Appendix A – Air Quality

Air Quality, Greenhouse Gases, and Climate Change

Introduction

The US Environmental Protection Agency (USEPA) established National Ambient Air Quality Standards (NAAQS) for six commonly found air pollutants (criteria pollutants) in the Clean Air Act (CAA). USEPA's General Conformity Rule (40 CFR Part 93 Subpart B) ensures that federal actions comply with the NAAQS and requires the lead federal agency to demonstrate that every action it undertakes, approves, permits or supports conforms to the State Implementation Plan (SIP). Federal agencies responsible for an action occurring in a nonattainment area are required to determine if the action conforms to the applicable SIP. The CAA General Conformity Rule (GCR) requires that any federal action does not create a new violation of NAAQS or delay the timely attainment of any NAAQS or milestones in the state's SIP.

A federal action is exempt from the GCR if the action's total net emissions are below the *de minimis* threshold or are otherwise exempt per 40 CFR 51.153. There are two main components to the overall process: an applicability analysis to determine whether a conformity determination is required and, if required, a conformity determination to demonstrate that the action conforms to the SIP.

The Project is located in Montgomery County, Alabama, which is currently in attainment for all NAAQS criteria pollutants; therefore, a conformity determination is not required for the Project.

Greenhouse Gas Emissions and Climate Change

Greenhouse Gas (GHG) emissions are emissions that trap heat in the atmosphere. EO 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, was signed on January 20, 2021 and declares the policy is "to listen to the science; to improve public health and protect our environment; to ensure access to clean air and water; to limit exposure to dangerous chemicals and pesticides; to hold polluters accountable, including those who disproportionately harm communities of color and low-income communities; to reduce greenhouse gas emissions; to bolster resilience to the impacts of climate change; to restore and expand our national treasures and monuments; and to prioritize both environmental justice and the creation of the well-paying union jobs necessary to deliver on these goals." EO 13990 directs federal agencies to review and take action to address previous regulations and other actions that conflict with the current national objectives, and to immediately commence work to confront the climate crisis. On January 9, 2023, in accordance with EO 13990, the CEQ issued an interim guidance for analyzing GHG and climate change effects. Federal agencies may use this guidance when analyzing their proposed actions under NEPA, while the CEQ seeks public comments on the guidance. The CEQ 2023 interim guidance on GHG does not establish any specific quantity of GHG emissions as the threshold for "significantly" affecting the quality of the human environment. The interim guidance also encourages federal agencies undertaking NEPA review to "be guided by a rule of reason and the concept of proportionality in undertaking this analysis," to decide whether and to what degree an agency will analyze particular effects of GHG emissions. In the absence of an adopted GHG standard, FRA is not proposing a new GHG standard for GHG emissions anticipated to result from the Project, but, consistent with the guidance, is considering climate change and GHG emissions. As such, this EA considers the potential effects the Project may have on climate change by assessing GHG emissions.

The transportation sector is one of the largest contributors to anthropogenic GHG emissions in the United States. According to the Inventory of US Greenhouse Gas Emissions and Sinks 1990–2022 (the Inventory), the national inventory that the US prepares annually under the United Nations Framework Convention on Climate Change (UNFCCC), the transportation sector accounted for the largest portion (28%) of total US GHG emissions in 2022. Cars, trucks, commercial aircraft, and railroads, among other sources, all contribute to transportation end-use sector emissions. Within the sector, light-duty vehicles (including passenger cars and light-duty trucks) were by far the largest category, with 57% of GHG emissions, while medium- and heavy-duty trucks made up the second largest category, with 23% of emissions. Between 1990 and 2022, GHG emissions in the transportation sector increased more in absolute terms than any other sector (i.e., electricity generation, industry, agriculture, residential, commercial), due in large part to increased demand for travel[1]. Greenhouse gas emissions from transportation sources include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (NO_x), and various hydrofluorocarbons (HFCs). CO , CH , and NO are all emitted via the combustion of fuels, while HFC emissions are the result of leaks and end-of-life disposal from air conditioners used to cool people and/or freight[2]. The FRA has announced a commitment to reach net-zero GHG emission in the rail industry and rail transportation by 2050. Freight rail is up to 75% more efficient than truck transportation[3], and by reducing highway freight traffic with more efficient freight rail transportation, GHG emissions can be greatly reduced.

Construction Air Quality

Under the Build Alternative, construction would generate minor amounts of fugitive dust and gaseous emissions of CO, VOC, NOx, SO2, and PM_{10} and $PM_{2.5}$ from the combustion of fuel by construction equipment and vehicles.

The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land worked on and the level of construction activity. USEPA estimates that ground disturbing activities emit uncontrolled fugitive dust emissions at a rate of 80 pounds (lbs.) of total suspended particulate (TSP) per acre day of disturbance.[6] In a USEPA study of air sampling data at a distance of 164 feet downwind from construction activities, PM_{10} emissions from various open dust sources were determined based on the ratio of PM_{10} to TSP sampling data. The average PM_{10} to TSP ratios for topsoil removal, aggregate hauling, and cut and fill operation are reported as 0.27, 0.23, and 0.22, respectively.[4] Using 0.24 as the average ratio for purposes of this analysis, the emission factor for PM_{10} dust emissions becomes 19.2 lbs. TSP per acre per day of disturbance. During construction, fugitive dust emissions would increase because construction would involve disturbance of 305 acres. However, USEPA estimates that an effective watering program would reduce the effects of fugitive dust from construction activities. Watering the disturbed area of the construction site twice per day with approximately 3,500 gallons per acre

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[1] USEPA, Fast Facts: Transportation Greenhouse Gas Emissions, 2024

[2] *Federal Railroad Administration Announces Climate Challenge to Meet Net-Zero Greenhouse Gas Emissions by 2050*. https://railroads.dot.gov/newsroom/press-releases/federal-railroad-administration-announces-climate-challenge-meet-net-zero-0

[3] United States, Environmental Protection Agency. *Compilation of Air Pollutant Factors, Volume 1: Stationary Point and Area Sources (AP-42)*. 5th edition, Ann Arbor, updated Feb. 2010.

[4] United States, Environmental Protection Agency. *Gap Filling PM10 Emission Factors for Selected Open Area Dust Sources, USEPA-450/4-88-003*. Research Triangle Park, Feb. 1988.

per day would reduce TSP emissions as much as 50 percent.[5] Therefore, watering would be required during construction to minimize particulate and fugitive dust emissions. With minimization measures included below, the impact would not be substantial.

Combustive emissions from construction equipment exhaust, including CO, VOCs, NO_x,PM_{10} and SO_x, were estimated using USEPA-approved emissions factors[5] for heavy-duty diesel-powered construction, along with the emission factors for the estimated types and numbers of equipment expected to be used during construction of the Build Alternative. **Table 1** below shows a summary of these emission estimates. The construction emission estimate calculations are included in **Attachment 1.** As with fugitive dust emissions, construction equipment emissions would be *de minimis*.

