

NEW CARROLLTON AND LANDOVER YARDS IMPROVEMENTS

AIR QUALITY TECHNICAL MEMORANDUM



WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
OCTOBER 2014

(This Page Intentionally Left Blank)

Table of Contents

1.0	Introduction	1
2.0	Regulatory Framework and Pollutants	7
3.0	Methodology.....	8
4.0	Existing Conditions.....	10
5.0	Environmental Consequences	12
6.0	References.....	13

List of Figures

Figure 1-1: New Carrollton Yard Project Concept.....	3
Figure 1-2: Proposed Landover Yard Project Concept	6
Figure 4-1: Air Quality Monitoring Station in Relation to New Carrollton and Landover Yards	11

List of Tables

Table 1-1: Existing and Future New Carrollton Yard Employee Counts	3
Table 1-2: Proposed Landover Yard Employee Counts	5
Table 2-1: National and Maryland Ambient Air Quality Standards.....	8
Table 4-1: Regional Ambient Air Quality	10

(This Page Intentionally Left Blank)

1.0 INTRODUCTION

The Washington Area Metropolitan Transit Authority (WMATA), in coordination with the Federal Transit Administration (FTA), is preparing an Environmental Assessment (EA) for the proposed New Carrollton Yard and Landover Yard Improvements Project (“the project”). The EA is being prepared in accordance with the National Environmental Policy Act (NEPA) and other federal, state and local laws and regulation.

This technical memorandum identifies the potential air quality effects of the No Build and Build Alternative for the project. The air quality evaluation includes an assessment of the region’s attainment status, existing conditions, projected future traffic volumes, and potential future effects on air quality. The memorandum describes the following:

- Project alternatives
- Applicable regulations and guidance
- Methodology
- Existing Conditions
- Environmental Consequences

The findings of this analysis will be incorporated into the EA.

1.1 Project Purpose and Need

The purpose of the project is to provide additional storage capacity and re-organize certain track maintenance functions at WMATA’s rail yards.

1.2 Project Alternatives

The EA for the project will evaluate a No Build Alternative and a single Build Alternative. The Build Alternative includes the same area improvements as the No Build Alternative in addition to construction and operation of the project.

1.2.1 No Build Alternative

The No Build Alternative assumes that operations at New Carrollton Yard would continue, and that no development would occur at the Landover site. In terms of the broader regional transportation network, the No Build Alternative is defined as the existing highway and transit network and committed transportation improvements from the National Capital Region Transportation Planning Board’s Financially Constrained Long Range Plan (CLRP). No planned improvements would occur within the project area at New Carrollton Yard or at the Landover site.

Under the No Build Alternative, WMATA would not be able to provide the necessary service and infrastructure improvements as outlined in the Rail Fleet Management Plan (RFMP), Momentum, or the Eight-Car Train Implementation Plan.

1.2.2 Build Alternative

The Build Alternative consists of the expansion of rail car storage capacity at New Carrollton Yard and construction of a new rail yard adjacent to and east of the Landover Metrorail Station along with a new parking structure. The proposed Landover Yard would provide storage and maintenance facilities for WMATA’s CTEM division and TRST, which currently operate at New Carrollton Yard. As part of the project, the CTEM and TRST functions would move from New Carrollton Yard to Landover Yard. The construction of CTEM and TRST facilities at Landover Yard would precede the demolition of existing CTEM and TRST facilities at New Carrollton Yard. Once CTEM and TRST functions are moved to Landover Yard, the resulting space at New Carrollton Yard would

be used to complete the expansion of facilities for rail car storage and equipment storage. The improvements at each site are described individually below. The EA assumes the project would be operational by 2018 to meet Metrorail system vehicle fleet expansion requirements needed by 2020.

The Build Alternative also assumes the planned regional transportation improvements contained in the CLRP that are part of the No Build Alternative.

New Carrollton Yard Improvements

The existing New Carrollton rail yard ("New Carrollton Yard") is approximately 36.8-acres in size and is located at 4440 Garden City Drive in Landover, Maryland. The Build Alternative proposes to expand capacity at New Carrollton Yard through the construction of an additional 120 rail car storage spaces and support facilities. The existing Service and Inspection (S&I) and Yard Control Tower functions would remain unchanged.

