Final Restoration																									
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.02	0.09	0.00	0.00	0.00	0.00	0.00	0.36	1.42
Crawler Tractors	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.02	0.06	0.00	0.00	0.00	0.00	0.00	0.20	0.82
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.14
Dumper/Tener	0.38	3.03	0.21	7000	> 1	0.027	0.008	1.027	1.008	0.390	3.054	0.00	0.00	0.00	0.00	0.00	0.03	0.12	0.00	0.00	0.00	0.00	0.00	0.24	0.96
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.15	0.60
Surfacing	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.14	0.54
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.13
												4.6	**4.6**	**2.4**	**2.2**	**1.0**	**0.4**	**0.6**	**65.9**	**66.5**	**37.4**	**33.4**	**15.9**	**5.9**	**7.3**

NOTES:

Note 1: Equipment type and SCC code based on Appendix A of "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", April 2004, EPA-420-P-04-005.

Note 2: Zero hour steady state emission factor (EFss; g/hp-hr), and load factor are from NMIM/NONROAD08 model factors dated April 5, 2009.

Note 3: Median life is taken from Table 1 of "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", April 2004, EPA-420-P-04-005.
EFss from NMIM/NONROAD08 have transient adjustment factors built in.

Note 4: Age factor and Deterioration factors calculated using Equation 4 from "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition", April 2004, EPA-420-P-04-009.

Age Factor = LF * cumulative hours / median life {where Age factor is capped at 1. For this calculation, age factor is assumed to be 1 for simplification purposes}.
Deterioration Factor = 1 + (A * Age Factor^b), where b = 1 for desel engines and A is taken from Table A4 from source

Note 5: Adjusted Emission Factors for HC and NOx are calculated using Equation 1 from, "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition", April 2004, EPA-420-P-04-009.
Adjusted EF = Efss * TAF * DF (as stated in Note 2, EFss have TAFs built in)

Note 6: Annual VOC Emissions are calculated using the following calculation (1.053 * Adj. HC emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

1.053 is the ratio of VOC to HC from "Conversion Factors for Hydrocarbon Components", December 2005, EPA-420-P-05-015.

Annual NOx Emissions are calculated using the following calculation (Adj. NOx emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

Table B-1b Safety Related NOx and VOC Emissions from Non-road Engines

Equipment Type	SCC[1]	Engine Technology Type	No.of Equipment #	Equipment Horsepower hp	Fuel Type	Total Operating Hrs	% of Tot. Hrs Safety Related	Total Safety Related Hrs	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7	
									Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours
IA. Early Site Prepatration																						
Crawler Tractors	2270002069	T3	4	700 Hp	Diesel	3,300	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	3	263 Hp	Diesel	2,475	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	3	148 Hp	Diesel	1,980	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	1	380 Hp	Diesel	660	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Crane	2270002045	T3	2	160 Hp	Diesel	880	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Dumper/Tener	2270002078	T3	10	450 Hp	Diesel	5,500	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Grader	2270002048	T3	2	259 Hp	Diesel	990	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Scraper	2270002018	T3	8	462 Hp	Diesel	5,280	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Scraper	2270002018	T3	3	462 Hp	Diesel	1,980	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	1	156 Hp	Diesel	660	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
IA. Site Development and Excavation																						
Intake area, Switchyard, NE & W Laydown areas																						
Crawler Tractors	2270002069	T3	7	700 Hp	Diesel	4,200	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Scraper (dual engine 1/2)	2270002018	T3	6	500 Hp	Diesel	2,400	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Scraper (dual engine 2/2)	2270002018	T3	6	462 Hp	Diesel	2,400	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	1	148 Hp	Diesel	480	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	6	263 Hp	Diesel	3,360	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Grader	2270002048	T3	1	259 Hp	Diesel	400	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Powerblock (inc. cooling towers & NC laydown)																						
Crawler Tractors	2270002069	T3	4	700 Hp	Diesel	6,240	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Crawler Tractors	2270002069	T3	1	410 Hp	Diesel	1,560	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	2	263 Hp	Diesel	3,120	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Scraper (dual engine 1/2)	2270002018	T3	15	500 Hp	Diesel	19,500	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Scraper (dual engine 2/2)	2270002018	T3	15	462 Hp	Diesel	19,500	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	2	156 Hp	Diesel	2,340	10%	234	20%	47	40%	94	40%	94	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	2	400 Hp	Diesel	2,340	10%	234	20%	47	40%	94	40%	94	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	2	148 Hp	Diesel	3,120	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	6	263 Hp	Diesel	10,920	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Grader	2270002048	T3	2	259 Hp	Diesel	2,600	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	5	428 Hp	Diesel	7,800	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Off-Highway Truck	2270002051	T3	30	650 Hp	Diesel	35,100	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Off-Highway Truck	2270002051	T2	1	462 Hp	Diesel	1,300	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Rubber tire loader	2270002060	T3	2	262 Hp	Diesel	704	80%	563	0%	0	75%	422	25%	141	0%	0	0%	0	0%	0	0%	0
Parking																						
Crawler Tractors	2270002069	T3	2	235 Hp	Diesel	1,500	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Scraper	2270002018	T3	1	462 Hp	Diesel	500	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	2	156 Hp	Diesel	900	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	2	400 Hp	Diesel	900	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	1	148 Hp	Diesel	600	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	1	263 Hp	Diesel	700	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Grader	2270002048	T3	1	259 Hp	Diesel	500	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Paving Equipment	2270002021	T3	1	174 Hp	Diesel	500	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Paving Equipment	2270002021	T3	1	107 Hp	Diesel	500	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Support Road (inc. Quarry, Batch Plant, Central laydown)																						
Crawler Tractors	2270002069	T3	4	235 Hp	Diesel	9,000	0%	0	0%	0	0%	0	20%	0	0%	0	0%	0	0%	0	0%	0
Scraper (dual engine 1/2)	2270002018	T3	3	500 Hp	Diesel	4,500	0%	0	0%	0	0%	0	5%	0	0%	0	0%	0	0%	0	0%	0
Scraper (dual engine 2/2)	2270002018	T3	3	462 Hp	Diesel	4,500	0%	0	0%	0	0%	0	5%	0	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	1	156 Hp	Diesel	1,350	0%	0	0%	0	0%	0	20%	0	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	2	400 Hp	Diesel	2,700	0%	0	0%	0	0%	0	20%	0	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	2	148 Hp	Diesel	3,600	0%	0	0%	0	0%	0	20%	0	0%	0	0%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	2	263 Hp	Diesel	4,200	0%	0	0%	0	0%	0	20%	0	0%	0	0%	0	0%	0	0%	0
Grader	2270002048	T3	2	259 Hp	Diesel	1,600	0%	0	0%	0	0%	0	20%	0	0%	0	0%	0	0%	0	0%	0
Paving Equipment	2270002021	T3	1	174 Hp	Diesel	500	0%	0	0%	0	0%	0	40%	0	0%	0	0%	0	0%	0	0%	0
Paving Equipment	2270002021	T3	1	107 Hp	Diesel	500	0%	0	0%	0	0%	0	40%	0	0%	0	0%	0	0%	0	0%	0
Off-Highway Truck	2270002051	T2	1	462 Hp	Diesel	1,200	0%	0	0%	0	0%	0	20%	0	0%	0	0%	0	0%	0	0%	0

Table B-1b Safety Related NOx and VOC Emissions from Non-road Engines

Equipment Type[1]	Criteria Pollutants EFas (g/hp-hr)[2]		Load Factor[2]	Median Life[3] Hours	Age Factor[4]	"A"[4]		Deterioration factor[4]		Adjusted EF (g/hp-hr)[5]		Emissions (tons)[6]													
												HC							NOx						
	HC	NOx				HC	NOx	HC	NOx	HC	NOx	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
IA Early Site Prepatrati																									
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.03	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.054	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dumper/Tener	0.38	3.03	0.21	7000	> 1	0.027	0.008	1.027	1.008	0.390	3.054	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surfacing	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IA Site Development ar																									
Intake area Switchy																									
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper (dual engine 1/2)	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper (dual engine 2/2)	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.03	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.054	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Powerblock (inc. co																									
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.03	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.054	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper (dual engine 1/2)	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper (dual engine 2/2)	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surfacing	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.00	0.00	0.00	0.00
Surfacing	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.06	0.06	0.00	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.03	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.054	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Highway Truck	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Highway Truck	0.17	4.11	0.59	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.147	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubber tire loader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.06	0.00	0.00	0.00	0.00
Parking																									
Crawler Tractors	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surfacing	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surfacing	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.03	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.054	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Equipment	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Equipment	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Support Road (inc.																									
Crawler Tractors	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper (dual engine 1/2)	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper (dual engine 2/2)	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surfacing	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surfacing	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.03	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.054	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Equipment	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Equipment	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Highway Truck	0.17	4.11	0.59	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.147	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table B-1b Safety Related NOx and VOC Emissions from Non-road Engines

