

## 14. Air Quality

### 14.1. Existing Conditions

#### 14.1.1. Climatic Conditions

The National Resources Conservation Service (NRCS) of the United States Department of Agriculture maintains and monitors National Water and Climate Centers (NWCCs) throughout the U.S. NWCC reports were referenced to provide temperature and precipitation data in this document.

The two closest NWCCs to the project site are at the Riverhead Research Farm (approximately 15 miles to the east) and in Patchogue (approximately 9 miles to the southwest). The most recent data set in Patchogue was collected from 1971 to 1997, while the Riverhead data extended until 2000. The two Centers respectively provide 27-year and 30-year average Climate Information, accessed online at:

<http://www.wcc.nrcs.usda.gov/ftpref/support/climate/taps/ny/36103.txt>

The two Centers' temperature data are very similar, while the precipitation data contrast more. Since these Centers are located in either direction from Yaphank, the existing climatic conditions in Yaphank should match or be in the range of the Centers' data.

**Table 14-1: Temperature and Precipitation Summary Data**

Feature	Patchogue	Riverhead
Average daily temperature	52.1 °F	53.2 °F
Average minimum temperature	42.5 °F	44.4 °F
Average maximum temperature	61.8 °F	61.9 °F
Warmest Month of the Year	July	
Coldest Month of the Year	January	
Highest Monthly Precipitation	4.63 inches	13.78 inches
Wettest Month	December	February
Lowest Monthly Rainfall	3.47 inches	3.21 inches
Dryest Month	July	July
Total Annual Precipitation	50.32 inches	57.13 inches

The average daily maximum temperature is 61.8 to 61.9 degrees Fahrenheit (°F) and the average daily minimum temperature is 42.5 to 44.4°F. Historically, January is the coldest month of the year, with average daily temperatures of 30.5

to 31.9°F. July is the warmest month of the year, with average daily temperatures of 73.7 to 74.5°F.

With respect to precipitation, the two Centers' data is less similar. Both Centers experienced their minimum precipitation (with similar rainfall) during July. However, the maximum precipitation was significantly higher in Riverhead than in Yaphank, and the wettest months were different (though they both occurred during the wintertime). The peak precipitation occurred in December and in February. For each Center, each month of the year experiences 5 to 8 days per month with precipitation, and each year experiences 20 to 22 days with at least 1 inch of snow on the ground.

With respect to humidity and wind conditions, data was referenced from the closest available NWCC Climate Report for Soil Survey Regions, accessed online at:

<http://www.wcc.nrcs.usda.gov/cgibin/soil-nar-state.pl?state=ny>

The closest soil survey region report to Yaphank is Manhattan in New York City. Its data references the same 1971 to 2000 period as the Climate Information reports referenced above for temperature and precipitation. According to this report, the average relative humidity in the middle of the afternoon is about 55 percent. The relative humidity increases at night, and the average humidity at dawn is approximately 72 percent. Yaphank is slightly further from coastal waters as compared to Manhattan (a small island) so the relative humidity patterns are the same, but the percentages are somewhat lower than Manhattan.

The prevailing wind direction is from the west. The month with the highest average wind speed (8.7 miles per hour) is March.

#### 14.1.2. Air Quality Attainment Status

The Federal Clean Air Act (CAA) required the United States Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) to protect the environmental and public health. Areas are therefore classified into one of three groups with respect to NAAQS for various pollutants:

- **Attainment:** The area has complied with Federal pollutant concentration limits for at least ten years
- **Non-Attainment:** The area does not comply with Federal pollutant concentration limits, or has not complied at any time in the last ten years. Non-attainment can either be classified as “moderate” or “serious”
- **Maintenance:** The area was previously classified as a Non-Attainment area, and has been at Attainment levels for less than ten years

EPA rules state that for moderate non-attainment areas, states have six years from the designation date – or until June 15, 2010 – to submit a “State Implementation Plan” (SIP) that demonstrates how the non-attainment area will meet the Federal standard. Serious non-attainment areas have nine years to demonstrate attainment, or by June 15, 2013.

The following information is based on the New York Metropolitan Transportation Council (NYMTC) *Draft Transportation Conformity Determination for Federal Fiscal Years 2008-2012 Transportation Improvement Program (As Amended) and Federal Fiscal Years 2010-2035 Regional Transportation Plan*. The document, dated April 15, 2010, discusses the attainment status of each County in the New York Metropolitan area for Carbon Monoxide (CO) and Ozone (NO<sub>x</sub>). Information is supplemented with data from the NYSDEC website (<http://www.dec.ny.gov/chemical/37012.html>).