The following facilities would be constructed within and adjacent to the existing New Carrollton Yard if the Build Alternative is implemented:

- Fifteen storage tracks accommodating 120 rail cars:
 - Eight storage tracks accommodating 64 rail cars in the northwest corner of the yard (referred to as the "northwest storage tracks");
 - Seven storage tracks accommodating 56 rail cars in the northeast corner of the yard (referred to as the "northeast storage tracks");
 - Lead service tracks for the storage areas;
- One contractor storage track with access road in the southeast corner of the yard;
- Two maintenance-of-way (MOW) tracks;
- Reconfigured and expanded employee surface parking in the northern and eastern sections of the yard;
- New operations platform and a pedestrian bridge (connecting to the employee parking lot via an elevator/stair tower) serving the northwest storage tracks;
- Relocation of the existing control tower from the center of the yard to the top of the elevator/stair tower at the location of the pedestrian bridge. The relocated tower would be approximately 40 feet high;
- New operations building for the northeast storage tracks;
- Conversion of the existing Engineering Campaign building to a S&I building (building was originally built as a S&I building); and
- Conversion of an existing operations building to an Automatic Train Control (ATC) building and training facility.

WMATA would acquire adjacent property from Amtrak and Maryland Highway Administration (SHA) to accommodate the rail yard expansion. New storage tracks would be constructed within the existing rail yard, as well as on the Amtrak and SHA properties. The expanded facility would be approximately 39.5-acres in size. A project concept is provided in **Figure 1-1**. The total number of existing and future employees at New Carrollton Yard is summarized in **Table 1-1**.

Table 1-1: Existing and Future New Carrollton Yard Employees

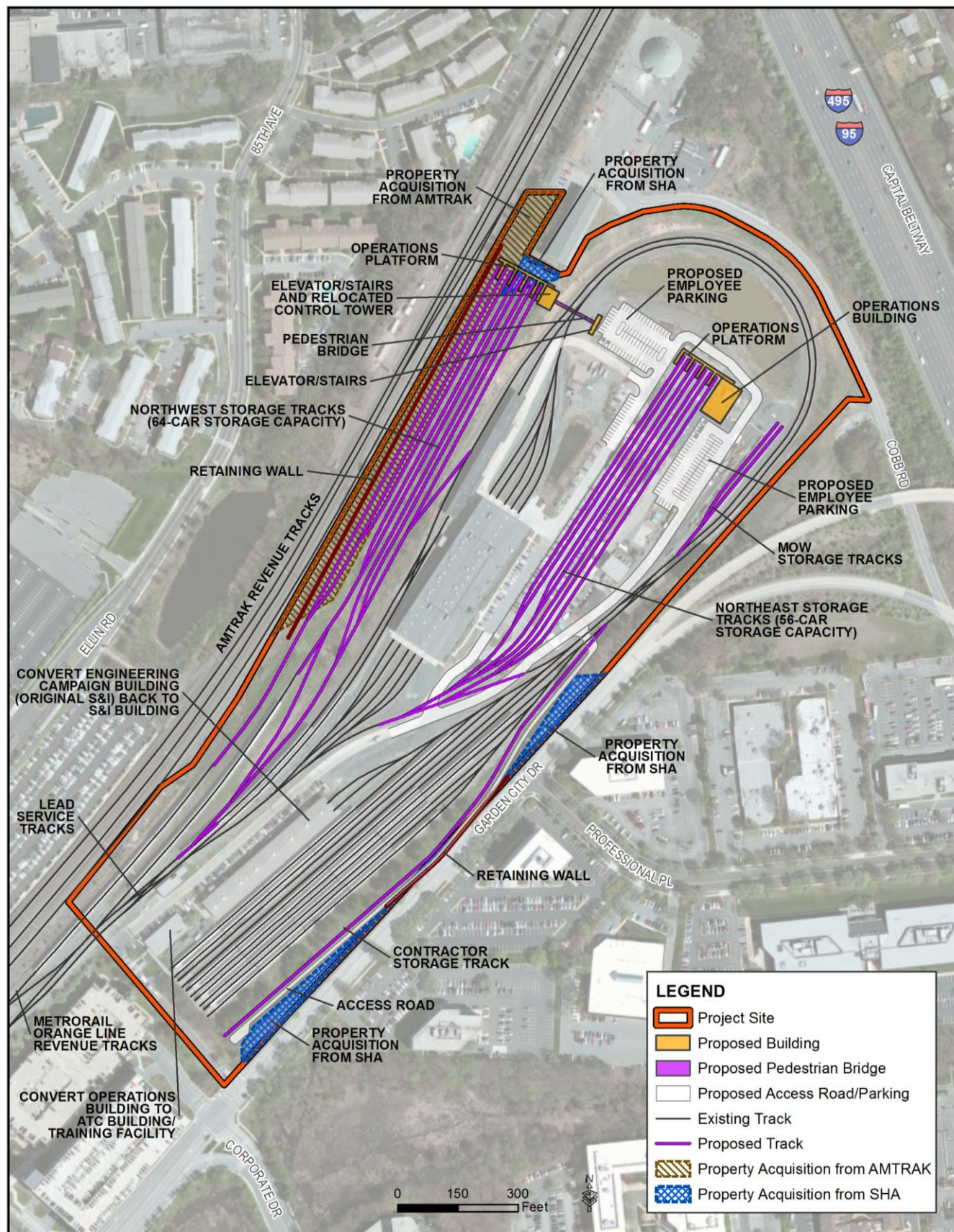
Activity	Existing Employees (2014) ^a	Future Employees (2025) ^a	Hours of Operation ^a
Metrorail Train Operators	83	131	Weekdays: 4:00am-1:00am Weekends: 6:00am-4:00am
S&I ^b	173	251	24-hour operations
Yard Control Tower	6	6	24-hour operations
CTEM	30	0 ^c	24-hour operations
TRST	78	0 ^c	24-hour operations
Total	370	388	