Equipment Type	SCC [1]	Engine Technology Type	No. of Equipment #	Equipment Horsepower hp	Fuel Type	Total Operating Hrs	% of Tot. Hrs Safety Related	Total Safety Related Hrs	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7	
									Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours
South Laydown																						
Crawler Tractors	2270002069	T3	4	700 Hp	Diesel	2,400	0%	0	0%	0	0%	0	20%	0	0%	0	0%	0	0%	0	0%	0
Surfacing	2270002024	T3	1	400 Hp	Diesel	360	0%	0	0%	0	0%	0	20%	0	0%	0	0%	0	0%	0	0%	0
Excavator	2270002036	T3	3	148 Hp	Diesel	1,440	0%	0	0%	0	0%	0	20%	0	0%	0	0%	0	0%	0	0%	0
Grader	2270002048	T3	1	259 Hp	Diesel	400	0%	0	0%	0	0%	0	20%	0	0%	0	0%	0	0%	0	0%	0
Boring/Soils investigation																						
Bore/Drill Rig	2270002033	T2	1	420 Hp	Diesel	246	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Underground utilities, piping, ductruns, grounding																						
Crane	2270002045	T3	2	160 Hp	Diesel	1,126	50%	563	0%	0	50%	282	50%	282	0%	0	0%	0	0%	0	0%	0
Crawler Tractors	2270002069	T3	2	235 Hp	Diesel	1,690	50%	845	0%	0	50%	422	50%	422	0%	0	0%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	6	102 Hp	Diesel	5,069	50%	2,534	0%	0	40%	1,014	30%	760	30%	760	0%	0	0%	0	0%	0
Excavator	2270002036	T3	2	148 Hp	Diesel	1,690	50%	845	0%	0	60%	507	40%	338	0%	0	0%	0	0%	0	0%	0
Dumper/Tener	2270002078	T3	1	400 Hp	Diesel	845	50%	422	0%	0	50%	211	40%	169	10%	42	0%	0	0%	0	0%	0
Warehouse & Storage																						
Forklift	2270003020	T3	2	94 Hp	Diesel	8,378	50%	4,189	0%	0	10%	419	20%	838	30%	1,257	25%	1,047	10%	419	5%	209
Crane	2270002045	T3	2	160 Hp	Diesel	9,574	50%	4,787	0%	0	10%	479	20%	957	30%	1,436	25%	1,197	10%	479	5%	239
Forklift (rough)	2270002057	T3	1	115 Hp	Diesel	5,386	50%	2,693	0%	0	10%	269	20%	539	30%	808	25%	673	10%	269	5%	135
IIA Civil / Concrete Structure Work																						
Bridge Construction																						
Crawler Tractors	2270002069	T3	3	700 Hp	Diesel	3,600	0%	0	0%	0	20%	0	30%	0	30%	0	20%	0	0%	0	0%	0
Crawler Tractors	2270002069	T3	2	305 Hp	Diesel	2,400	0%	0	0%	0	20%	0	30%	0	30%	0	20%	0	0%	0	0%	0
Surfacing	2270002024	T3	2	400 Hp	Diesel	2,160	0%	0	0%	0	20%	0	30%	0	30%	0	20%	0	0%	0	0%	0
Excavator	2270002036	T3	4	148 Hp	Diesel	4,800	0%	0	0%	0	20%	0	30%	0	30%	0	10%	0	10%	0	0%	0
Grader	2270002048	T3	1	259 Hp	Diesel	960	0%	0	0%	0	20%	0	30%	0	30%	0	20%	0	0%	0	0%	0
Tractor/Loader/Backhoe	2270002066	T3	3	80 Hp	Diesel	3,802	0%	0	0%	0	20%	0	30%	0	30%	0	10%	0	10%	0	0%	0
Crane	2270002045	T3	4	160 Hp	Diesel	4,224	0%	0	0%	0	20%	0	30%	0	30%	0	10%	0	10%	0	0%	0
Crane	2270002045	T2	2	355 Hp	Diesel	2,112	0%	0	0%	0	20%	0	30%	0	30%	0	20%	0	0%	0	0%	0
Pump	2270006010	T3	1	300 Hp	Diesel	528	0%	0	0%	0	10%	0	30%	0	30%	0	20%	0	10%	0	0%	0
Forklift (rough)	2270002057	T3	2	115 Hp	Diesel	1,901	0%	0	0%	0	10%	0	30%	0	30%	0	20%	0	10%	0	0%	0
Rubber tire loader	2270002060	T3	1	262 Hp	Diesel	1,056	0%	0	0%	0	10%	0	30%	0	30%	0	20%	0	10%	0	0%	0
Sheet Piling																						
Crane	2270002045	T3	1	205 Hp	Diesel	352	0%	0	0%	0	50%	0	50%	0	0%	0	0%	0	0%	0	0%	0
Crane	2270002045	T3	2	160 Hp	Diesel	493	0%	0	0%	0	50%	0	50%	0	0%	0	0%	0	0%	0	0%	0
Structural Concrete																						
Pump	2270006010	T3	5	300 Hp	Diesel	7,500	50%	3,750	0%	0	10%	375	30%	1,125	30%	1,125	20%	750	5%	188	5%	188
Crane	2270002045	T2	5	355 Hp	Diesel	7,920	50%	3,960	0%	0	10%	396	30%	1,188	30%	1,188	20%	792	5%	198	5%	198
Crane	2270002045	T3	5	160 Hp	Diesel	9,504	50%	4,752	0%	0	10%	475	30%	1,426	30%	1,426	20%	950	5%	238	5%	238
Forklift (rough)	2270002057	T3	6	115 Hp	Diesel	17,107	50%	8,554	0%	0	10%	855	30%	2,566	30%	2,566	20%	1,711	5%	428	5%	428
Rubber tire loader	2270002060	T3	2	262 Hp	Diesel	6,336	50%	3,168	0%	0	10%	317	30%	950	30%	950	20%	634	5%	158	5%	158
Tractor/Loader/Backhoe	2270002066	T3	4	80 Hp	Diesel	12,672	50%	6,336	0%	0	10%	634	30%	1,901	30%	1,901	20%	1,267	5%	317	5%	317
Non-Power Block (Oump House, Switchyard, Cooling Towers)																						
Crane	2270002045	T3	2	160 Hp	Diesel	8,490	0%	0	0%	0	0%	0	70%	0	30%	0	0%	0	0%	0	0%	0
Pump	2270006010	T3	3	300 Hp	Diesel	1,901	0%	0	0%	0	0%	0	70%	0	30%	0	0%	0	0%	0	0%	0
Crane	2270002045	T2	2	355 Hp	Diesel	6,336	0%	0	0%	0	0%	0	70%	0	30%	0	0%	0	0%	0	0%	0
Forklift (rough)	2270002057	T3	1	115 Hp	Diesel	1,901	0%	0	0%	0	0%	0	70%	0	30%	0	0%	0	0%	0	0%	0
Switchyard																						
Crane	2270002045	T3	2	160 Hp	Diesel	3,168	25%	792	0%	0	0%	0	50%	396	40%	317	10%	79	0%	0	0%	0
Pump	2270006010	T3	3	300 Hp	Diesel	950	25%	238	0%	0	0%	0	75%	178	25%	59	0%	0	0%	0	0%	0
Crane	2270002045	T2	1	355 Hp	Diesel	792	25%	198	0%	0	0%	0	75%	149	25%	50	0%	0	0%	0	0%	0
Forklift (rough)	2270002057	T3	1	115 Hp	Diesel	1,426	25%	356	0%	0	0%	0	75%	267	25%	89	0%	0	0%	0	0%	0
Cooling Tower																						
Crane	2270002045	T3	4	160 Hp	Diesel	8,490	10%	849	0%	0	0%	0	0%	0	30%	255	70%	594	0%	0	0%	0
Crane	2270002045	T2	2	355 Hp	Diesel	1,584	10%	158	0%	0	0%	0	0%	0	30%	48	70%	111	0%	0	0%	0
Pump	2270006010	T3	3	300 Hp	Diesel	1,901	10%	190	0%	0	0%	0	0%	0	30%	57	70%	133	0%	0	0%	0
Forklift (rough)	2270002057	T3	1	115 Hp	Diesel	2,851	10%	285	0%	0	0%	0	0%	0	30%	86	70%	200	0%	0	0%	0

Table B-1b Safety Related NOx and VOC Emissions from Non-road Engines

Equipment Type [1]	Criteria Pollutants EFss (g/hp-hr) [2]		Load Factor [2]	Median Life [3] Hours	Age Factor [4]	"A" [4]		Deterioration factor [4]		Adjusted EF (g/hp-hr) [5]		Emissions (tons) [6]													
												HC							NOx						
	HC	NOx				HC	NOx	HC	NOx	HC	NOx	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
South Laydown																									
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surfacing	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boring/Soils investi																									
Bore/Drill Rig	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Underground utilitie																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.00
Crawler Tractors	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.03	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.054	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.07	0.05	0.05	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.13	0.09	0.00	0.00	0.00	0.00
Dumper/Tener	0.38	3.03	0.21	7000	> 1	0.027	0.008	1.027	1.008	0.390	3.054	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.06	0.05	0.01	0.00	0.00	0.00
Warehouse & Storag																									
Forklift	0.19	3.13	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	3.155	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.08	0.16	0.24	0.20	0.08	0.04
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.01	0.01	0.02	0.02	0.01	0.00	0.00	0.09	0.18	0.27	0.23	0.09	0.05
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.05	0.11	0.16	0.13	0.05	0.03
IIA. Civil/.Concrete Stru																									
Bridge Construction																									
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surfacing	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tractor/Loader/Backhoe	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pump	0	0	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubber tire loader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sheet Piling																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Structural Concrete																									
Pump	0	0	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.01	0.04	0.04	0.02	0.01	0.01	0.00	0.29	0.88	0.88	0.58	0.15	0.15
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.01	0.02	0.02	0.01	0.00	0.00	0.00	0.09	0.27	0.27	0.18	0.05	0.05
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.04	0.04	0.02	0.01	0.01	0.00	0.17	0.50	0.50	0.34	0.08	0.08
Rubber tire loader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.01	0.03	0.03	0.02	0.01	0.01	0.00	0.14	0.43	0.43	0.28	0.07	0.07
Tractor/Loader/Backhoe	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.01	0.02	0.02	0.01	0.00	0.00	0.00	0.04	0.13	0.13	0.09	0.02	0.02
Non-Power Block (C																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pump	0	0	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Switchyard																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.06	0.02	0.00	0.00
Pump	0	0	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.04	0.00	0.00	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.02	0.00	0.00	0.00
Cooling Tower																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.11	0.00	0.00
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.08	0.00	0.00
Pump	0	0	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.00	0.00