Table 1: Build Alternative Estimated Construction Emissions in Tons Per Year

	CO	VOC	NO_x	SO_x	PM_{10}
Build Alternative	16.30	2.42	70.95	0.03	0.98
Conformity Thresholds	100	100	100	100	100

CO = Carbon Monoxide
NOx = Nitrogen Oxides
PM10 = Particulate Matter equal or less than 10 micrometers in diameter
SOx = Sulfur Oxides
VOC = Volatile Organic Compound

Construction Air Quality Minimization Measures

The construction contractor will implement the following air quality Best Management Practices (BMPs) to minimize the combustion engine emissions (CO, VOC, NO_x, and SO_x) and PM_{10} emissions during construction:

1) Use appropriate dust suppression methods during on-site construction activities. Available methods include application of water, dust palliative, or soil stabilizers; use of enclosures, covers, silt fences, or wheel washers; and suspension of earth-moving activities during high wind conditions.
2) Maintain an appropriate speed to minimize dust generated by vehicles and equipment on unpaved surfaces.
3) Shut off equipment when it is not in use.
4) Cover haul trucks importing/exporting dirt with tarps.
5) Stabilize previously disturbed areas with vegetation or mulching if such area will be inactive for several weeks or more (unlikely).
6) Visually monitor all construction activities regularly and particularly during extended periods of dry weather and implement dust control measures when appropriate.

Operational Air Quality

To analyze the potential impact to air quality due to rail operations under the Build Alternative, the analysis assumed that trains would travel from within a 175-mile radius of the Project and, per CSX system wide train efficiency measurements[6] each train would consume one gallon of fuel

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[5] United States, Environmental Protection Agency. *Compilation of Air Pollutant Factors, Volume 1: Stationary Point and Area Sources (AP-42)*. 5th edition, Ann Arbor, updated Feb. 2010.
[6] https://www.csx.com/index.cfm/about-us/the-csx-advantage/fuel-efficiency/

per ton for every 520 miles. Assuming that each train would consist of (on average) three locomotives and 180 rail cars, the weight of the train would be approximately 18,600 gross tons and would consume approximately 6,620 gallons of fuel.

It is anticipated that approximately one train per day would be diverted from the CSXT mainline to use the ICTF. Based on these assumptions and EPA emission factors, on an annual basis, the emissions associated with the trains were calculated and summarized in **Table 2**.

Table 2: Build Alternative Estimated Construction Annual Train Emissions for Large Line Haul Lines

	NO_x	PM_{10}	Hydrocarbons
Emission Factor (gram/gallon) 2025*	74	1.6	2.6
Grams per Train	489,880	10,592	17,212
Annually (Tons)**	197.0981	4.2616	6.9251
Applicability for Conformity (Tons)	100	100	N/A

NOx = Nitrogen Oxides

PM10 = Particulate Matter equal or less than 10 micrometers in diameter

*Assumes opening year for the operation of the Project is 2025

**Assumes one train per day to the ICTF

Source: *USEPA. 2009. Emission Factors for Locomotives. Office of Transportation and Air Quality, EPA-420-F-09-025*

While approximately one train per day would be diverted from the existing CSXT mainline to use the ICTF and the Project would increase the average number of rail cars per train on the CSXT mainline by 50, the total number of train passes or locomotives is not anticipated to increase due to the Project from what is currently on the CSXT mainline. Therefore, it is expected the Project will not increase rail operation emissions from what is currently being experienced in the Study Area from existing train operations.

Greenhouse Gas Emissions

GHG Emissions from Construction

GHG emissions from the construction of the Project were estimated using the FHWA's Infrastructure Carbon Estimator (ICE) version 2.1.3. The FHWA's ICE calculated that for the two-year construction period, total GHG emissions of CO_{2e} (carbon dioxide equivalent) would be approximately 127,491 metric tons for the Project. A breakdown of the calculations from the FHWA ICE are included in **Attachment 1.**

GHG Emissions from Operations

GHG emissions from the vehicle operations of the Project were estimated using the FHWA ICE version 2.1.3. The FHWA's ICE calculated that in the design year 2045 Build Alternative condition, total GHG emissions of CO_{2e} (carbon dioxide equivalent) would be approximately 472 metric tons for the ICTF new access road. A breakdown of the calculations from the FHWA ICE are included in **Attachment 1**.

GHG emissions from the rails operations of the Project were calculated using the Federal Transit Administration's (FTA) Transit GHG Emissions Estimator version 3. The FTA GHG Emissions Estimator calculated that in the design year 2045 Build Alternative condition, total GHG emissions of CO_{2e} (carbon dioxide equivalent) would be approximately 16,693 metric tons for the ICTF facility and rail operations. A breakdown of the calculations from the FTA GHG Emissions Estimator are included in **Attachment 1**.

While it is anticipated the construction and operation of the Project would generate GHG, it is expected that the Project would shift freight from less efficient highways to more efficient rail transportation and have a positive impact by reducing overall GHG emission.

The No-Build Alternative would have a negative impact on GHG emissions by allowing the congestion and less efficient transport of cargo to continue.

Mobile Source Air Toxics (MSATs)

Introduction

On February 3, 2006, the FHWA released "*Interim Guidance on Air Toxic Analysis in NEPA Documents."* This guidance was superseded on September 30, 2009, December 6, 2012, and most recently on January 18, 2023, by FHWA "*Updated Interim Guidance Update on Air Toxic Analysis in NEPA Documents."* The purpose of FHWA's guidance is to advise on when and how to analyze MSATs in the NEPA process for highways. This guidance is interim, because MSAT science is still evolving. As the science progresses, FHWA will update the guidance.

The FHWA developed a tiered approach with three categories for analyzing MSAT in NEPA documents, depending on specific project circumstances:

1) No analysis for projects with no potential for meaningful MSAT effects;
2) Qualitative analysis for projects with low potential MSAT effects; or
3) Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

1) Projects with No Meaningful Potential MSAT Effects, or Exempt Projects.

The types of projects included in this category are:

- Projects qualifying as a categorical exclusion under 23 CFR 771.117;
- Projects exempt under the CAA conformity rule under 40 CFR 93.126; and
- Other projects with no meaningful impacts on traffic volumes or vehicle mix.

For projects that are categorically excluded under 23 CFR 771.117, or are exempt from conformity requirements under the CAA pursuant to 40 CFR 93.126, no analysis or discussion of MSAT is necessary. Documentation sufficient to demonstrate that the project qualifies as a categorical exclusion and/or exempt project will suffice. For other projects with no or negligible traffic impacts, regardless of the class of NEPA environmental document, no MSAT analysis is recommended. However, the project record should document in the Environmental Assessment (EA) or

Environmental Impact Statement (EIS) the basis for the determination of no meaningful potential impacts with a brief description of the factors considered.

2) Projects with Low Potential MSAT Effects

The types of projects included in this category are those that serve to improve operations of highway, transit, or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions. This category covers a broad range of projects.

It is anticipated that most highway projects that need an MSAT assessment will fall into this category. Examples of these types of projects are minor widening projects; new interchanges; replacing a signalized intersection on a surface street; and projects where design year traffic is projected to be less than 140,000 to 150,000 Average Daily Traffic (ADT).