^aEmployee estimates and hours of operation provided by WMATA Space Needs Program. Hours of operations are assumed to be the same under the existing and future operations.

^bS&I employee estimates include employees from Car Maintenance (CMNT) and Automatic Train Control (ATC) departments.

^cFuture employees would move to CTEM and TRST facilities at Landover Yard.

Figure 1-1: New Carrollton Yard Project Concept



Proposed Landover Yard

The Landover Yard site, currently owned by WMATA, is approximately 18.7-acres in size and is located at 3000 Pennsy Drive in Hyattsville, Maryland. Currently, the site is undeveloped, except for the two southern tracts, which contain surface Park & Ride lots serving the adjacent Landover Metrorail Station. The Build Alternative consists of the construction of a new rail yard, commuter parking garage, and support facilities for CTEM and TRST at the site. The new commuter parking garage would replace all Metrorail surface Park & Ride spaces removed for the project. Existing CTEM and TRST facilities would be moved from their current location at New Carrollton Yard to the proposed Landover Yard. Track maintenance vehicles of various sizes and function would be stored in and operate from the rail yard. No Metrorail passenger rail cars (revenue vehicles) would be stored at Landover Yard. Approximately 190 employees would be based at Landover Yard.

The following facilities would be constructed at Landover Yard if the Build Alternative is implemented:

- Loop track around the southern portion of the rail yard;
- Lead and tail tracks for the rail yard;
- New CTEM and TRST building and eleven storage tracks for track equipment and maintenance vehicles;
- Six-level commuter Park & Ride facility, consisting of 848-spaces to replace the surface spaces displaced by construction. The structure would be constructed on an existing commuter lot, south of the rail yard and separated from the new yard by the Landover Metro Access Road.
- Employee surface parking lot and delivery area in the southern portion of the proposed yard;
- New track crossover on the Metrorail revenue tracks;
- Retaining wall in the southwest corner would be constructed to accommodate the bypass track; and
- Stormwater management area at the northern end of the rail yard.

No property acquisition would be necessary for the project, as the rail yard would be built on land owned by WMATA.

See **Figure 1-2** for the project concept and **Table 1-2** for a summary of existing and future employees at the proposed rail yard.