Table B-1b Safety Related NOx and VOC Emissions from Non-road Engines

Equipment Type	SCC[1]	Engine Technology Type	No. of Equipment #	Equipment Horsepower hp	Fuel Type	Total Operating Hrs	% of Tot Hrs Safety Related	Total Safety Related Hrs	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7	
									Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours
IIB Superstructure & Structual Steel																						
Structural & Building Steel																						
Crane	2270002045	T2	5	355 Hp	Diesel	5,280	40%	2,112	0%	0	0%	0	20%	422	75%	1,584	5%	106	0%	0	0%	0
Crane	2270002045	T3	4	400 Hp	Diesel	4,224	40%	1,690	0%	0	0%	0	20%	338	75%	1,267	5%	84	0%	0	0%	0
Crane	2270002045	T3	7	160 Hp	Diesel	9,905	40%	3,962	0%	0	0%	0	20%	792	75%	2,972	5%	198	0%	0	0%	0
Crane	2270002045	T3	7	173 Hp	Diesel	8,870	40%	3,548	0%	0	0%	0	20%	710	75%	2,661	5%	177	0%	0	0%	0
Aerial Lift	2270003010	T3	8	65 Hp	Diesel	10,138	40%	4,055	0%	0	0%	0	20%	811	75%	3,041	5%	203	0%	0	0%	0
Aerial Lift	2270003010	T3	8	74 Hp	Diesel	10,138	40%	4,055	0%	0	0%	0	20%	811	75%	3,041	5%	203	0%	0	0%	0
Forklift (rough)	2270002057	T3	8	115 Hp	Diesel	10,138	40%	4,055	0%	0	0%	0	20%	811	75%	3,041	5%	203	0%	0	0%	0
Building Modules & Heavy Lifts																						
Crane	2270002045	T3	1	600 Hp	Diesel	845	40%	338	0%	0	0%	0		0	50%	169	50%	169	0%	0	0%	0
Crane	2270002045	T3	1	1,200 Hp	Diesel	422	40%	169	0%	0	0%	0	50%	84	50%	84	0%	0	0%	0	0%	0
Building Siding / Insulated Panels																						
Crane	2270002045	T3	2	160 Hp	Diesel	1,056	40%	422	0%	0	0%	0	0%	0	30%	127	70%	296	0%	0	0%	0
Aerial Lift	2270003010	T3	3	74 Hp	Diesel	2,218	40%	887	0%	0	0%	0	0%	0	30%	266	70%	621	0%	0	0%	0
Forklift (rough)	2270002057	T3	2	115 Hp	Diesel	1,056	40%	422	0%	0	0%	0	0%	0	30%	127	70%	296	0%	0	0%	0
Roofing																						
Crane	2270002045	T3	2	160 Hp	Diesel	950	40%	380	0%	0	0%	0	0%	0	0%	0	100%	380	0%	0	0%	0
Aerial Lift	2270003010	T3	3	74 Hp	Diesel	1,426	40%	570	0%	0	0%	0	0%	0	0%	0	100%	570	0%	0	0%	0
Forklift (rough)	2270002057	T3	2	115 Hp	Diesel	950	40%	380	0%	0	0%	0	0%	0	0%	0	100%	380	0%	0	0%	0
IIIA Mechanical Installation																						
Mechanical Installation																						
Crane	2270002045	T3	5	160 Hp	Diesel	14,784	50%	7,392	0%	0	0%	0	20%	1,478	50%	3,696	20%	1,478	10%	739	0%	0
Crane	2270002045	T3	3	173 Hp	Diesel	2,534	50%	1,267	0%	0	0%	0	20%	253	50%	634	20%	253	10%	127	0%	0
Crane	2270002045	T2	5	355 Hp	Diesel	4,224	50%	2,112	0%	0	0%	0	20%	422	50%	1,056	20%	422	10%	211	0%	0
Crane	2270002045	T3	2	400 Hp	Diesel	1,690	50%	845	0%	0	0%	0	20%	169	50%	422	20%	169	10%	84	0%	0
Crane	2270002045	T3	1	500 Hp	Diesel	845	50%	422	0%	0	0%	0	20%	84	50%	211	20%	84	10%	42	0%	0
Aerial Lift	2270003010	T3	5	65 Hp	Diesel	5,280	50%	2,640	0%	0	0%	0	20%	528	50%	1,320	20%	528	10%	264	0%	0
Aerial Lift	2270003010	T3	5	74 Hp	Diesel	5,280	50%	2,640	0%	0	0%	0	20%	528	50%	1,320	20%	528	10%	264	0%	0
Forklift (rough)	2270002057	T3	2	115 Hp	Diesel	5,914	50%	2,957	0%	0	0%	0	30%	887	40%	1,183	15%	444	15%	444	0%	0
IIIB Electrical Installation																						
Electrical Installation																						
Crane	2270002045	T3	5	160 Hp	Diesel	4,435	50%	2,218	0%	0	0%	0	15%	333	40%	887	20%	444	15%	333	10%	222
Crane	2270002045	T3	3	173 Hp	Diesel	3,168	50%	1,584	0%	0	0%	0	15%	238	40%	634	20%	317	15%	238	10%	158
Crane	2270002045	T2	5	355 Hp	Diesel	5,280	50%	2,640	0%	0	0%	0	15%	396	40%	1,056	20%	528	15%	396	10%	264
Crane	2270002045	T3	2	400 Hp	Diesel	2,112	50%	1,056	0%	0	0%	0	15%	158	40%	422	20%	211	15%	158	10%	106
Crane	2270002045	T3	1	500 Hp	Diesel	1,056	50%	528	0%	0	0%	0	15%	79	40%	211	20%	106	15%	79	10%	53
Aerial Lift	2270003010	T3	5	65 Hp	Diesel	5,280	50%	2,640	0%	0	0%	0	15%	396	40%	1,056	20%	528	15%	396	10%	264
Aerial Lift	2270003010	T3	5	74 Hp	Diesel	5,280	50%	2,640	0%	0	0%	0	15%	396	40%	1,056	20%	528	15%	396	10%	264
Crane	2270002045	T3	1	355 Hp	Diesel	845	50%	422	0%	0	0%	0	15%	63	40%	169	20%	84	15%	63	10%	42
Forklift (rough)	2270002057	T3	2	115 Hp	Diesel	5,914	50%	2,957	0%	0	0%	0	15%	444	40%	1,183	20%	591	15%	444	10%	296
IV Major Equipment (heavy) lift and movement																						
Crane	2270002045	T3	1	500 Hp	Diesel	528	75%	396	0%	0	0%	0	10%	40	30%	119	50%	198	5%	20	5%	20
Crane	2270002045	T3	1	600 Hp	Diesel	528	75%	396	0%	0	0%	0	10%	40	30%	119	50%	198	5%	20	5%	20
Roller	2270002015	T3	2	600 Hp	Diesel	300	75%	225	0%	0	0%	0	0%	0	40%	90	60%	135	0%	0	0%	0
Roller	2270002015	T3	1	600 Hp	Diesel	300	75%	225	0%	0	0%	0	0%	0	40%	90	60%	135	0%	0	0%	0
Roller	2270002015	T3	1	600 Hp	Diesel	300	75%	225	0%	0	0%	0	0%	0	40%	90	60%	135	0%	0	0%	0

Table B-1b Safety Related NOx and VOC Emissions from Non-road Engines

Equipment Type[1]	Criteria Pollutants EFss (g/hp-hr)[2]		Load Factor[2]	Median Life[3]	Age	"A"[4]		Deterioration factor[4]		Adjusted EF (g/hp-hr)[5]		Emissions (tons)[6]													
												HC							NOx						
	HC	NOx	Factor[2]	Hours	Factor[4]	HC	NOx	HC	NOx	HC	NOx	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
IIB. Superstructure & S																									
Structural & Buildin																									
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.00	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.31	1.17	0.08	0.00	0.00
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.16	0.61	0.04	0.00	0.00
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.15	0.57	0.04	0.00	0.00
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.15	0.55	0.04	0.00	0.00
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.04	0.17	0.01	0.00	0.00
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.05	0.19	0.01	0.00	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.16	0.60	0.04	0.00	0.00
Building Modules &																									
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00
Crane	0.17	4.1	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	4.133	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00	0.00
Building Siding / Ins																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.06	0.00	0.00
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.00	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.06	0.00	0.00
Roofing																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00
IIIA. Nechanical Installa																									
Mechanical Installat																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.02	0.05	0.02	0.01	0.00	0.00	0.00	0.28	0.71	0.28	0.14	0.00
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.13	0.05	0.03	0.00
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.00	0.01	0.03	0.01	0.01	0.00	0.00	0.00	0.31	0.78	0.31	0.16	0.00
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.08	0.20	0.08	0.04	0.00
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.13	0.05	0.03	0.00
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.07	0.03	0.01	0.00
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.08	0.03	0.02	0.00
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.17	0.23	0.09	0.09	0.00
IIIB. Electrical Installatic																									
Electrical Installatio																									
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.06	0.17	0.08	0.06	0.04
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.13	0.07	0.05	0.03
Crane	0.17	4.34	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.379	0.00	0.00	0.01	0.03	0.02	0.01	0.01	0.00	0.00	0.29	0.78	0.39	0.29	0.19
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.08	0.20	0.10	0.08	0.05
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.13	0.06	0.05	0.03
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.06	0.03	0.02	0.01
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.07	0.03	0.02	0.02
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.07	0.04	0.03	0.02
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.09	0.23	0.12	0.09	0.06
IV. Major Equipment (he																									
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.07	0.12	0.01	0.01
Crane	0.17	2.5	0.43	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.520	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.09	0.14	0.01	0.01
Roller	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.09	0.14	0.00	0.00
Roller	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.09	0.14	0.00	0.00
Roller	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.09	0.14	0.00	0.00