For these projects, a qualitative assessment of emissions projections should be conducted. This qualitative assessment should compare, in narrative form, the expected effect of the project on traffic volumes, vehicle mix, or routing of traffic and the associated changes in MSAT for the project alternatives, including no-build, based on Vehicle Miles Traveled (VMT), vehicle mix, and speed. It should also discuss national trend data projecting substantial overall reductions in emissions due to stricter engine and fuel regulations issued by the USEPA. Because the emission effects of these projects typically are low, there should be no appreciable difference in overall MSAT emissions among the various alternatives.

3) Projects with Higher Potential MSAT Effects

This category includes projects that have the potential for meaningful differences in MSAT emissions among project alternatives. A limited number of projects are expected to meet this two-pronged test. To fall into this category, a project should:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location, involving a significant number of diesel vehicles for new projects or accommodating with a significant increase in the number of diesel vehicles for expansion projects; or
- Create new capacity or add significant capacity to urban highways such as Interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the ADT is projected to be in the range of 140,000 to 150,000 or greater by the design year; and also
- Be proposed to be located in proximity to populated areas.

The Build Alternative conditions for the Project will improve the operation of a highway without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions. Although the Project consists of constructing a intermodal freight facility, the ICTF portion of the Project is not located in close proximity to populated areas. The closest residence is approximately 3,064 feet from the ICTF portion of the Project. As a result, the Project is considered to be a “Project with Low Potential MSAT Effects.”

Background

Controlling air toxic emissions became a national priority with the passage of the CAA Amendments of 1990, whereby Congress mandated that the USEPA regulate 188 air toxics, also known as hazardous air pollutants. The USEPA assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are part of USEPA's Integrated Risk Information System (IRIS). In addition, USEPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment (NATA). These are *1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter.* While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future USEPA rules. For projects warranting MSAT analysis, all nine priority MSAT should be considered.

Motor Vehicle Emissions Simulator (MOVES)

According to EPA, MOVES3 is a major revision to MOVES2014 and improves upon it in many respects. MOVES3 includes new data, new emissions standards, and new functional improvements and features. It incorporates substantial new data for emissions, fleet, and activity developed since the release of MOVES2014. These new emissions data are for light- and heavy duty vehicles, exhaust and evaporative emissions, and fuel effects. MOVES3 also adds updated vehicle sales, population, age distribution, and vehicle miles travelled (VMT) data. In the November 2020 EPA issued the 'MOVES3 Mobile Source Emissions Model Questions and Answers"[7]. EPA states that for on-road emissions, MOVES3 updated heavy-duty (HD) diesel and compressed natural gas (CNG) emission running rates and updated HD gasoline emission rates. They updated light-duty (LD) emission rates for hydrocarbon (HC), carbon monoxide (CO) and nitrogen oxide (NOx) and updated light-duty (LD) particulate matter rates, incorporating new data on Gasoline Direct Injection (GDI) vehicles.

Using EPA's MOVES3 model, as shown in **Figure 1** FHWA estimates that even if VMT increases by 31 percent from 2020 to 2060 as forecast, a combined reduction of 76 percent in the total annual emissions for the priority MSAT is projected for the same time period.

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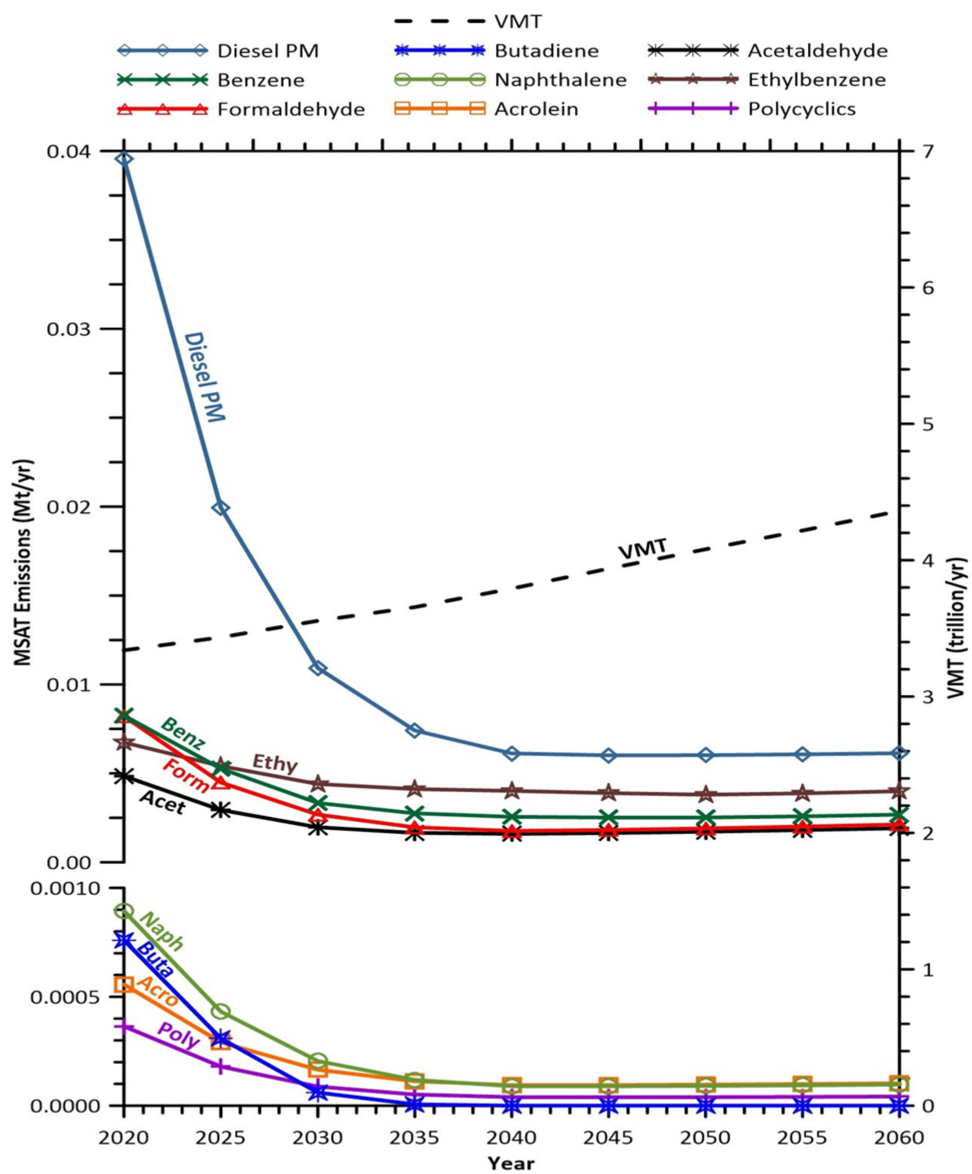
[7] https://www.epa.gov/sites/default/files/2020-11/documents/420f20050.pdf

Figure 1: FHWA Projected National MSAT Emission Trends 2020-2060 for Vehicles Operating on Roadways



Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors.
Source: EPA MOVES3 model runs conducted by FHWA, March 2021.