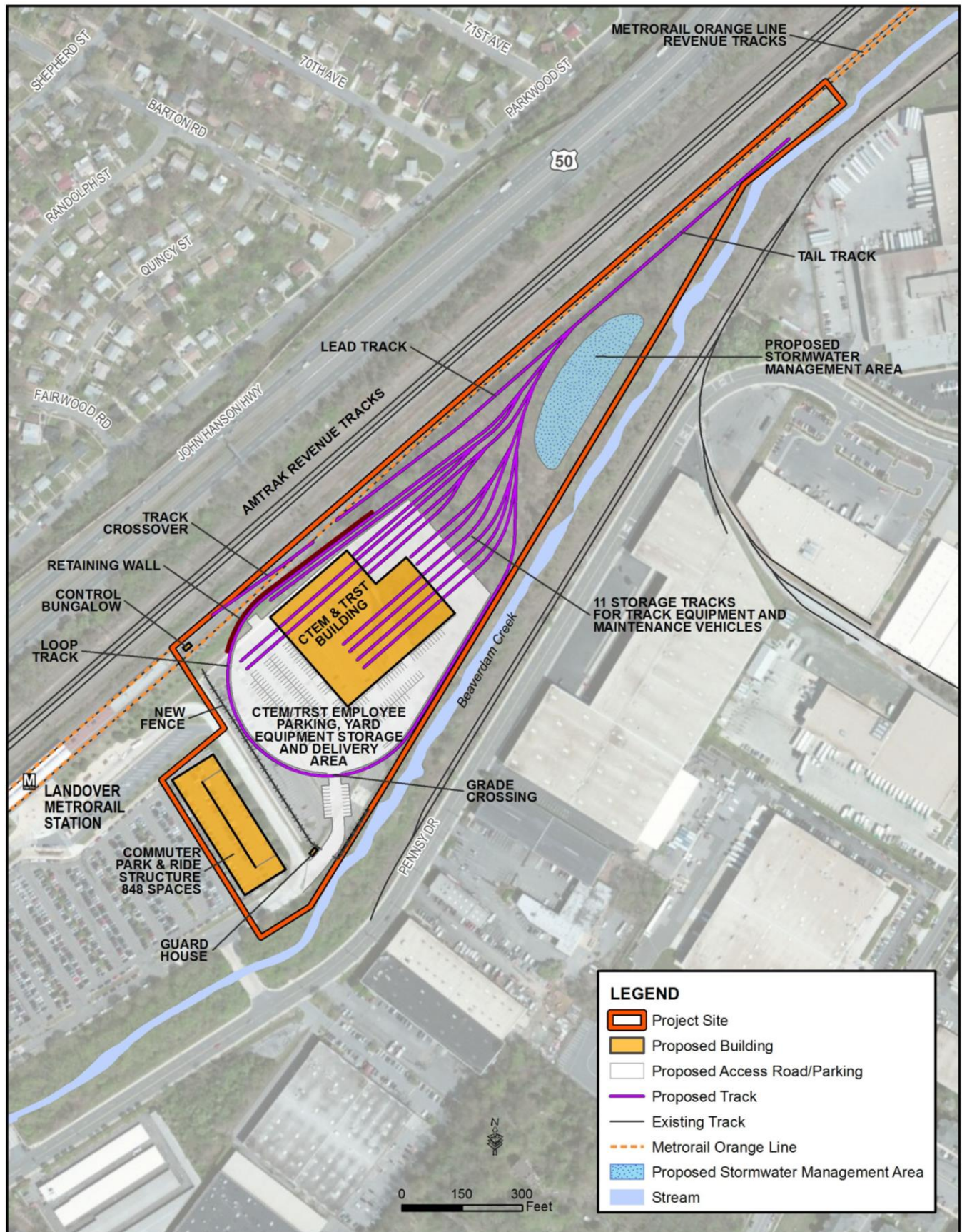
Table 1-2: Proposed Landover Yard Employees

Activity	Existing Employees (2014) ^a	Future Employees (2025) ^a	Hours of Operation ^a
CTEM	0 (30 at New Carrollton Yard) ^b	79	24-hour operations
TRST	0 (78 at New Carrollton Yard) ^b	111	24-hour operations
Total	0 (108 at New Carrollton Yard) ^b	190	

^a Employee estimates and hours of operation provided by WMATA Space Needs Program.

^b Existing employees at CTEM and TRST facilities at New Carrollton Yard, who would be transferred to the new Landover Yard. Currently no employees are based at the Landover project site.

Figure 1-2: Proposed Landover Yard Project Concept



2.0 REGULATORY FRAMEWORK AND POLLUTANTS

2.1 Clean Air Act (42 USC 85)

The Clean Air Act (CAA), as amended, is the basis for most federal air pollution control programs. Under the CAA, the U.S. Environmental Protection Agency (EPA) regulates air quality nationally. The EPA delegates authority to the Maryland Department of the Environment (MDE) for monitoring and enforcing air quality regulations in the State of Maryland. The *Maryland State Implementation Plan* (SIP), developed in accordance with the CAA, contains the major state-level requirements with respect to transportation in general. The MDE, specifically the Air Quality Planning Program (AQPP), is responsible for preparing the SIP and submitting it to the EPA for approval.