Table B-1b Safety Related NOx and VOC Emissions from Non-road Engines

Equipment Type	SCC [1]	Engine Technology Type	No. of Equipment #	Equipment Horsepower hp	Fuel Type	Total Operating Hrs	% of Tot. Hrs Safety Related	Total Safety Related Hrs	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7	
									Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours	Operation %	Hours
V. Construction & Site Support																						
Crane	2270002045	T3	2	160 Hp	Diesel	11,968	0%	0	0%	0	5%	0	15%	0	20%	0	20%	0	20%	0	20%	0
Aerial Lift	2270003010	T3	3	74 Hp	Diesel	8,976	0%	0	0%	0	5%	0	15%	0	20%	0	20%	0	20%	0	20%	0
Generator Set	2270006005	T2	1	600 Hp	Diesel	1,197	0%	0	0%	0	5%	0	15%	0	25%	0	20%	0	20%	0	15%	0
Welder	2270006025			<50 Hp	Diesel		0%	0		0		0		0		0		0		0		0
Air Compressor	2270006015			<50 Hp	Diesel		0%	0		0		0		0		0		0		0		0
Portable Lighting				<50 Hp	Diesel		0%	0		0		0		0		0		0		0		0
VI. Final Restoration																						
Crawler Tractors	2270002069	T3	3	410 Hp	Diesel	2,534	10%	253	0%	0	0%	0	0%	0	0%	0	0%	0	20%	51	80%	203
Crawler Tractors	2270002069	T3	3	235 Hp	Diesel	2,534	10%	253	0%	0	0%	0	0%	0	0%	0	0%	0	20%	51	80%	203
Excavator	2270002036	T3	1	148 Hp	Diesel	704	10%	70	0%	0	0%	0	0%	0	0%	0	0%	0	20%	14	80%	56
Dumper/Tener	2270002078	T3	6	400 Hp	Diesel	4,224	10%	422	0%	0	0%	0	0%	0	0%	0	0%	0	20%	84	80%	338
Grader	2270002048	T3	2	259 Hp	Diesel	1,690	10%	169	0%	0	0%	0	0%	0	0%	0	0%	0	20%	34	80%	135
Surfacing	2270002024	T3	3	156 Hp	Diesel	2,534	10%	253	0%	0	0%	0	0%	0	0%	0	0%	0	20%	51	80%	203
Forklift (rough)	2270002057	T3	2	115 Hp	Diesel	845	10%	84	0%	0	0%	0	0%	0	0%	0	0%	0	20%	17	80%	68

NOTES:

Note 1: Equipment type and SCC code based on Appendix A of "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", April 2004, EPA-420-P-04-005.

Note 2: Zero hour steady state emission factor (EFss; g/hp-hr), and load factor are from NMIM/NONROAD08 model factors dated April 5, 2009.

Note 3: Median life is taken from Table 1 of "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", April 2004, EPA-420-P-04-005.
EFss from NMIM/NONROAD08 have transient adjustment factors built in.

Note 4: Age factor and Deterioration factors calculated using Equation 4 from "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition", April 2004, EPA-420-P-04-009.
Age Factor = LF * cumulative hours / median life (where Age factor is capped at 1. For this calculation, age factor is assumed to be 1 for simplification purposes).
Deterioration Factor = 1 + (A * Age Factor^b), where b = 1 for desel engines and A is taken from Table A4 from source

Note 5: Adjusted Emission Factors for HC and NOx are calculated using Equation 1 from, "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition", April 2004, EPA-420-P-04-009.
Adjusted EF = Efss * TAF * DF (as stated in Note 2, EFss have TAFs built in)

Note 6: Annual VOC Emissions are calculated using the following calculation (1.053 * Adj. HC emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

1.053 is the ratio of VOC to HC from "Conversion Factors for Hydrocarbon Components", December 2005, EPA-420-P-05-015.

Annual NOx Emissions are calculated using the following calculation (Adj. NOx emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

Table B-1b Safety Related NOx and VOC Emissions from Non-road Engines

Equipment Type [1]	Criteria Pollutants EFss (g/hp-hr) [2]		Load Factor [2]	Median Life [3] Hours	Age Factor [4]	"A" [4]		Deterioration factor [4]		Adjusted EF (g/hp-hr) [5]		Emissions (tons) [6]														
												HC							NOx							
	HC	NOx				HC	NOx	HC	NOx	HC	NOx	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
V: Construction & Site P																										
Crane	0.18	2.5	0.43	4667	> 1	0.027	0.008	1.027	1.008	0.185	2.520	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aerial Lift	0.42	3.64	0.21	4667	> 1	0.027	0.008	1.027	1.008	0.431	3.669	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Generator Set	0.17	4.1	0.43	7000	> 1	0.034	0.009	1.034	1.009	0.176	4.137	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welder	0	0	0.21	0	> 1	0	0	1.000	1.000	0.000	0.000														
Air Compressor	0	0	0.43	0	> 1	0	0	1.000	1.000	0.000	0.000														
Portable Lighting	0	0	0	0	> 1	0	0	1.000	1.000	0.000	0.000														
VI: Final Restoration																										
Crawler Tractors	0.17	2.61	0.59	7000	> 1	0.027	0.008	1.027	1.008	0.175	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.14
Crawler Tractors	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.08
Excavator	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Dumper/Tener	0.38	3.03	0.21	7000	> 1	0.027	0.008	1.027	1.008	0.390	3.054	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.10
Grader	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.06
Surfacing	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.05
Forklift (rough)	0.19	2.61	0.59	4667	> 1	0.027	0.008	1.027	1.008	0.195	2.631	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
												0.0	0.1	0.4	0.8	0.4	0.1	0.1	0.0	1.7	6.4	12.0	5.5	1.9	1.4

NOTES:

Note 1: Equipment type and SCC code based on Appendix A of "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", April 2004, EPA-420-P-04-005.

Note 2: Zero hour steady state emission factor (EFss; g/hp-hr), and load factor are from NMIM/NONROAD08 model factors dated April 5, 2009.

Note 3: Median life is taken from Table 1 of "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", April 2004, EPA-420-P-04-005.
EFss from NMIM/NONROAD08 have transient adjustment factors built in.

Note 4: Age factor and Deterioration factors calculated using Equation 4 from "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition", April 2004, EPA-420-P-04-009.
Age Factor = LF * cumulative hours / median life {where Age factor is capped at 1. For this calculation, age factor is assumed to be 1 for simplification purposes).
Deterioration Factor = 1 + (A * Age Factor^b), where b = 1 for desel engines and A is taken from Table A4 from source

Note 5: Adjusted Emission Factors for HC and NOx are calculated using Equation 1 from, "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition", April 2004, EPA-420-P-04-009.
Adjusted EF = Efss * TAF * DF (as stated in Note 2, EFss have TAFs built in)

Note 6: Annual VOC Emissions are calculated using the following calculation (1.053 * Adj. HC emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

1.053 is the ratio of VOC to HC from "Conversion Factors for Hydrocarbon Components", December 2005, EPA-420-P-05-015.

Annual NOx Emissions are calculated using the following calculation (Adj. NOx emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

Table B-2 - Construction Commuting Emissions Years 1-7

Bell Bend Construction Commuter Emissions **Year 1**

Average Workforce 150
Average Vehicles 115
Average Travel (mi) 50 (Miles Round Trip)
Daily VMT= 5750

	tons/running	tons/startups	tons/Year 1
VOC	0.14	0.17	0.31
NOX	0.92	0.08	1.00

Roadway	From	To	Average Speed (mph)	Distance (miles)	Percent of Traffic	VMT (veh-miles)	VOC Emission Factor (gram/veh-mi)	NOx Emission Factor (gram/veh-mi)	Daily VOC Emissions (tons/Yr)	Daily NOx Emissions (tons/Yr)
Plant Entrance	Rt 11	Parking Area	15	1.4	100	322	0.1817	0.7993	0.0185	0.0814
Rt 11 N	Plant Entrance	Rt 239	50	8.4	47.7	922	0.0926	0.6339	0.0270	0.1847
Rt 11 N	Rt 239	Rt 81	50	15.2	42	1468	0.0926	0.6339	0.0430	0.2942
Rt 239	Rt 11	To the NW	30	15.2	5.7	199	0.12	0.6419	0.0076	0.0404
Rt 11 S	Plant Entrance	Rt 93	50	5.6	52.3	674	0.0926	0.6339	0.0197	0.1350
Rt 11 S**	Rt 93	Rt 80	50	7.9	30.4	552	0	0	0.0000	0.0000
Rt 93	Rt 11	Rt 80	40	12.6	21.9	635	0.1024	0.6316	0.0205	0.1267
Rt 80	Rt 93	To the East	65	5.4	21.9	272	0.0919	0.6588	0.0079	0.0566
Rt 80**	Rt 11	To the West	65	10.1	30.4	706	0	0	0.0000	0.0000
Total						**5750**			**0.144**	**0.919**

** Outside SWB Maintenance Area - Emissions set to zero for this analysis

Emissions from startups	7-8AM EF (grams/ Vehicle-Start)	4-5PM EF (grams/ Vehicle-Start)	Mid-1AM EF (grams/ Vehicle-Start)	Avg EF (grams/ Vehicle-Start)	Vehicle Starts per Day	Startup Emissions/Day (Grams/Day)	Startup Emissions/Day (Tons/year)
VOC	3.907	2.667	3.574	3.047	115	526	0.166
NOX	1.601	1.438	1.565	1.491	115	257	0.081