Diesel PM is the dominant component of MSAT emissions, making up 36 to 56 percent of all priority MSAT pollutants by mass, depending on calendar year. Users of MOVES3 will notice some differences in emissions compared with MOVES2014. MOVES3 is based on updated data on some emissions and pollutant processes compared to MOVES2014, and also reflects the latest Federal emissions standards in place at the time of its release. In addition, MOVES3 emissions forecasts are based on slightly higher VMT projections than MOVES2014, consistent with nationwide VMT trends.

MSAT Research

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how potential public health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA.

Nonetheless, air toxics concerns continue to arise on highway projects during the NEPA process. Even as the science emerges, the public and other agencies expect FHWA to address MSAT impacts in its environmental documents. The FHWA, USEPA, the Health Effects Institute (HEI), and others have funded and conducted research studies to try to define potential risks more clearly from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this field.

Qualitative MSAT Assessment

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. For the Design Year 2045 No-Build and Build Alternative scenarios, the amount of MSATs emitted would be proportional to the VMT. An assessment of VMT for the No-Build and Build Alternative is included in **Table 3** below.

Table 3: Design Year 2045 No-Build Alternative and Build Alternative VMT Projections on Affected Roadway Network

Roadway Link	*Distance*	*2045 ADT*	*VMT**
2045 No-Build Alternative Conditions			
Node 1: US 31 from I-65 exit 164 to US 80	3.06	19,072	58,360
Total 2045 No-Build Alternative	**3.06**	**--**	**58,360**
2045 Build Alternative Condition			
Node 1: US 31 from I-65 exit 164 to ICTF New Access Road	2.35	19,837	46,627
Node 2: ICTF New Access Road from US 31 to ICTF	0.48	765	367
Total 2045 Build Alternative	**2.83 mile**	**--**	**46,994**

*VMT is calculated by multiplying the ADT by the Node length.

An comparison of the VMT, for the No-Build and Build Alternative from the link-by-link VMT results, included in **Table 3** indicate that the VMT for the Build Alternative is 19 percent less than the 2045 No-Build Alternative.

Emissions will likely be lower than the existing levels in the design year as a result of USEPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent from 2010 to 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the USEPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in virtually all locations.

The construction of the Project would have the effect of moving some traffic slightly closer to nearby homes, and businesses; therefore, under the Build Alternative, there may be localized areas where ambient concentrations of MSATs could be higher than the No-Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced at locations near the new location portions that will move closer to homes and businesses. However, the magnitude and the duration of these potential increases compared to the No-Build Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts.[8]

[8] Appendix C - Council on Environmental Quality (CEQ) Provisions Covering Incomplete or Unavailable Information (40 CFR 1502.22) - MSAT - Policy And Guidance - Air Toxics - Air Quality - EnvironMent - FHWA (dot.gov)

Attachment 1: Air Quality Calculations

Construction Air Quality

Summary of Estimated Air Emissions from Construction Equipment

	PM_{10} / $PM_{2.5}$ (tons/year)	SO_2 (tons/year)	NO_X (tons/year)	VOC (tons/year)	CO (tons/year)
Proposed Project Construction	0.98*	0.03*	70.95*	2.42*	16.30*
Maintenance Area Threshold	100**	100**	100**	100**	100**

*Calculated using emission factors contained in AP-42, Chapter 3.4, Table 3.4-1. "Gaseous Emission Factors for Large Stationary Diesel and All Stationary Duel-Fuel Engines" for diesel fuel emission factors (Stationary Internal Combustion Sources, October 1996).
**Source: 40 CFR 93.153

Calculations for Estimated Air Emissions from Construction Equipment

						Carbon Monoxide (CO)		Sulfur Dioxide (SO2)		NOx		VOC		PM10/PM2.5	
Description	Fuel Type	Equipment Horsepower (1)	Number of Equipment	Days of Construction (days)	Total Working Hours (2)	Emission Factor (g/hp-hr) (3)	Emissions (Tons/Year) (4)	Emission Factor (g/hp-hr) (3)	Emissions (Tons/Year) (4)	Emission Factor (g/hp-hr) (3)	Emissions (Tons/Year) (4)	Emission Factor (g/hp-hr) (3)	Emissions (Tons/Year) (4)	Emission Factor (g/hp-hr) (3)	Emissions (Tons/Year) (4)
Dump/Haul Truck	Diesel	350	1	730	5,840	2.495756	2.6992	0.0044	0.0048	10.866	11.7516	0.37	0.4002	0.15	0.1622
Excavator	Diesel	250	1	730	5,840		1.9280		0.0034		8.3940		0.2858		0.1159
Front end loader	Diesel	100	1	730	5,840		0.7712		0.0014		3.3576		0.1143		0.0463
Bulldozer	Diesel	200	1	730	5,840		1.5424		0.0027		6.7152		0.2287		0.0927
Skidsteer	Diesel	50	1	730	5,840		0.3856		0.0007		1.6788		0.0572		0.0232
Material Handler (Lull)	Diesel	100	1	730	5,840		0.7712		0.0014		3.3576		0.1143		0.0463
Cement Mixer/Pump	Diesel	250	1	730	5,840		1.9280		0.0034		8.3940		0.2858		0.1159
Compactor/Roller	Diesel	150	1	730	5,840		1.1568		0.0020		5.0364		0.1715		0.0695
Water Truck	Diesel	300	1	730	5,840		2.3136		0.0041		10.0728		0.3430		0.1390
Flatbed Truck	Diesel	350	1	730	5,840		2.6992		0.0048		11.7516		0.4002		0.1622
Generator	Diesel	5	1	730	5,840		0.0386		0.0001		0.1679		0.0057		0.0023
Rail Saw	Gasoline	8	1	730	5,840		0.0617		0.0001		0.2686		0.0091		0.0037

(1) Horsepower for each type of equipment was estimate based on HATCH Environmental Assessment for Port of Houston (May 26, 2022), which was used as a reference example or based on internet searches for typical equipment horsepower. When a range of horsepower was listed, an estimate in the lower 50% range was selected, using increments of 50 horsepower.