For carbon monoxide (CO), Suffolk County was not recently listed as a non-attainment area. Therefore, the status of Yaphank (as part of Suffolk County) is as an attainment area for carbon monoxide under the eight-hour CO standard.

For ozone (NO<sub>x</sub>), the EPA classified Suffolk County as a moderate non-attainment area in June 2004. According to the NYSDEC website, on August 9, 2007, the NYSDEC submitted a proposed revision to the New York Metropolitan Area ozone SIP demonstrating attainment by June 15, 2013. This revision reclassified the entire metropolitan area from "moderate" to "serious" non-attainment.

As summarized in its latest TIP and RTP, NYMTC performed budget tests of eight-hour ozone and one-hour ozone concentrations for the years 2011, 2012, 2020, and 2030, in accordance with EPA standards. Every year's budget test is shown to pass Federal standards.

#### 14.1.3. Air Quality Screening

The first step in determining potential air quality impacts is to determine if projected Build Year 2025 traffic volumes and intersection geometries will meet certain threshold values, as part of an Air Quality Analysis Screening. If the appropriate thresholds are met, this would trigger the need for a full microscale carbon monoxide analysis. If the thresholds are not met, this means that any carbon monoxide (CO) concentration predicted in a microscale analysis would likely be well below ambient standards, which in turn corresponds to a lack of a significant air quality impact from this Action.

Existing air quality conditions were not obtained, as they are not necessary for performing air quality screening analysis. The Air Quality Analysis Screening was based on the existing traffic count data provided in the Traffic Impact Study. The screening includes every existing study intersection and proposed site driveway.

### **14.2. Potential Impacts of Proposed Project**

There is a potential for nearby existing industrial sources to impact "sensitive receptors" (such as housing and the arena) to be developed under the Proposed Action. The most significant industrial use which could impact air quality levels at the proposed residential and recreational uses is the Brookhaven Town Landfill located on the south side of Horseblock Road. It is projected that the existing measures undertaken by the Town to minimize air quality impacts to existing neighboring uses will be adequate to prevent impacts to proposed "sensitive receptors."

Air quality impacts are possible as a result of two factors associated with the Proposed Action:

- Changed traffic volumes
- Widened roadways (as part of traffic improvements or mitigation)

Proposed land uses are subject to established air quality criteria for certain pollutants. The overall list of pollutants is dictated by the National Ambient Air Quality Standards, or NAAQS:

- Sulfur dioxide (SO<sub>2</sub>)
- Carbon monoxide (CO)
- Inhalable particulates (“PM<sub>10</sub>”)
- Fine particulates (“PM<sub>2.5</sub>”)
- Lead (Pb)
- Nitrogen dioxide (NO<sub>2</sub>)
- Ozone (O<sub>3</sub>)

New York State also has criteria for hydrocarbons (HC) and total suspended particulates (TSP).

This list is all-inclusive; some land use applications require analysis of only some (or none) of the above pollutants, or they may require analysis at only some (or none) of the adjacent intersections.

The criteria for judging which pollutants need to be analyzed are based on the methodology in the *Environmental Procedures Manual* (EPM) published by the New York State Department of Transportation (NYSDOT) Environmental Analysis Bureau in January 2001.

For air quality screening, the pollutant must fall into one of two categories:

- It will generate traffic (when the site itself will not generate pollutants)
- It is typically studied on the local (as opposed to the regional) level

Next, the EPM has a three-step secondary procedure to determine what intersections might warrant air quality screening of the pollutants that pass the above test, based on meeting all three criteria.

Of the above pollutants, only carbon monoxide (CO) is associated with vehicular traffic and is studied on the project (local) level. Therefore, only CO analysis needs to be screened.