Table B-2 - Construction Commuting Emissions Years 1-7

Bell Bend Construction Commuter Emissions **Year 2**

Average Workforce 550
Average Vehicles 423
Average Travel (mi) 50 (Miles Round Trip)
Daily VMT= 21150

	tons/running	tons/startups	tons/Year 2
VOC	0.53	0.61	1.14
NOX	3.38	0.30	3.68

Roadway	From	To	Average Speed (mph)	Distance (miles)	Percent of Traffic	VMT (veh-miles)	VOC Emission Factor (gram/veh-mi)	NOx Emission Factor (gram/veh-mi)	Daily VOC Emissions (tons/Yr)	Daily NOx Emissions (tons/Yr)
Plant Entrance	Rt 11	Parking Area	15	1.4	100	1184	0.1817	0.7993	0.0680	0.2993
Rt 11 N	Plant Entrance	Rt 239	50	8.4	47.7	3390	0.0926	0.6339	0.0992	0.6793
Rt 11 N	Rt 239	Rt 81	50	15.2	42	5401	0.0926	0.6339	0.1581	1.0823
Rt 239	Rt 11	To the NW	30	15.2	5.7	733	0.12	0.6419	0.0278	0.1487
Rt 11 S	Plant Entrance	Rt 93	50	5.6	52.3	2478	0.0926	0.6339	0.0725	0.4965
Rt 11 S**	Rt 93	Rt 80	50	7.9	30.4	2032	0	0	0.0000	0.0000
Rt 93	Rt 11	Rt 80	40	12.6	21.9	2334	0.1024	0.6316	0.0756	0.4661
Rt 80	Rt 93	To the East	65	5.4	21.9	1000	0.0919	0.6588	0.0291	0.2084
Rt 80**	Rt 11	To the West	65	10.1	30.4	2598	0	0	0.0000	0.0000
Total						**21150**			**0.530**	**3.381**

** Outside SWB Maintenance Area - Emissions set to zero for this analysis

Emissions from startups	7-8AM EF (grams/ Vehicle-Start)	4-5PM EF (grams/ Vehicle-Start)	Mid-1AM EF (grams/ Vehicle-Start)	Avg EF (grams/ Vehicle-Start)	Vehicle Starts per Day	Startup Emissions/Day (Grams/Day)	Startup Emissions/Day (Tons/year)
VOC	3.907	2.667	3.574	3.047	423	1933	0.611
NOX	1.601	1.438	1.565	1.491	423	946	0.299

Table B-2 - Construction Commuting Emissions Years 1-7

Bell Bend Construction Commuter Emissions **Year 3**

Average Workforce 1950
Average Vehicles 1500
Average Travel (mi) 50 (Miles Round Trip)
Daily VMT= 75000

	tons/running	tons/startups	tons/Year 3
VOC	1.65	1.44	3.10
NOX	10.66	0.71	11.37

Roadway	From	To	Average Speed (mph)	Distance (miles)	Percent of Traffic	VMT (veh-miles)	VOC Emission Factor (gram/veh-mi)	NOx Emission Factor (gram/veh-mi)	Daily VOC Emissions (tons/Yr)	Daily NOx Emissions (tons/Yr)
Plant Entrance	Rt 11	Parking Area	15	1.4	100	4200	0.1574	0.7122	0.2090	0.9456
Rt 11 N	Plant Entrance	Rt 239	50	8.4	47.7	12020	0.0816	0.5637	0.3101	2.1420
Rt 11 N	Rt 239	Rt 81	50	15.2	42	19152	0.0816	0.5637	0.4940	3.4128
Rt 239	Rt 11	To the NW	30	15.2	5.7	2599	0.1049	0.5708	0.0862	0.4690
Rt 11 S	Plant Entrance	Rt 93	50	5.6	52.3	8786	0.0816	0.5637	0.2266	1.5657
Rt 11 S**	Rt 93	Rt 80	50	7.9	30.4	7205	0	0	0.0000	0.0000
Rt 93	Rt 11	Rt 80	40	12.6	21.9	8278	0.0899	0.5616	0.2353	1.4697
Rt 80	Rt 93	To the East	65	5.4	21.9	3548	0.0819	0.5872	0.0919	0.6586
Rt 80**	Rt 11	To the West	65	10.1	30.4	9211	0	0	0.0000	0.0000
Total						**75000**			**1.653**	**10.663**

** Outside SWB Maintenance Area - Emissions set to zero for this analysis

Emissions from startups	7-8AM EF (grams/ Vehicle-Start)	4-5PM EF (grams/ Vehicle-Start)	Mid-1AM EF (grams/ Vehicle-Start)	Avg EF (grams/ Vehicle-Start)	Vehicle Starts per Day	Startup Emissions/Day (Grams/Day)	Startup Emissions/Day (Tons/year)
VOC	3.907	2.667	3.574	3.047	1500	4570	1.445
NOX	1.601	1.438	1.565	1.491	1500	2236	0.707

Table B-2 - Construction Commuting Emissions Years 1-7

Bell Bend Construction Commuter Emissions **Year 4**

Average Workforce 3950
Average Vehicles 3039
Average Travel (mi) 50 (Miles Round Trip)
Daily VMT= 151950

	tons/running	tons/startups	tons/Year 4
VOC	3.35	1.44	4.79
NOX	21.60	0.71	22.31

Roadway	From	To	Average Speed (mph)	Distance (miles)	Percent of Traffic	VMT (veh-miles)	VOC Emission Factor (gram/veh-mi)	NOx Emission Factor (gram/veh-mi)	Daily VOC Emissions (tons/Yr)	Daily NOx Emissions (tons/Yr)
Plant Entrance	Rt 11	Parking Area	15	1.4	100	8509	0.1574	0.7122	0.4234	1.9158
Rt 11 N	Plant Entrance	Rt 239	50	8.4	47.7	24353	0.0816	0.5637	0.6282	4.3397
Rt 11 N	Rt 239	Rt 81	50	15.2	42	38802	0.0816	0.5637	1.0009	6.9144
Rt 239	Rt 11	To the NW	30	15.2	5.7	5266	0.1049	0.5708	0.1746	0.9502
Rt 11 S	Plant Entrance	Rt 93	50	5.6	52.3	17801	0.0816	0.5637	0.4592	3.1721
Rt 11 S**	Rt 93	Rt 80	50	7.9	30.4	14597	0	0	0.0000	0.0000
Rt 93	Rt 11	Rt 80	40	12.6	21.9	16772	0.0899	0.5616	0.4766	2.9775
Rt 80	Rt 93	To the East	65	5.4	21.9	7188	0.0819	0.5872	0.1861	1.3343
Rt 80**	Rt 11	To the West	65	10.1	30.4	18662	0	0	0.0000	0.0000
Total						**151950**			**3.349**	**21.604**

** Outside SWB Maintenance Area - Emissions set to zero for this analysis

Emissions from startups	7-8AM EF (grams/ Vehicle-Start)	4-5PM EF (grams/ Vehicle-Start)	Mid-1AM EF (grams/ Vehicle-Start)	Avg EF (grams/ Vehicle-Start)	Vehicle Starts per Day	Startup Emissions/Day (Grams/Day)	Startup Emissions/Day (Tons/year)
VOC	3.907	2.667	3.574	3.047	1500	4570	1.445
NOX	1.601	1.438	1.565	1.491	1500	2236	0.707

Table B-2 - Construction Commuting Emissions Years 1-7

Bell Bend Construction Commuter Emissions **Year 5**

Average Workforce 3950
Average Vehicles 3039
Average Travel (mi) 50 (Miles Round Trip)
Daily VMT= 151950

	tons/running	tons/startups	tons/Year 5
VOC	3.35	1.44	4.79
NOX	21.60	0.71	22.31

Roadway	From	To	Average Speed (mph)	Distance (miles)	Percent of Traffic	VMT (veh-miles)	VOC Emission Factor (gram/veh-mi)	NOx Emission Factor (gram/veh-mi)	Daily VOC Emissions (tons/Yr)	Daily NOx Emissions (tons/Yr)
Plant Entrance	Rt 11	Parking Area	15	1.4	100	8509	0.1574	0.7122	0.4234	1.9158
Rt 11 N	Plant Entrance	Rt 239	50	8.4	47.7	24353	0.0816	0.5637	0.6282	4.3397
Rt 11 N	Rt 239	Rt 81	50	15.2	42	38802	0.0816	0.5637	1.0009	6.9144
Rt 239	Rt 11	To the NW	30	15.2	5.7	5266	0.1049	0.5708	0.1746	0.9502
Rt 11 S	Plant Entrance	Rt 93	50	5.6	52.3	17801	0.0816	0.5637	0.4592	3.1721
Rt 11 S**	Rt 93	Rt 80	50	7.9	30.4	14597	0	0	0.0000	0.0000
Rt 93	Rt 11	Rt 80	40	12.6	21.9	16772	0.0899	0.5616	0.4766	2.9775
Rt 80	Rt 93	To the East	65	5.4	21.9	7188	0.0819	0.5872	0.1861	1.3343
Rt 80**	Rt 11	To the West	65	10.1	30.4	18662	0	0	0.0000	0.0000
Total						**151950**			**3.349**	**21.604**

** Outside SWB Maintenance Area - Emissions set to zero for this analysis

Emissions from startups	7-8AM EF (grams/ Vehicle-Start)	4-5PM EF (grams/ Vehicle-Start)	Mid-1AM EF (grams/ Vehicle-Start)	Avg EF (grams/ Vehicle-Start)	Vehicle Starts per Day	Startup Emissions/Day (Grams/Day)	Startup Emissions/Day (Tons/year)
VOC	3.907	2.667	3.574	3.047	1500	4570	1.445
NOX	1.601	1.438	1.565	1.491	1500	2236	0.707