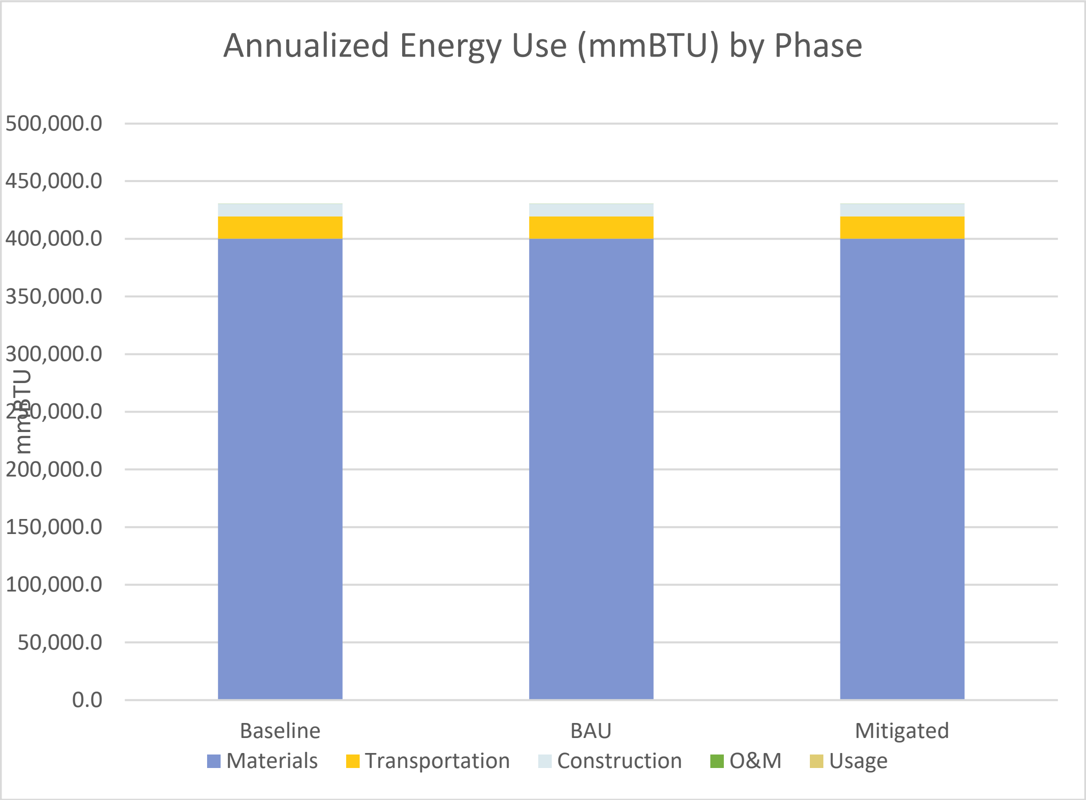
(2) Total working hours are equal to the product of the number of equipment, days of construction, and an assumed 8 hours of work per day.

(3) Emission factors are from AP-42, Chapter 3.4, Table 3.4-1. "Gaseous Emission Factors for Large Stationary Diesel and All Stationary Duel-Fuel Engines" for diesel fuel emission factors (Stationary Internal Combustion Sources, October 1996.

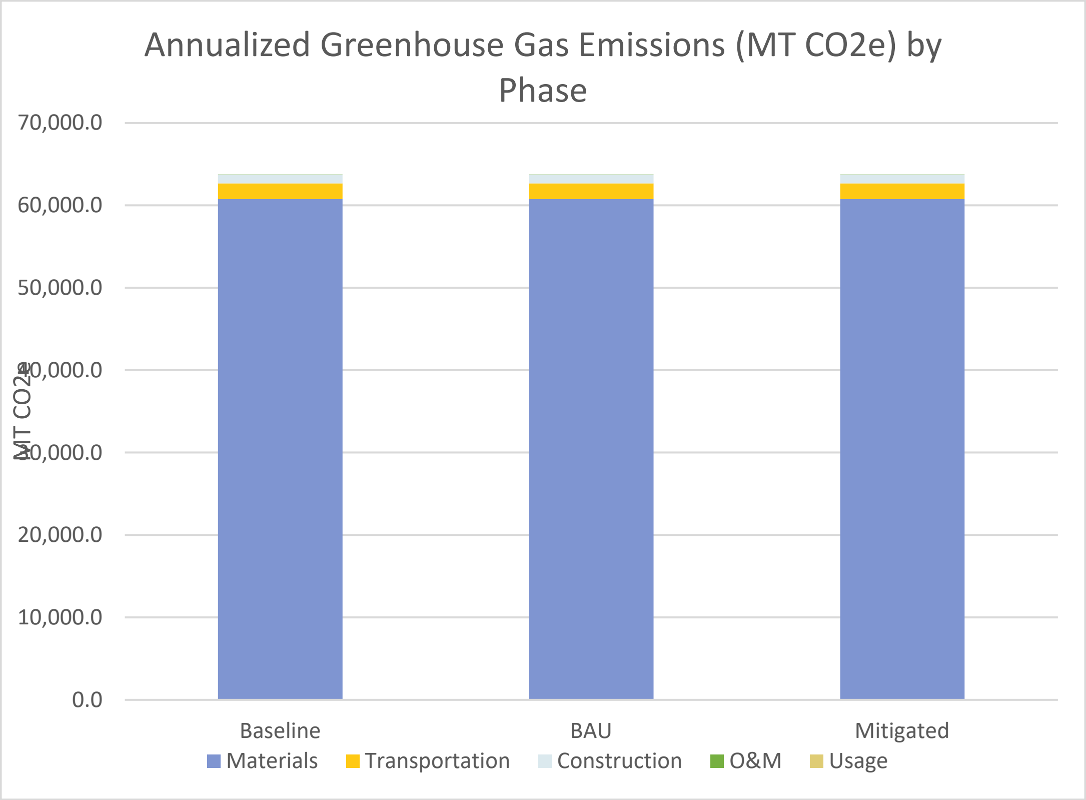
(4) Emissions calculated using formulas from the USEPA's "General Conformity Training Modules: Appendix A Samples Emissions Calculations."

GHG Output (Greenhouse Gas Emissions)

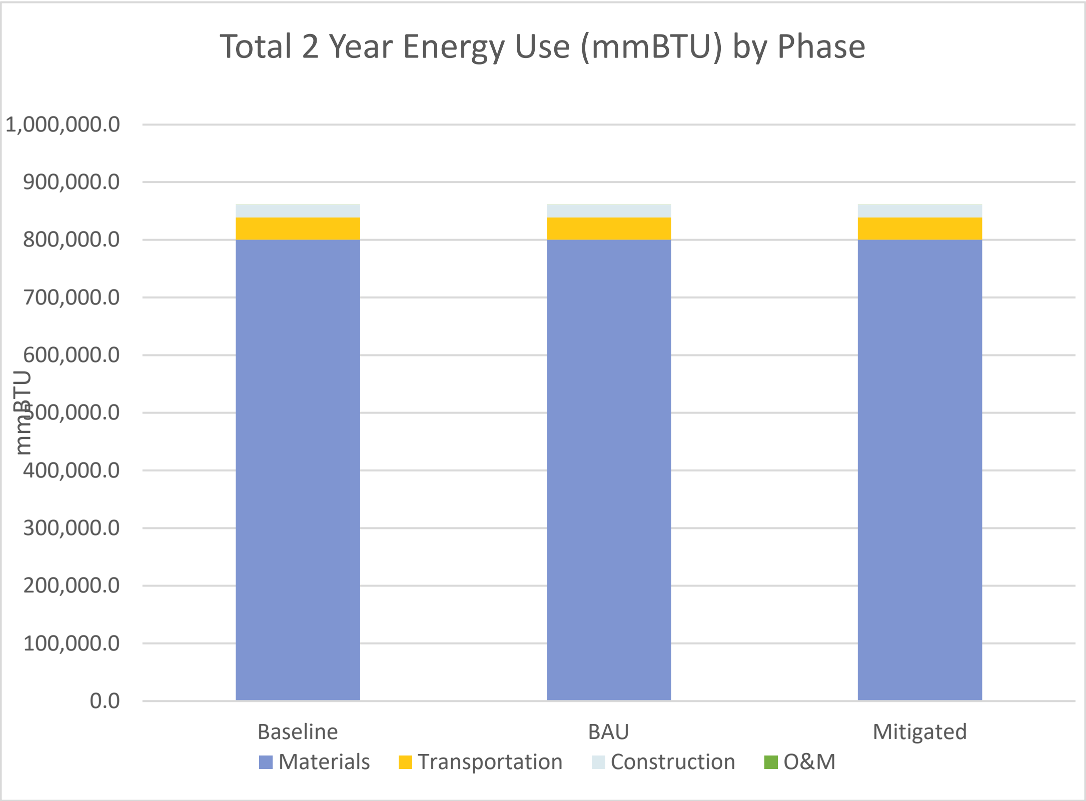
Infrastructure Carbon Estimator (ICE) Construction Charts and Tables



