

# Scenario 04: New Engine - Scaled for 500

Tuesday, September 14, 2021 5:45 PM

## Scenario Info

### Casino

- ID: CASINO
- Base elevation: -38 ft
- Tiers of Current Building
  1. 32 ft
- Type: Polygonal

#	X Coord [m]	Y Coord [m]
1	575598.31	3730521.14
2	575544.61	3730576.25
3	575576.99	3730605.98
4	575567.15	3730615.39
5	575584.86	3730633.63
6	575633.18	3730628.64
7	575686.63	3730670.19
8	575805.28	3730557.42
9	575763.29	3730514.98
10	575697.96	3730575.96
11	575658.63	3730577.75

### Parking Garage

- ID: Garage
- Base elevation: -37 ft
- Tiers of Current Building
  1. 34 ft
- Type: Polygonal

#	X Coord	Y Coord
1	575538.06	3730504.43
2	575455.02	3730595.48
3	575518.66	3730668.58
4	575573.97	3730608.17
5	575544.03	37305575.33
6	575577.74	3730541.49

### Source Used for Run:

- Source ID: NE\_500
  - o Existing engine scaled for 50 hr/yr
- X-Coordinate: 575642.0 m
- Y-Coordinate: 3730655.0 m

- Release Height: 8.0 ft
- Base Elevation: -37 ft = -11.28 m
- Release Type: Vertical
- Emission Rate: 2.406 lb/hr
  - o Emission Factor: 42.16 lb/hr NO<sub>x</sub> (from Spotlight Calculations spreadsheet)
  - o  $(42.16 \text{ lb/hr}) * (500 \text{ hr}/8760 \text{ hr}) = 2.406 \text{ lb/hr}$ 
    - Scaling for 50 hours of operation per year instead of 8760
- Fixed
- Gas Exit Temperature: 853.1 F
- Stack Inside Diameter: 0.254 m
  - o 12 inch diameter
  - o  $(12 \text{ in})(2.54 \text{ cm/in})(1 \text{ m}/100 \text{ cm}) = 0.3048 \text{ m}$
- Gas Exit Velocity: 392.527 ft/s
  - o Auto-populated
- Gas Exit Flow Rate: 18497.4 ft<sup>3</sup>/min

Source Scenario Inputs:

- Dispersion: Urban
- Population 2,675
- No Debug File
- Pollutant Emission Rate:
  - o 2.406 lb/hr NO<sub>2</sub> (with Chemistry)
    - OLM
    - In-Stack NO<sub>2</sub>/NO<sub>x</sub> Ratio: 0.5
    - Ozone Concentration: 34.0 ppb
- Downwash: Include all Buildings (CASINO, YARD)
- Meteorology Parameters
  - o Min Temp: -9.67 F
  - o Max Temp: 116 F
  - o Min Wind Speed: 0.5 m/s
  - o Anemometer Height: 10.0 m
  - o Do NOT adjust friction velocity
- Surface Characteristics (urban, dry, annual average):
  - o Condition: Dry
  - o Land Use Type: Urban
  - o Season: Annual Average
  - o Albedo: 0.2075
  - o Bowen Ratio: 3.0
  - o Surface Roughness: 1.0 m
- NO AERMET Seasonal Tables
- NO External File
- Include Terrain Effects and Force AERMAP Re-Run
  - o Map Type: USGS DEM/CDED
- Source Base Elevation: -37 ft
- NO Flagpole Receptors
- Minimum Distance to Ambient Air (Distance from Source to Fenceline): 1.0 m
- Maximum Distance of Downwind Receptors (Probe Distance): 10.0 km
- NO Additional Receptors
- Do NOT apply inverse break-up fumigation
- Do NOT apply shoreline fumigation