Table B-2 - Construction Commuting Emissions Years 1-7

Bell Bend Construction Commuter Emissions **Year 6**

Average Workforce 2000
Average Vehicles 1538
Average Travel (mi) 50 (Miles Round Trip)
Daily VMT= 76900

	tons/running	tons/startups	tons/Year 6
VOC	1.69	1.48	3.18
NOX	10.93	0.72	11.66

Roadway	From	To	Average Speed (mph)	Distance (miles)	Percent of Traffic	VMT (veh-miles)	VOC Emission Factor (gram/veh-mi)	NOx Emission Factor (gram/veh-mi)	Daily VOC Emissions (tons/Yr)	Daily NOx Emissions (tons/Yr)
Plant Entrance	Rt 11	Parking Area	15	1.4	100	4306	0.1574	0.7122	0.2143	0.9696
Rt 11 N	Plant Entrance	Rt 239	50	8.4	47.7	12325	0.0816	0.5637	0.3179	2.1963
Rt 11 N	Rt 239	Rt 81	50	15.2	42	19637	0.0816	0.5637	0.5066	3.4993
Rt 239	Rt 11	To the NW	30	15.2	5.7	2665	0.1049	0.5708	0.0884	0.4809
Rt 11 S	Plant Entrance	Rt 93	50	5.6	52.3	9009	0.0816	0.5637	0.2324	1.6054
Rt 11 S**	Rt 93	Rt 80	50	7.9	30.4	7387	0	0	0.0000	0.0000
Rt 93	Rt 11	Rt 80	40	12.6	21.9	8488	0.0899	0.5616	0.2412	1.5069
Rt 80	Rt 93	To the East	65	5.4	21.9	3638	0.0819	0.5872	0.0942	0.6753
Rt 80**	Rt 11	To the West	65	10.1	30.4	9445	0	0	0.0000	0.0000
Total						**76900**			**1.695**	**10.934**

** Outside SWB Maintenance Area - Emissions set to zero for this analysis

Emissions from startups	7-8AM EF (grams/ Vehicle-Start)	4-5PM EF (grams/ Vehicle-Start)	Mid-1AM EF (grams/ Vehicle-Start)	Avg EF (grams/ Vehicle-Start)	Vehicle Starts per Day	Startup Emissions/Day (Grams/Day)	Startup Emissions/Day (Tons/year)
VOC	3.907	2.667	3.574	3.047	1538	4686	1.481
NOX	1.601	1.438	1.565	1.491	1538	2293	0.725

Table B-2 - Construction Commuting Emissions Years 1-7

Bell Bend Construction Commuter Emissions **Year 7**

Average Workforce 400
Average Vehicles 308
Average Travel (mi) 50 (Miles Round Trip)
Daily VMT= 15400

	tons/running	tons/startups	tons/Year 7
VOC	0.34	0.30	0.64
NOX	2.19	0.15	2.33

Roadway	From	To	Average Speed (mph)	Distance (miles)	Percent of Traffic	VMT (veh-miles)	VOC Emission Factor (gram/veh-mi)	NOx Emission Factor (gram/veh-mi)	Daily VOC Emissions (tons/Yr)	Daily NOx Emissions (tons/Yr)
Plant Entrance	Rt 11	Parking Area	15	1.4	100	862	0.1574	0.7122	0.0429	0.1942
Rt 11 N	Plant Entrance	Rt 239	50	8.4	47.7	2468	0.0816	0.5637	0.0637	0.4398
Rt 11 N	Rt 239	Rt 81	50	15.2	42	3933	0.0816	0.5637	0.1014	0.7008
Rt 239	Rt 11	To the NW	30	15.2	5.7	534	0.1049	0.5708	0.0177	0.0963
Rt 11 S	Plant Entrance	Rt 93	50	5.6	52.3	1804	0.0816	0.5637	0.0465	0.3215
Rt 11 S**	Rt 93	Rt 80	50	7.9	30.4	1479	0	0	0.0000	0.0000
Rt 93	Rt 11	Rt 80	40	12.6	21.9	1700	0.0899	0.5616	0.0483	0.3018
Rt 80	Rt 93	To the East	65	5.4	21.9	728	0.0819	0.5872	0.0189	0.1352
Rt 80**	Rt 11	To the West	65	10.1	30.4	1891	0	0	0.0000	0.0000
Total						**15400**			**0.339**	**2.190**

** Outside SWB Maintenance Area - Emissions set to zero for this analysis

Emissions from startups	7-8AM EF (grams/ Vehicle-Start)	4-5PM EF (grams/ Vehicle-Start)	Mid-1AM EF (grams/ Vehicle-Start)	Avg EF (grams/ Vehicle-Start)	Vehicle Starts per Day	Startup Emissions/Day (Grams/Day)	Startup Emissions/Day (Tons/year)
VOC	3.907	2.667	3.574	3.047	308	938	0.297
NOX	1.601	1.438	1.565	1.491	308	459	0.145

Table B-3 - Delivery Vehicle Emissions Years 1-7

Bell Bend Emissions From all Deliveries Year 1

	tons/running	tons/startups	tons/Year 1
VOC	0.07	0.004	0.08
NOX	1.38	0.008	1.39

	Year 1 Trips	Year 1 VMT	Avg Distance Traveled (miles)	VMT from SWB Ozone MA	VMT from Reading Ozone MA	VMT from Non-MA Ozone MA	Total VMT in SWB Ozone MA	EF (grams/ veh-mile)*	SWB Ozone MA Annual Emissions (tons/year)
VOC	3,465.75	173,287.4	50.00	77,979.3	13,863.0	0.0	91,842.3	0.72	0.073
NOX	3,465.75	173,287.4	50.00	77,979.3	13,863.0	0.0	91,842.3	13.63	1.380

* Based on Avg of 40 MPH

	4 AM EF (g/Veh.-Start)	Noon EF (g/Veh.-Start)	8 PM EF (g/Veh.-Start)	Avg EF (g/Veh.-Start)	Vehicle Starts per Year	Startup Emissions (Grams/Year)	Startup Emissions (Tons/year)
VOC	1.252	1.027	1.038	1.042	3466	3611	0.004
NOX	2.603	1.923	1.958	1.969	3466	6826	0.008

Table B-3 - Delivery Vehicle Emissions Years 1-7

Bell Bend Emissions From all Deliveries Year 2

	tons/running	tons/startups	tons/Year 2
VOC	1.34	0.073	1.41
NOX	25.37	0.138	25.51

	Year 2 Trips	Year 2 VMT	Avg Distance Traveled (miles)	VMT from SWB Ozone MA	VMT from Reading Ozone MA	VMT from Non-MA Ozone MA	Total VMT in SWB Ozone MA	EF (grams/ veh-mile)*	SWB Ozone MA Annual Emissions (tons/year)
VOC	63,693.34	3,186,186.4	50.02	1,433,783.9	254,773.4	0.0	1,688,557.2	0.72	1.340
NOX	63,693.34	3,186,186.4	50.02	1,433,783.9	254,773.4	0.0	1,688,557.2	13.63	25.371

* Based on Avg of 40 MPH

	4 AM EF (g/Veh.-Start)	Noon EF (g/Veh.-Start)	8 PM EF (g/Veh.-Start)	Avg EF (g/Veh.-Start)	Vehicle Starts per Year	Startup Emissions (Grams/Year)	Startup Emissions (Tons/year)
VOC	1.252	1.027	1.038	1.042	63693	66366	0.073
NOX	2.603	1.923	1.958	1.969	63693	125443	0.138

Table B-3 - Delivery Vehicle Emissions Years 1-7

Bell Bend Emissions From all Deliveries **Year 3**

	tons/running	tons/startups	tons/Year 3
VOC	1.43	0.083	1.51
NOX	27.01	0.156	27.17

	Year 2 Trips	Year 2 VMT	Avg Distance Traveled (miles)	VMT from SWB Ozone MA	VMT from Reading Ozone MA	VMT from Non-MA Ozone MA	Total VMT in SWB Ozone MA	EF (grams/ veh-mile)*	SWB Ozone MA Annual Emissions (tons/year)
VOC	72,046.34	3,664,018.9	50.86	1,648,808.5	288,185.4	0.0	1,936,993.9	0.67	1.431
NOX	72,046.34	3,664,018.9	50.86	1,648,808.5	288,185.4	0.0	1,936,993.9	12.65	27.014

* Based on Avg of 40 MPH

	4 AM EF (g/Veh.-Start)	Noon EF (g/Veh.-Start)	8 PM EF (g/Veh.-Start)	Avg EF (g/Veh.-Start)	Vehicle Starts per Year	Startup Emissions (Grams/Year)	Startup Emissions (Tons/year)
VOC	1.252	1.027	1.038	1.042	72046	75069	0.083
NOX	2.603	1.923	1.958	1.969	72046	141894	0.156

Table B-3 - Delivery Vehicle Emissions Years 1-7

Bell Bend Emissions From all Deliveries **Year 4**

	tons/running	tons/startups	tons/Year 4
VOC	0.42	0.022	0.44
NOX	7.88	0.042	7.93

	Year 2 Trips	Year 2 VMT	Avg Distance Traveled (miles)	VMT from SWB Ozone MA	VMT from Reading Ozone MA	VMT from Non-MA Ozone MA	Total VMT in SWB Ozone MA	EF (grams/ veh-mile)*	SWB Ozone MA Annual Emissions (tons/year)
VOC	19,534.26	1,082,465.6	55.41	487,109.5	78,137.0	0.0	565,246.6	0.67	0.418
NOX	19,534.26	1,082,465.6	55.41	487,109.5	78,137.0	0.0	565,246.6	12.65	7.883

