

## **Appendix H – Greenhouse Gas Analysis**

---

**Appendix H  
GHG Worksheet**

Equipment Fuel Consumption Estimates - Construction							
Equipment Type	No. of Equipment	Days	Duration (hours/day)	Fuel Consumption (gal/hour)	Fuel Type	Est. Total Gallons	Notes/Assumptions
Backhoe	1	30	8	3.1	Diesel	744	Caterpillar 420F Low Load
Bulldozer	2	30	8	7.6	Diesel	3,648	Caterpillar D6T Medium Load
Concrete truck and boom	2	20	8	12.0	Diesel	3,840	Primarily Foundations, also substation
Dump Truck	2	20	8	10.0	Diesel	3,200	Tandem Axle 10-14 CY
Excavator	1	20	8	8.1	Diesel	1,296	Caterpillar 336D Medium Load
Fork lift (all terrain)	2	120	8	2.9	Diesel	5,568	JLG 12K (3), JCB 512-56 (2), JCB 12K VR (6), CAT 12K VR
Grader/scrapper	1	30	8	5.6	Diesel	1,344	Caterpillar 140M3 Medium Load
Light Duty Crane	1	20	8	12.6	Diesel	2,016	LINK-BELT LS-238 HSL CRAWLER CRANE
Medium Duty Crane	1	20	8	12.6	Diesel	2,016	LINK-BELT LS 248 200 TON CRAWLER CRANE
Roller	1	20	8	6.6	Diesel	1,056	CAT 84" (2), CAT CS56B, CAT CB24
Semi truck/trailer	1	30	8	10.0	Diesel	2,400	Standard size and weight semitruck for equipment deliveries
Skid steer	1	120	8	3.3	Diesel	3,168	Caterpillar 289D Medium Load
Track Boom	1	30	8	2.6	Diesel	624	GENIE S-65 TraX BOOM
Track Loader	1	30	8	5.3	Diesel	1,279	CAT 963K TRACK LOADER W/ FORKS & BKT
Track Manlift	1	20	8	2.6	Diesel	416	GENIE S-60 TraX MANLIFT
Tractors	1	20	8	7.0	Diesel	1,120	Ford 4600 AG & International 9200I
Truck Mounted Auger or Drill Rig	1	20	8	6.5	Diesel	1,040	Bay Shore Systems TR Series (TR40/TR50)
Watering truck	1	120	8	4.3	Diesel	4,128	BAS VOLVO FMX WATER TANK TRUCK
Wheel Loader	1	30	8	4.4	Diesel	1,056	CAT 950K WHEEL LOADER W/BKT & FORKS
Pile Driver	1	30	8	5.3	Diesel	1,279	Could also be driver for helical piles
Generator	1	120	8	1.0	Gasoline	960	CAT XQ30KW
Light-duty pickup truck (on-site)	4	130	6	3.6	Gasoline	11,232	Ford F-150 or similar
Construction contractor and worker vehicles (commute to/from site)	50	120	0.8	2.5	Gasoline	12,450	Assume bulk of the workforce lives in Minneapolis, MN and drive to the site. Workers in Minneapolis are about 25 minutes one way, 50 min round trip. Assume 50% carpool.
<b>TOTAL GALLONS DIESEL (per year)</b>						<b>41,238</b>	
<b>TOTAL GALLONS GASOLINE (per year)</b>						<b>24,642</b>	

Equipment Fuel Consumption Estimates - Operation							
Equipment Type	No. of Equipment	Days/Year	Duration (hours/day)	Fuel Consumption (gal/hour)	Fuel Type	Est. Total Gallons	Notes/Assumptions
Light-duty pickup truck (commute to/from site) - 1 full time staff	1	60	2	2.5	Gasoline	300	1 BESS Tech (Only on-site for troubleshooting)
O&M contractor vehicles (commute to/from site)	1	50	1	2.5	Gasoline	125	1 Off site Manager visiting site once per week
O&M contractor vehicles (on-site)	1	60	1	2.5	Gasoline	150	1 Service Tech at 1.25 days average per service
<b>TOTAL GALLONS GAS (per year)</b>						<b>575</b>	
<b>TOTAL GALLONS DIESEL (per year)</b>						<b>-</b>	

Appendix H  
GHG Worksheet

Summary						
Construction/Operation	Annual Gallons	KG of CO2 per Gallon Diesel	KG of CO2 per Gallon Gas	Total KG	KG to Tons Conversion Factor	Total Tons
<b>Construction</b>						
Total Gas	25,217		8.78	221,405	0.00110231	244.1
Total Diesel	41,238	10.19		420,215	0.00110231	463.2
<b>TOTAL</b>				<b>641,620</b>		<b>707.3</b>
<b>Operation</b>						
Total Gas	575		8.78	5,049	0.00110231	5.6
Total Diesel	-	10.19		0	0.00110231	0.0
<b>TOTAL</b>				<b>5,049</b>		<b>5.6</b>

Construction	Gallons	KG of CO2 per Gallon Diesel	KG of CO2 per Gallon Gas	Total KG	Notes/Assumptions
Total Diesel	41,238	10.19		420,215	<a href="https://www.eia.gov/environment/emissions/co2_vol_mass.php">https://www.eia.gov/environment/emissions/co2_vol_mass.php</a>
Total Gas	25,217		8.78	221,405	<a href="https://www.eia.gov/environment/emissions/co2_vol_mass.php">https://www.eia.gov/environment/emissions/co2_vol_mass.php</a>
<b>Total - KG</b>				<b>641,620</b>	
<b>Total - Tons</b>				<b>707</b>	Conversion Factor KG to Tons (0.00110231)
Annual Operation	Gallons	KG of CO2 per Gallon Diesel	KG of CO2 per Gallon Gas	Total KG	Notes/Assumptions
Total Diesel	0	10.19		0	<a href="https://www.eia.gov/environment/emissions/co2_vol_mass.php">https://www.eia.gov/environment/emissions/co2_vol_mass.php</a>
Total Gas	575		8.78	5,049	<a href="https://www.eia.gov/environment/emissions/co2_vol_mass.php">https://www.eia.gov/environment/emissions/co2_vol_mass.php</a>
<b>Total - KG</b>				<b>5,049</b>	
<b>Total - Tons</b>				<b>5.6</b>	Conversion Factor KG to Tons (0.00110231)