Any project constructed in the State of Maryland must comply with the National Ambient Air Quality Standards (NAAQS), a set of standards established by EPA under the authority of the CAA for various “criteria” of air pollutants described in more detail in the Methodology section (Section 3.0).

The CAA also requires the EPA to specify geographic areas of the country that have measured pollutant concentrations exceeding the levels prescribed by the air quality standards (non-attainment areas). The EPA classifies non-attainment areas and specifies compliance deadlines for these areas. The New Carrollton and Landover Yards Project is located in Prince George’s County, which is part of the EPA-defined Metropolitan Washington Air Quality Designation Area. The greater metropolitan Washington area is currently designated as nonattainment for 8-hour ozone (O₃) and annual average particulate matter less than 2.5 microns (PM_{2.5}). However, the metropolitan Washington area is in attainment for all other pollutants including carbon monoxide (CO), particulate matter less than 10 microns (PM₁₀), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and lead (Pb). Therefore, the SIP requirements do not apply to CO with respect to this project.

Under the CAA, the responsibility of federal agencies, such as the FTA, is to ensure that a proposed project conforms to the SIP. Transportation conformity is a process required of the Metropolitan Washington Council of Governments (MWCOG) and the National Capital Region Transportation Planning Board (TPB), as the region’s metropolitan planning organization, to ensure that those transportation activities that are consistent with air quality goals receive federal funding and approval. The EPA promulgated the Transportation Conformity Rules under the Clean Air Act, as amended (40 CFR Parts 51 and 93).

3.0 METHODOLOGY

3.1 National Ambient Air Quality Standards (NAAQS)

As described in the previous section, any project constructed in the State of Maryland has to achieve compliance with the NAAQS, a set of standards established by EPA under the authority of the CAA for various “criteria” air pollutants. **Table 2-1** lists the NAAQS for the seven criteria pollutants: O₃, CO, NO₂, SO₂, PM₁₀, PM_{2.5}, and Pb.

3.2 Pollutants of Concern

The pollutants that are most relevant to this project are those principally traceable to motor vehicle engines and electrical power plants. In the study area, ambient concentrations of CO and O₃ are predominantly influenced by roadway motor vehicle activity. Emissions of Volatile Organic Compounds (VOCs), Nitrogen Oxide (NO_x), PM₁₀, and PM_{2.5} come from both mobile and stationary sources, while emissions of sulfur oxides (SO_x) and Pb are associated mainly with various stationary sources. Pollutant emissions from electric-powered transit vehicles are expected to be minor and generally occur well outside the study area. Emissions are expected to be minor partly because of the small proportion of expected future train activity compared with existing and future roadway motor vehicle activity in the project study area. Electricity purchased from the national electrical grid may be produced by either fossil-fueled plants or renewable energy plants, or even both.

Table 3-1: National and Maryland Ambient Air Quality Standards

Pollutant	Standard Type	Averaging Period	Standard Values ^a
Carbon Monoxide (CO)	Primary ^b	8-Hour average	9 ppm (10 mg/m ³) ^c
	Primary	1-Hour average	35 ppm (40 mg/m ³)
Nitrogen Dioxide (NO ₂)	Primary and Secondary	Annual arithmetic mean	53 ppb ^d
	Primary	1-Hour average	100 ppb
Ozone (O ₃)	Primary and Secondary	8-Hour average	0.075 ppm (155 µg/m ³) ^e
Sulfur Dioxide (SO ₂)	Primary	Annual arithmetic mean	0.03 ppm (80 µg/m ³)
	Primary	24-Hour average ^g	0.14 ppm (365 µg/m ³)
	Secondary	3-Hour average	0.5 ppm (1300 µg/m ³)
	Primary	1-Hour average ^h	75 ppb (0.075 ppm)
Particulate Matter (PM ₁₀)	Primary and Secondary	24-Hour average	150 µg/m ³ ^f
Particulate Matter (PM _{2.5})	Primary and Secondary	Annual arithmetic mean	12 µg/m ³
		24-Hour average	35 µg/m ³
Lead (Pb)	Primary and Secondary	3-month rolling average	0.15 µg/m ³