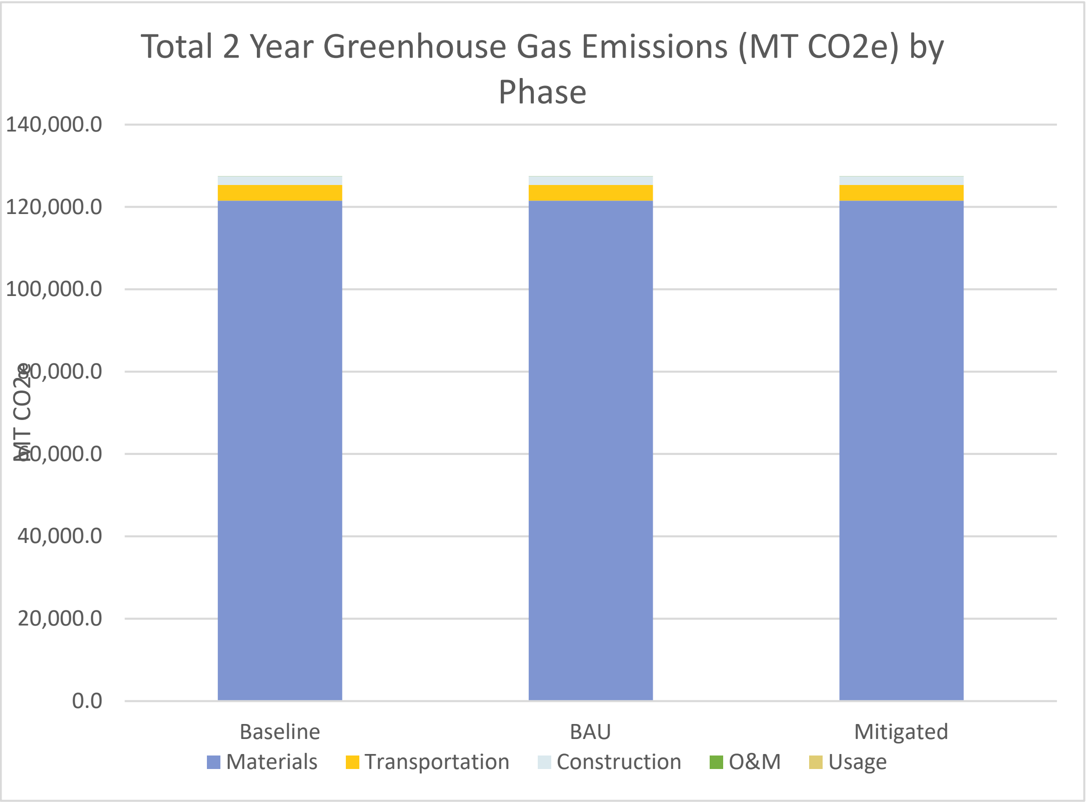
Annualized Energy Use (mmBTU) by Phase
mmBTU
500,000.0
450,000.0
400,000.0
350,000.0
300,000.0
250,000.0
200,000.0
150,000.0
100,000.0
50,000.0
0.0
Baseline
BAU
Mitigated
Materials
Transportation
Construction
O&M
Usage



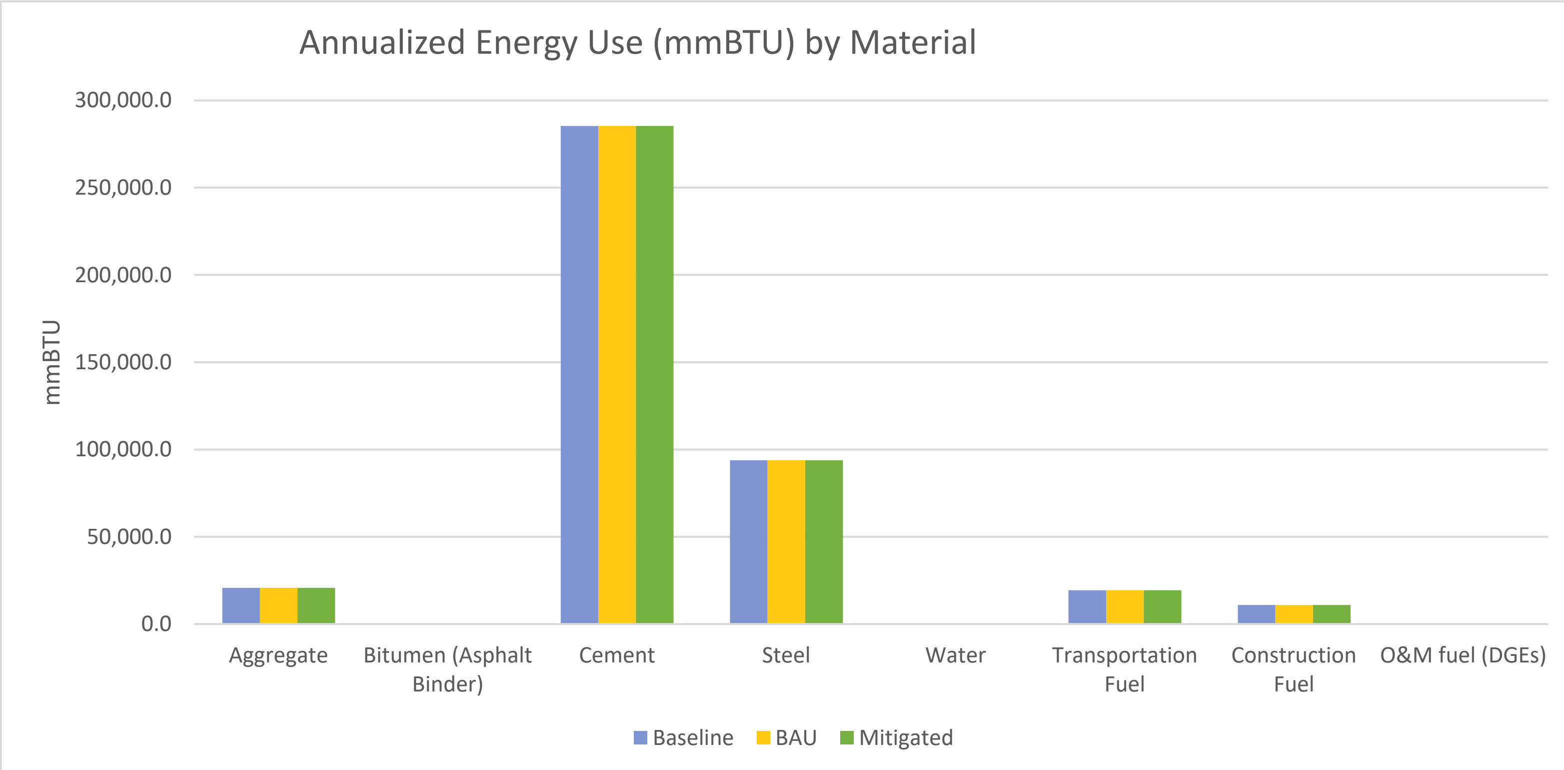
Annualized Greenhouse Gas Emissions (MT CO2e) by Phase
MT CO2e
70,000.0
60,000.0
50,000.0
40,000.0
30,000.0
20,000.0
10,000.0
0.0
Baseline
BAU
Mitigated
Materials
Transportation
Construction
O&M
Usage