* Based on Avg of 40 MPH

	4 AM EF (g/Veh.-Start)	Noon EF (g/Veh.-Start)	8 PM EF (g/Veh.-Start)	Avg EF (g/Veh.-Start)	Vehicle Starts per Year	Startup Emissions (Grams/Year)	Startup Emissions (Tons/year)
VOC	1.252	1.027	1.038	1.042	19534	20354	0.022
NOX	2.603	1.923	1.958	1.969	19534	38472	0.042

Table B-3 - Delivery Vehicle Emissions Years 1-7

Bell Bend Emissions From all Deliveries Year 5

	tons/running	tons/startups	tons/Year 5
VOC	0.23	0.011	0.24
NOX	4.25	0.021	4.27

	Year 2 Trips	Year 2 VMT	Avg Distance Traveled (miles)	VMT from SWB Ozone MA	VMT from Reading Ozone MA	VMT from Non-MA Ozone MA	Total VMT in SWB Ozone MA	EF (grams/ veh-mile)*	SWB Ozone MA Annual Emissions (tons/year)
VOC	9,899.25	588,672.8	59.47	264,902.8	39,597.0	0.0	304,499.8	0.67	0.225
NOX	9,899.25	588,672.8	59.47	264,902.8	39,597.0	0.0	304,499.8	12.65	4.247

* Based on Avg of 40 MPH

	4 AM EF (g/Veh.-Start)	Noon EF (g/Veh.-Start)	8 PM EF (g/Veh.-Start)	Avg EF (g/Veh.-Start)	Vehicle Starts per Year	Startup Emissions (Grams/Year)	Startup Emissions (Tons/year)
VOC	1.252	1.027	1.038	1.042	9899	10314	0.011
NOX	2.603	1.923	1.958	1.969	9899	19496	0.021

Table B-3 - Delivery Vehicle Emissions Years 1-7

Bell Bend Emissions From all Deliveries Year 6

	tons/running	tons/startups	tons/Year 6
VOC	**0.13**	**0.007**	**0.13**
NOX	**2.41**	**0.013**	**2.42**

	Year 2 Trips	Year 2 VMT	Avg Distance Traveled (miles)	VMT from SWB Ozone MA	VMT from Reading Ozone MA	VMT from Non-MA Ozone MA	Total VMT in SWB Ozone MA	EF (grams/ veh-mile)*	SWB Ozone MA Annual Emissions (tons/year)
VOC	6,006.23	330,650.4	55.05	148,792.7	24,024.9	0.0	172,817.6	0.67	0.128
NOX	6,006.23	330,650.4	55.05	148,792.7	24,024.9	0.0	172,817.6	12.65	2.410

* Based on Avg of 40 MPH

	4 AM EF (g/Veh.-Start)	Noon EF (g/Veh.-Start)	8 PM EF (g/Veh.-Start)	Avg EF (g/Veh.-Start)	Vehicle Starts per Year	Startup Emissions (Grams/Year)	Startup Emissions (Tons/year)
VOC	1.252	1.027	1.038	1.042	6006	6258	0.007
NOX	2.603	1.923	1.958	1.969	6006	11829	0.013

Table B-3 - Delivery Vehicle Emissions Years 1-7

Bell Bend Emissions From all Deliveries Year 7

	tons/running	tons/startups	tons/Year 7
VOC	0.12	0.007	0.13
NOX	2.33	0.013	2.34

	Year 2 Trips	Year 2 VMT	Avg Distance Traveled (miles)	VMT from SWB Ozone MA	VMT from Reading Ozone MA	VMT from Non-MA Ozone MA	Total VMT in SWB Ozone MA	EF (grams/ veh-mile)*	SWB Ozone MA Annual Emissions (tons/year)
VOC	5,989.13	318,132.2	53.12	143,159.5	23,956.5	0.0	167,116.0	0.67	0.123
NOX	5,989.13	318,132.2	53.12	143,159.5	23,956.5	0.0	167,116.0	12.65	2.331

* Based on Avg of 40 MPH

	4 AM EF (g/Veh.-Start)	Noon EF (g/Veh.-Start)	8 PM EF (g/Veh.-Start)	Avg EF (g/Veh.-Start)	Vehicle Starts per Year	Startup Emissions (Grams/Year)	Startup Emissions (Tons/year)
VOC	1.252	1.027	1.038	1.042	5989	6240	0.007
NOX	2.603	1.923	1.958	1.969	5989	11795	0.013

Table B-4 - On-Site On-Road Vehicle Emissions Years 1-7

Bell Bend On-Site On-road Vehicles **Year 1**

	Non-safety & Safety Related			Safety Related		
	tons/running	tons/startups	tons/Year 1	SR tons/running	SR tons/startups	SR tons/Year 1
VOC	0.19	0.056	0.24	0.00	0.000	0.00
NOX	1.36	0.263	1.62	0.00	0.000	0.00

	Annual Operation	Annual Idle Hours of Operation (10%)	Annual Running Hours of Operation (90%)	Idle VOC EF (gram/veh-hr)	Run VOC EF (gram/veh-hr)	Idle NOx EF (gram/veh-hr)	Run NOx EF (gram/veh-hr)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
F250/F650	7531	753	6778	9.398	0.922	50.909	5.817	0.11	0.69
Mack MP6	3452	345	3107	10.638	1.393	71.011	12.370	0.08	0.66
Total								**0.19**	**1.36**

	No. of Vehicles	Annual No of Starts* Per Year for All Veh	VOC EF (gram/Veh-Start)	NOx EF (gram/Veh-Start)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
F250/F650	21	90338	0.346	1.629	0.034	0.162
Mack MP6	13	55923	0.346	1.629	0.021	0.100
Total					**0.056**	**0.263**

* Number of Starts Per Day Per Vehicle (All Veh Types) = 15

SAFETY RELATED CONCRETE TRUCK

	Annual Operation	Annual Idle Hours of Operation (10%)	Annual Running Hours of Operation (90%)	Idle VOC EF (gram/veh-hr)	Run VOC EF (gram/veh-hr)	Idle NOx EF (gram/veh-hr)	Run NOx EF (gram/veh-hr)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
Mack MP6	0	0	0	10.638	1.393	71.011	12.370	0.00	0.00

	No. of Vehicles	Annual No of Starts* Per Year for All Veh	VOC EF (gram/Veh-Start)	NOx EF (gram/Veh-Start)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
Mack MP6	0	0	0.346	1.629	0.000	0.000

* Number of Starts Per Day Per Vehicle (All Veh Types) = 15

Table B-4 - On-Site On-Road Vehicle Emissions Years 1-7

Bell Bend On-Site On-road Vehicles **Year 2**

	Non-safety & Safety Related			Safety Related		
	tons/running	tons/startups	tons/Year 2	SR tons/running	SR tons/startups	SR tons/Year 2
VOC	0.41	0.156	0.57	0.07	0.041	0.11
NOX	3.11	0.734	3.84	0.60	0.193	0.80

	Annual Operation	Annual Idle Hours of Operation (10%)	Annual Running Hours of Operation (90%)	Idle VOC EF (gram/veh-hr)	Run VOC EF (gram/veh-hr)	Idle NOx EF (gram/veh-hr)	Run NOx EF (gram/veh-hr)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
F250/F650	13157	1316	11841	9.398	0.922	50.909	5.817	0.19	1.21
Mack MP6	9867	987	8880	10.638	1.393	71.011	12.370	0.22	1.89
Total								**0.41**	**3.11**

	No. of Vehicles	Annual No of Starts* Per Year for All Veh	VOC EF (gram/Veh-Start)	NOx EF (gram/Veh-Start)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
F250/F650	52	223693	0.346	1.629	0.085	0.402
Mack MP6	43	184977	0.346	1.629	0.071	0.332
Total					**0.156**	**0.734**

* Number of Starts Per Day Per Vehicle (All Veh Types) = 15

SAFETY RELATED CONCRETE TRUCK

	Annual Operation	Annual Idle Hours of Operation (10%)	Annual Running Hours of Operation (90%)	Idle VOC EF (gram/veh-hr)	Run VOC EF (gram/veh-hr)	Idle NOx EF (gram/veh-hr)	Run NOx EF (gram/veh-hr)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
Mack MP6	3136.7	313.67	2823.03	10.638	1.393	71.011	12.370	0.07	0.60

	No. of Vehicles	Annual No of Starts* Per Year for All Veh	VOC EF (gram/Veh-Start)	NOx EF (gram/Veh-Start)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
Mack MP6	25	107545	0.346	1.629	0.041	0.193

* Number of Starts Per Day Per Vehicle (All Veh Types) = 15

Table B-4 - On-Site On-Road Vehicle Emissions Years 1-7

Bell Bend On-Site On-road Vehicles **Year 3**

	Non-safety & Safety Related			Safety Related		
	tons/running	tons/startups	tons/Year 3	SR tons/running	SR tons/startups	SR tons/Year 3
VOC	**0.68**	**0.180**	**0.86**	**0.09**	**0.041**	**0.13**
NOX	**4.84**	**0.850**	**5.69**	**0.75**	**0.193**	**0.94**

	Annual Operation	Annual Idle Hours of Operation (10%)	Annual Running Hours of Operation (90%)	Idle VOC EF (gram/veh-hr)	Run VOC EF (gram/veh-hr)	Idle NOx EF (gram/veh-hr)	Run NOx EF (gram/veh-hr)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
F250/F650	29660	2966	26694	9.398	0.922	50.909	5.817	0.44	2.73
Mack MP6	10966	1097	9869	10.638	1.393	71.011	12.370	0.24	2.10
Total								**0.68**	**4.84**