The EMP has a three-step procedure to determine whether full CO analysis is required. With respect to this document, analyses were based on Build Year 2025 conditions at the study intersections identified in the Traffic Impact Study, for the four traffic analysis periods:

- The weekday AM peak hour period (7:00 – 9:00 am)
- The weekday Midday peak hour period (11:00 am - 2:00 pm)
- The weekday PM peak hour period (4:00 – 6:00 pm)
- The Saturday midday peak hour period (11:00 am – 2:00 pm)

Level 1 Screening is “Level of Service (LOS) Screening”: only signalized intersections that will operate at LOS D, E, or F pass through to Level 2 Screening. Of the intersections in the Traffic Impact Study, the following pass through this Level 1 screening:

- Yaphank Avenue at LIE North Service Road
- Yaphank Avenue at LIE South Service Road
- Yaphank Avenue at Horseblock Road
- Horseblock Road at Town Landfill-Area D Driveway
- Horseblock Road at Bellport Road
- Horseblock Road at LIE North Service Road
- Sunrise Highway at Exit 57 (Yaphank/Horseblock)
- Yaphank Avenue at Proposed Area A Site Driveway

Level 2 screening is “Capture Criteria screening” and has 5 components. If the intersections which pass through Level 1 screening exceed any of the following thresholds, they will pass on to Level 3:

1. 10% reduction in source-receptor distance (occurs with road widening)
2. 10% or more increase in traffic volume
3. 10% or more increase in vehicle emissions (similar to the increase in vehicular volume, factored slightly by changes in truck trips)
4. Any increase in the number of queued lanes

5. 20% reduction in travel speed when speeds are below 30 mph

Based on the “Mitigated No Build” and “Mitigated Build” traffic analyses (which include traffic volumes, travel speeds on the main roadways, and accounting for intersection widening associated with mitigation), the following intersections pass through all five components of Screening Level 2 (parentheticals note the peak hours during which the screening criteria will be met):

- Yaphank Avenue at LIE North Service Road (Midday, PM, Saturday)
- Yaphank Avenue at LIE South Service Road (PM, Saturday)
- Yaphank Avenue at Horseblock Road (PM, Saturday)
- Horseblock Road at Town Landfill-Area D Driveway (PM, Saturday)
- Horseblock Road at Bellport Road (Midday, PM, Saturday)
- Horseblock Road at LIE North Service Road (PM, Saturday)
- Sunrise Highway at Exit 57 (Yaphank/Horseblock) (AM)
- Yaphank Avenue at Proposed Area A Site Driveway (PM)

Level 3 screening is “Volume Threshold screening”. If the busiest approach volumes at the intersections which pass through Level 2 screening exceed the thresholds of EPM Table 3c, they will require full CO microscale analysis.

Table 3c relates carbon monoxide “Emission Factors” for the year 2025, for various vehicle speeds in 5 mph increments, based on projected vehicle registration classifications [cars, light duty trucks, heavy duty trucks]), to the minimum required threshold volume needed to trigger a required CO analysis. The volume is needed on the busiest approach to the intersection.

Of the above intersections, none of the intersections will meet the required threshold volume. Depending on the Mitigated Build traffic results (or on a reasonable projected travel speed, depending on the direction that was found to have the highest traffic volume), the busiest approach on each intersection must either reach 2,562 or 3,800 vehicles per hour:

**Table 14-2: Air Quality Screening Volume Thresholds**

Number of Intersections	Required Volume	Projected Volume
1) Yaphank Avenue at Area A Site Driveway	2,562 vehicles per hour	1,770 vehicles per hour THRESHOLD NOT MET
1) Yaphank Avenue at Horseblock Road 2) Horseblock at Town Landfill-Area D Driveway 3) Sunrise Highway Exit 57 4) Horseblock Road at LIE NSR 6) Yaphank Avenue at LIE NSR 7) Yaphank Avenue at LIE SSR 8) Horseblock Road at Bellport Road	3,862 vehicles per hour	907 to 2,589 vehicles per hour  THRESHOLD NOT MET

As shown in Table 14-2, none of the intersections will meet the required threshold volumes, so no intersection passes through Level 3 Screening. Therefore, as detailed in the Air Quality Screening Analysis in Appendix H, the projected Mitigated Build conditions will not reach the thresholds required to trigger a required Carbon Monoxide microscale analysis.

When intersections fail to pass through each of the three screening levels, it means that any CO concentration predicted in a micro-scale analysis would likely be well below ambient standards, and therefore this project will not have a significant air quality impact.

### **14.3. Proposed Mitigation**

Since there is no air quality impact expected, based on the findings of the Air Quality Screening Analysis, if the mitigation measures identified in the Traffic Impact Study are provided, there will be no mitigation required with respect to air quality.

During construction, typical Erosion and Sediment Control (ESC) methods should be implemented to minimize potential air pollution.

With respect to proposed “sensitive receptors,” the future site plan should maximize corresponding buffers to the maximum practical extent, and trucks associated with the proposed industrial uses should not be routed directly through the residential section of the development to Horseblock Road to minimize any potential effects to the proposed residential and recreational uses.