NOTES:

- Short-term standards (1 to 24 hours) are not to be exceeded more than once per calendar year.
- Former national secondary standards for carbon monoxide have been repealed.
- Concentrations are shown in parts per million (ppm), milligrams per cubic meter (mg/m³) or micrograms per cubic meter (µg/m³).
- The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.
- Maximum daily one-hour (eight-hour) average. The ozone standard is attained when the expected number of days with maximum hourly (eight-hourly) average concentrations above the value of the standard, averaged over a three year period, is less than or equal to one. The O₃ criterion was updated by the EPA on May 27, 2008 from 0.08 to 0.075 ppm.
- For each particle size, the annual PM standard is met when the three-year average of the annual mean concentration is less than or equal to the value of the standard. The 24-hour PM₁₀ (PM_{2.5}) standard is met when the three-year average of the annual 99th (98th) percentile values of the daily average concentrations is less than or equal to the value of the standard.
- National standards are block averages rather than moving averages.
- Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

Note: CO, NO₂, O₃, and PM are transportation-related pollutants

Source: 40 CFR 50, National Primary and Secondary Ambient Air Quality Standards.

3.3 Impact Analysis

3.3.1 Regional Air Quality Conformity Determination

The project has been included in the Metropolitan Washington Council of Governments' (MWCOC) Financially Constrained Long-Range Transportation Plan (CLRP) for projects planned between 2014 and 2040. On July 24, 2014, the New Carrollton and Landover Yards Improvements project was included in an amendment to the 2015-2020 Transportation Improvement Program (TIP). The TIP (ID #5867) is included as **Appendix I** of the EA.

3.3.2 Hot Spot Analysis

To determine whether a localized pollutant emissions "hot-spot" analysis was required for the project, the study reviewed the Transportation Conformity guidelines "Procedures for determining localized CO, PM₁₀, and PM_{2.5} concentrations (hot-spot analysis)", as described in 40 CFR 93.123. According to these guidelines, the project would not exceed the relevant criterion in 40 CFR 93.123(b)(1)(iii). Specifically, the project would not create "New [or expanded] bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location."

Maintenance-of-way (MOW) equipment would service the Landover Yard; however, these existing equipment currently operate in the project area and would simply be relocated from New Carrollton Yard to the proposed Landover Yard for storage and service as part of their existing maintenance schedule. Any idling from these rail maintenance vehicles is expected to be minimal based on current operations and would not result in a "significant number of diesel vehicles congregating at a single location" as defined by 40 CFR 93.123. No new emissions from maintenance of way equipment are expected as a result of the project.

Although motor vehicle emissions at congested intersections are the predominant source of CO, the surrounding region of the study area continues to be designated as in attainment for CO. Therefore, a CO hot spot analysis is not required because the project is not expected to significantly degrade the level of service at nearby congested intersections.

The traffic analysis conducted for the project found that overall congestion delay at the study intersection does not increase as a result of the project. Also, since recent concentrations of CO monitored in the vicinity of the project by the MDE are well below the NAAQS, no exceedances would reasonably be expected under the Build Alternative as a result of any insignificant increases in intersection delay. The traffic analysis and results are documented in the *Transportation Technical Memorandum (July 2014)* prepared for the project.

Based on the insignificant level of activity proposed at New Carrollton and Landover Yards, neither a qualitative nor a quantitative PM_{2.5} or CO hotspot analysis is required for this project. Since this project has been found not to be of air quality concern under 40CFR 93.123(b)(1), the CAA Amendments and the Transportation Conformity requirements are met without a hotspot analysis. Therefore, the project meets statutory and regulatory transportation conformity requirements for CO and PM_{2.5} without a hot-spot analysis.

4.0 EXISTING CONDITIONS

Existing conditions were evaluated using data from air quality monitoring stations identified in the vicinity of the study area. MDE maintains an area-wide network of monitoring stations that routinely measure pollutant concentrations in the ambient air. The nearest monitoring station to New Carrollton and Landover Yards is part of the EPA's Clean Air Status and Trends Network (CASTNET). CASTNET monitoring stations are used by MDE to determine attainment status. MDE and CASTNET stations provide data to assess air quality compliance with the NAAQS proximate to the project study area and to evaluate the effectiveness of pollution control strategies. Figure 4-1 shows the location of the closest monitoring station:

- Site M1 – Beltsville (CASTNET ID BEL116; 12003 Old Baltimore Pike, Beltsville, Prince George's County).