	No. of Vehicles	Annual No of Starts* Per Year for All Veh	VOC EF (gram/Veh-Start)	NOx EF (gram/Veh-Start)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
F250/F650	67	288220	0.346	1.629	0.110	0.518
Mack MP6	43	184977	0.346	1.629	0.071	0.332
Total					**0.180**	**0.850**

* Number of Starts Per Day Per Vehicle (All Veh Types) = 15

SAFETY RELATED CONCRETE TRUCK

	Annual Operation	Annual Idle Hours of Operation (10%)	Annual Running Hours of Operation (90%)	Idle VOC EF (gram/veh-hr)	Run VOC EF (gram/veh-hr)	Idle NOx EF (gram/veh-hr)	Run NOx EF (gram/veh-hr)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
Mack MP6	3913.3	391.33	3521.97	10.638	1.393	71.011	12.370	0.09	0.75

	No. of Vehicles	Annual No of Starts* Per Year for All Veh	VOC EF (gram/Veh-Start)	NOx EF (gram/Veh-Start)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
Mack MP6	25	107545	0.346	1.629	0.041	0.193

* Number of Starts Per Day Per Vehicle (All Veh Types) = 15

Table B-4 - On-Site On-Road Vehicle Emissions Years 1-7

Bell Bend On-Site On-road Vehicles **Year 4**

	Non-safety & Safety Related			Safety Related		
	tons/running	tons/startups	tons/Year 4	SR tons/running	SR tons/startups	SR tons/Year 4
VOC	**0.66**	**0.130**	**0.79**	**0.07**	**0.016**	**0.09**
NOX	**4.55**	**0.610**	**5.16**	**0.60**	**0.077**	**0.68**

	Annual Operation	Annual Idle Hours of Operation (10%)	Annual Running Hours of Operation (90%)	Idle VOC EF (gram/veh-hr)	Run VOC EF (gram/veh-hr)	Idle NOx EF (gram/veh-hr)	Run NOx EF (gram/veh-hr)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
F250/F650	32545	3255	29291	9.398	0.922	50.909	5.817	0.48	3.00
Mack MP6	8059	806	7253	10.638	1.393	71.011	12.370	0.18	1.55
Total								**0.66**	**4.55**

	No. of Vehicles	Annual No of Starts* Per Year for All Veh	VOC EF (gram/Veh-Start)	NOx EF (gram/Veh-Start)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
F250/F650	63	271013	0.346	1.629	0.103	0.487
Mack MP6	16	68829	0.346	1.629	0.026	0.124
Total					**0.130**	**0.610**

* Number of Starts Per Day Per Vehicle (All Veh Types) = 15

SAFETY RELATED CONCRETE TRUCK

	Annual Operation	Annual Idle Hours of Operation (10%)	Annual Running Hours of Operation (90%)	Idle VOC EF (gram/veh-hr)	Run VOC EF (gram/veh-hr)	Idle NOx EF (gram/veh-hr)	Run NOx EF (gram/veh-hr)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
Mack MP6	3136.5	313.65	2822.85	10.638	1.393	71.011	12.370	0.07	0.60

	No. of Vehicles	Annual No of Starts* Per Year for All Veh	VOC EF (gram/Veh-Start)	NOx EF (gram/Veh-Start)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
Mack MP6	10	43018	0.346	1.629	0.016	0.077

* Number of Starts Per Day Per Vehicle (All Veh Types) = 15

Table B-4 - On-Site On-Road Vehicle Emissions Years 1-7

Bell Bend On-Site On-road Vehicles **Year 5**

	Non-safety & Safety Related			Safety Related		
	tons/running	tons/startups	tons/Year 5	SR tons/running	SR tons/startups	SR tons/Year 5
VOC	0.46	0.115	0.58	0.05	0.016	0.06
NOX	3.20	0.541	3.74	0.40	0.077	0.48

	Annual Operation	Annual Idle Hours of Operation (10%)	Annual Running Hours of Operation (90%)	Idle VOC EF (gram/veh-hr)	Run VOC EF (gram/veh-hr)	Idle NOx EF (gram/veh-hr)	Run NOx EF (gram/veh-hr)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
F250/F650	23522	2352	21170	9.398	0.922	50.909	5.817	0.35	2.17
Mack MP6	5372	537	4835	10.638	1.393	71.011	12.370	0.12	1.03
Total								**0.46**	**3.20**

	No. of Vehicles	Annual No of Starts* Per Year for All Veh	VOC EF (gram/Veh-Start)	NOx EF (gram/Veh-Start)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
F250/F650	54	232296	0.346	1.629	0.089	0.417
Mack MP6	16	68829	0.346	1.629	0.026	0.124
Total					**0.115**	**0.541**

* Number of Starts Per Day Per Vehicle (All Veh Types) = 15

SAFETY RELATED CONCRETE TRUCK

	Annual Operation	Annual Idle Hours of Operation (10%)	Annual Running Hours of Operation (90%)	Idle VOC EF (gram/veh-hr)	Run VOC EF (gram/veh-hr)	Idle NOx EF (gram/veh-hr)	Run NOx EF (gram/veh-hr)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
Mack MP6	2091	209.1	1881.9	10.638	1.393	71.011	12.370	0.05	0.40

	No. of Vehicles	Annual No of Starts* Per Year for All Veh	VOC EF (gram/Veh-Start)	NOx EF (gram/Veh-Start)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
Mack MP6	10	43018	0.346	1.629	0.016	0.077

* Number of Starts Per Day Per Vehicle (All Veh Types) = 15

Table B-4 - On-Site On-Road Vehicle Emissions Years 1-7

Bell Bend On-Site On-road Vehicles **Year 6**

	Non-safety & Safety Related			Safety Related		
	tons/running	tons/startups	tons/Year 6	SR tons/running	SR tons/startups	SR tons/Year 6
VOC	**0.15**	**0.087**	**0.24**	**0.01**	**0.016**	**0.03**
NOX	**1.00**	**0.409**	**1.41**	**0.10**	**0.077**	**0.18**

	Annual Operation	Annual Idle Hours of Operation (10%)	Annual Running Hours of Operation (90%)	Idle VOC EF (gram/veh-hr)	Run VOC EF (gram/veh-hr)	Idle NOx EF (gram/veh-hr)	Run NOx EF (gram/veh-hr)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
F250/F650	8573	857	7716	9.398	0.922	50.909	5.817	0.13	0.79
Mack MP6	1073	107	966	10.638	1.393	71.011	12.370	0.02	0.21
Total								**0.15**	**1.00**

	No. of Vehicles	Annual No of Starts* Per Year for All Veh	VOC EF (gram/Veh-Start)	NOx EF (gram/Veh-Start)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
F250/F650	43	184977	0.346	1.629	0.071	0.332
Mack MP6	10	43018	0.346	1.629	0.016	0.077
Total					**0.087**	**0.409**

* Number of Starts Per Day Per Vehicle (All Veh Types) = 15

SAFETY RELATED CONCRETE TRUCK

	Annual Operation	Annual Idle Hours of Operation (10%)	Annual Running Hours of Operation (90%)	Idle VOC EF (gram/veh-hr)	Run VOC EF (gram/veh-hr)	Idle NOx EF (gram/veh-hr)	Run NOx EF (gram/veh-hr)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
Mack MP6	522.5	52.25	470.25	10.638	1.393	71.011	12.370	0.01	0.10

	No. of Vehicles	Annual No of Starts* Per Year for All Veh	VOC EF (gram/Veh-Start)	NOx EF (gram/Veh-Start)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
Mack MP6	10	43018	0.346	1.629	0.016	0.077

* Number of Starts Per Day Per Vehicle (All Veh Types) = 15

Table B-4 - On-Site On-Road Vehicle Emissions Years 1-7

Bell Bend On-Site On-road Vehicles **Year 7**

	Non-safety & Safety Related			Safety Related		
	tons/running	tons/startups	tons/Year 7	SR tons/running	SR tons/startups	SR tons/Year 7
VOC	0.13	0.071	0.20	0.01	0.016	0.03
NOX	0.86	0.332	1.19	0.10	0.077	0.18

	Annual Operation	Annual Idle Hours of Operation (10%)	Annual Running Hours of Operation (90%)	Idle VOC EF (gram/veh-hr)	Run VOC EF (gram/veh-hr)	Idle NOx EF (gram/veh-hr)	Run NOx EF (gram/veh-hr)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
F250/F650	6925	693	6233	9.398	0.922	50.909	5.817	0.10	0.64
Mack MP6	1158	116	1042	10.638	1.393	71.011	12.370	0.03	0.22
Total								**0.13**	**0.86**

	No. of Vehicles	Annual No of Starts* Per Year for All Veh	VOC EF (gram/Veh-Start)	NOx EF (gram/Veh-Start)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
F250/F650	33	141959	0.346	1.629	0.054	0.255
Mack MP6	10	43018	0.346	1.629	0.016	0.077
Total					**0.071**	**0.332**

* Number of Starts Per Day Per Vehicle (All Veh Types) = 15

SAFETY RELATED CONCRETE TRUCK

	Annual Operation	Annual Idle Hours of Operation (10%)	Annual Running Hours of Operation (90%)	Idle VOC EF (gram/veh-hr)	Run VOC EF (gram/veh-hr)	Idle NOx EF (gram/veh-hr)	Run NOx EF (gram/veh-hr)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
Mack MP6	522.5	52.25	470.25	10.638	1.393	71.011	12.370	0.01	0.10

	No. of Vehicles	Annual No of Starts* Per Year for All Veh	VOC EF (gram/Veh-Start)	NOx EF (gram/Veh-Start)	Annual VOC (Tons/Year)	Annual NOx (Tons/Year)
Mack MP6	10	43018	0.346	1.629	0.016	0.077

* Number of Starts Per Day Per Vehicle (All Veh Types) = 15