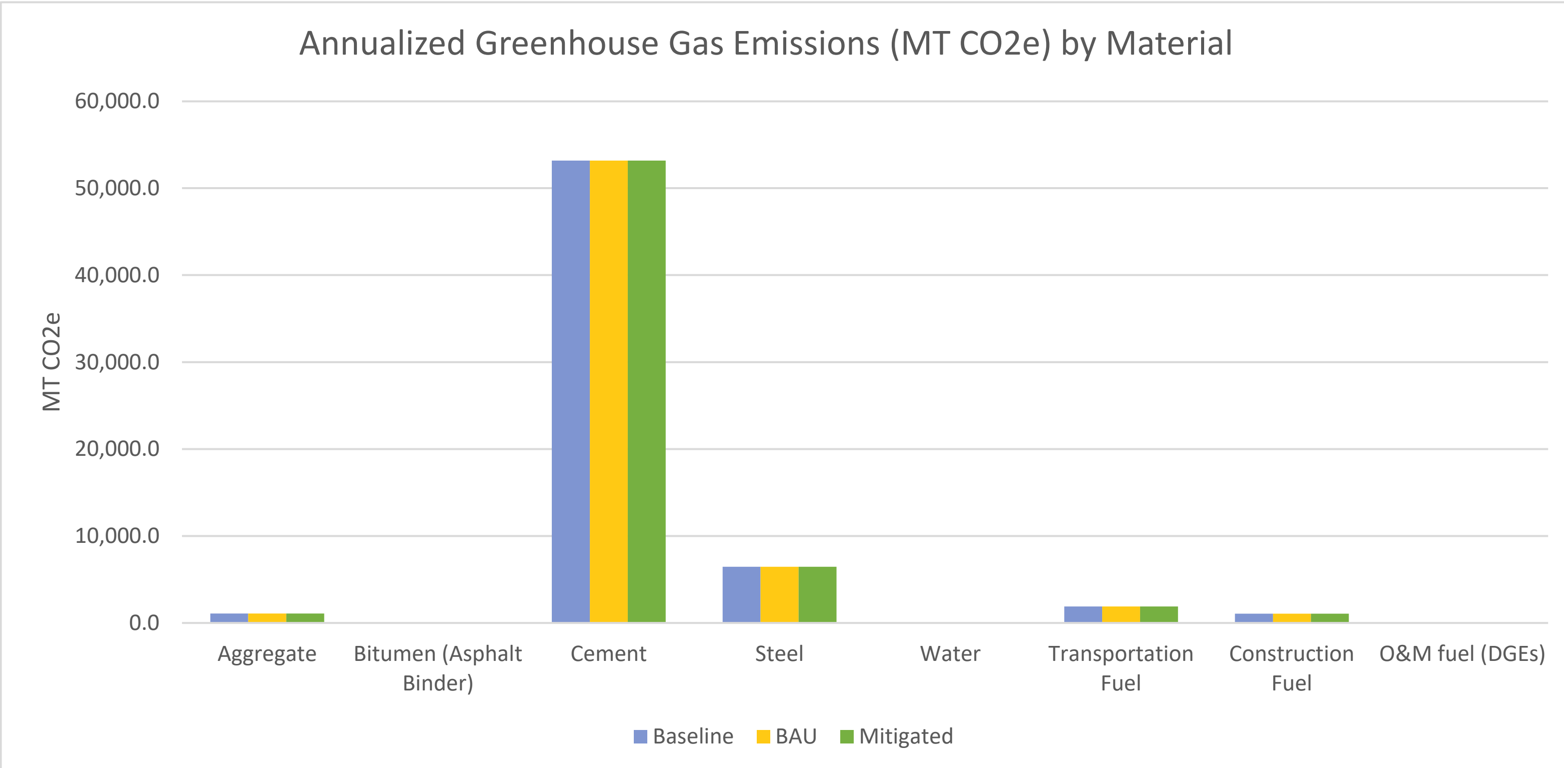
Total 2 Year Energy Use (mmBTU) by Phase
1,000,000.0
900,000.0
800,000.0
700,000.0
600,000.0
500,000.0
400,000.0
300,000.0
200,000.0
100,000.0
0.0
mmBTU
Baseline
BAU
Mitigated
Materials
Transportation
Construction
O&M