The relevant monitored pollutants are ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), fine particulate matter (both PM_{2.5} and PM₁₀), and sulfur dioxide (SO₂).

As shown in **Table 4-1**, recent monitoring data indicates that no exceedances of the NAAQS in the vicinity of New Carrollton and Landover Yards have been reported through May 2014 (the last period for which data is available), except two ozone violations in 2012.

Table 4-1: Regional Ambient Air Quality

Pollutant	Period	NAAQS	2012		2013		2014	
			1 st Max	2 nd Max	1 st Max	2 nd Max	1 st Max	2 nd Max
Carbon Monoxide (CO)	1-hour	35 ppm	1.3	1.3	1	0.9	0.7	0.7
	8-hour	9 ppm	1.2	0.9	0.9	0.9	0.6	0.5
Nitrogen Dioxide (NO ₂)	1-hour	100 ppb	44	41	48	43	--	--
	Annual	53 ppb	--	--	--	--	--	--
Ozone (O ₃) ²	8-hour	0.075 ppm	0.091	0.085	0.074	0.072	--	--
Sulfur Dioxide (SO ₂)	1-hour	75 ppb	16	15	12	10	18	16
	3-hour	0.03 ppm	--	--	--	--	--	--
	24-hour	0.14 ppm	0.003	0.003	0.003	0.003	0.005	0.005
	Annual	0.5 ppm	--	--	--	--	--	--
Particulate Matter (PM _{2.5})	24-hour	35 µg/m ³	25	22.3	22.2	20.1	18.1	17.4
	Annual	12 µg/m ³	--	--	--	--	--	--
Particulate Matter (PM ₁₀)	24-hour	150 µg/m ³	32	32	26	25	21	21

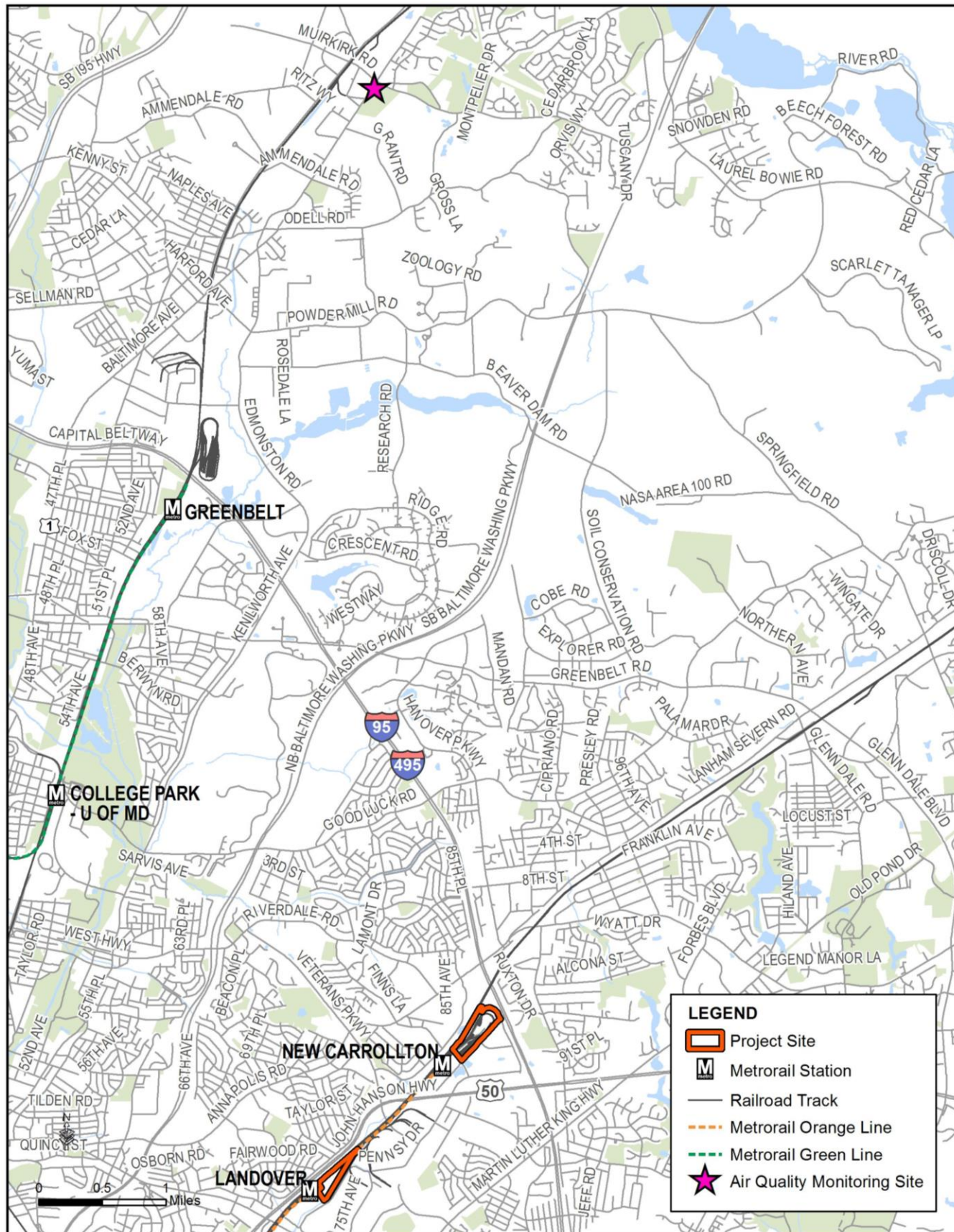
NOTES:

¹ All monitoring levels are from the station located at 12003 Old Baltimore Pike, Beltsville, Prince George's County.

² The reported pollutant concentration for ozone is the 3rd and 4th highest 8-hour level.

Source: http://www.epa.gov/airdata/ad_rep_mon.html

Figure 4-1: Air Quality Monitoring Station in Relation to New Carrollton and Landover Yards



5.0 ENVIRONMENTAL CONSEQUENCES

5.1 No Build Alternative

As no project elements are proposed under the No Build Alternative, no impacts are anticipated to air quality.

5.2 Build Alternative

5.2.1 New Carrollton Yard

Under the Build Alternative, traffic volumes and ambient pollutant concentrations at New Carrollton Yard are expected to be the same as under the No Build Alternative. Since the project is located in an area that has been designated by the EPA as in attainment for all criteria pollutants, no exceedances of the NAAQS are expected.

As no additional air pollutant emissions are expected beyond the No Build Alternative, no impacts are anticipated to air quality.

5.2.2 Landover Yard

Under the Build Alternative, traffic volumes and ambient pollutant concentrations at Landover Yard are expected to be the same as under the No Build Alternative. Since the project is located in an area that has been designated by the EPA as in attainment for all criteria pollutants, no exceedances of the NAAQS are expected.

As no additional air pollutant emissions are expected beyond the No Build Alternative, no impacts are anticipated to air quality.

5.3 Temporary Construction Impacts

Direct emissions from construction equipment are not expected to produce adverse effects on local air quality, provided that all equipment is properly operated and maintained. If required, traffic management techniques are available during the construction period that would mitigate increased emissions from traffic congestion resulting from lane closures, detours, and construction vehicles accessing sites.

Air quality impacts resulting from temporary construction activities are possible particularly on dry and windy days. Mitigation techniques could include development of site-specific traffic management plans; temporary signage and other traffic controls; designated staging areas, worker parking lots (with shuttle bus service if necessary), and truck routes; and prohibition of construction vehicle travel during peak traffic periods.

Potential fugitive dust impacts would be mitigated through good "housekeeping" practices, such as water sprays during demolition; wetting, paving, or landscaping exposed earth areas; covering dust-producing materials during transport; limiting dust-producing construction activities during high wind conditions; and providing street sweeping and tire washes for trucks leaving the site.

6.0 REFERENCES

40 CFR 50, National Primary and Secondary Ambient Air Quality Standards.

US Environmental Protection Agency, Guidelines for Modeling Carbon Monoxide from Roadway Intersections, Office of Air Quality Planning and Standards, Research Triangle, NC, November 1992.

MWCOG, National Capital Region's Financially Constrained Long-Range Transportation Plan (CLRP), July 17, 2013.

MWCOG, Transportation Improvement Program, For the Metropolitan Washington Region, FY 2013 – 2018, July 18, 2012.