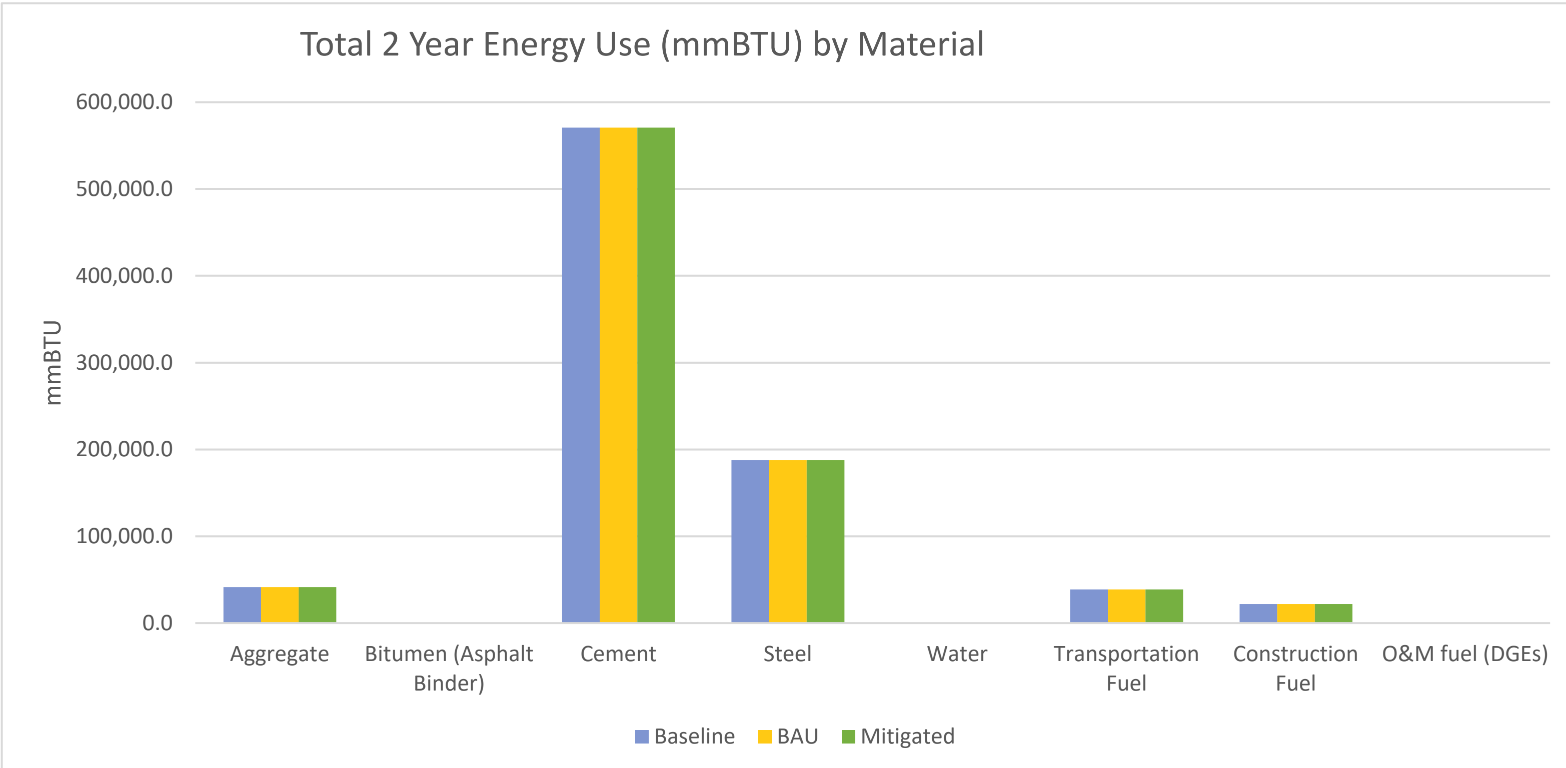
Total 2 Year Greenhouse Gas Emissions (MT CO2e) by Phase
MT CO2e
140,000.0
120,000.0
100,000.0
80,000.0
60,000.0
40,000.0
20,000.0
0.0
Baseline
BAU
Mitigated
Materials
Transportation
Construction
O&M
Usage



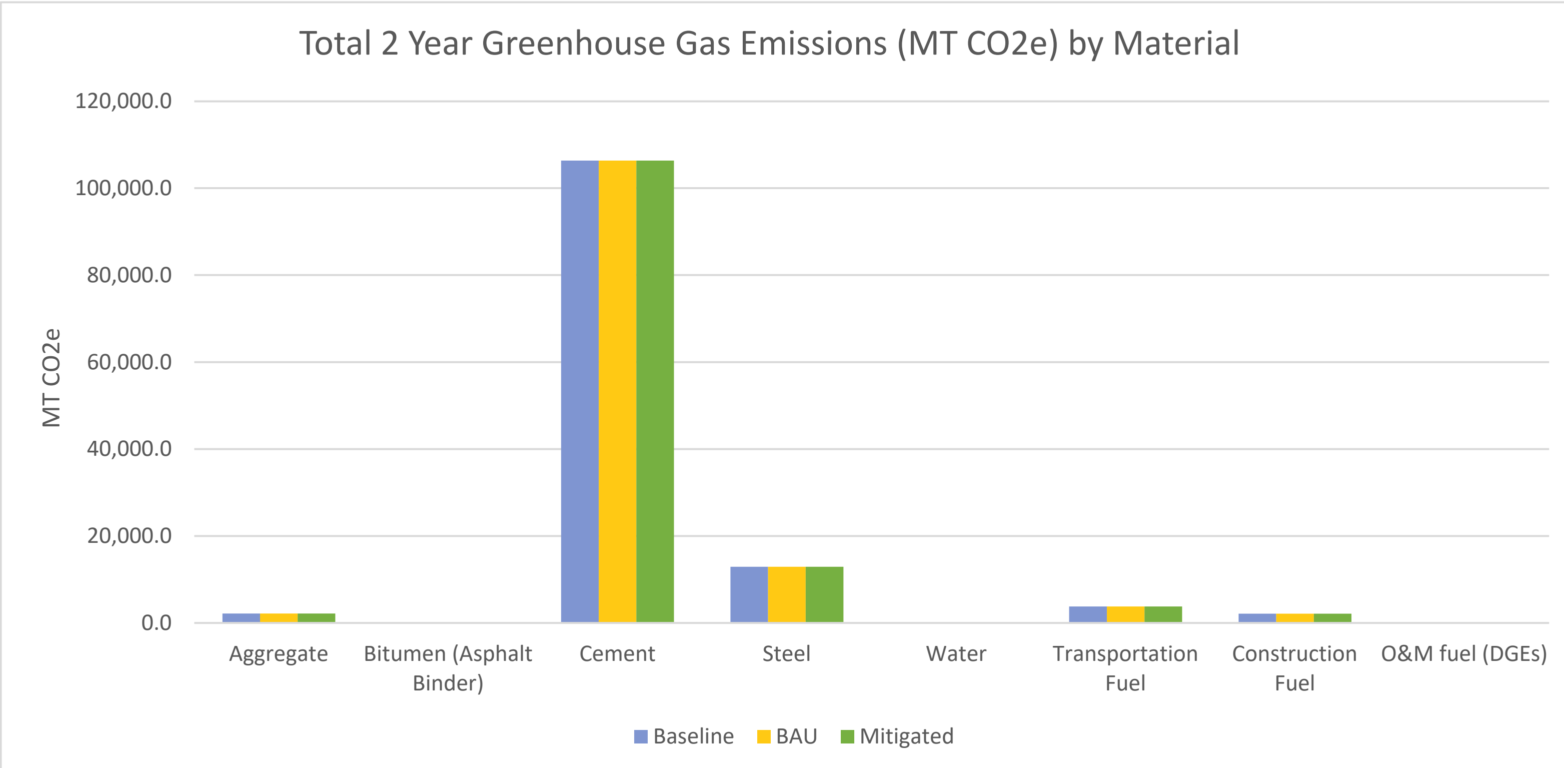
Annualized Energy Use (mmBTU) by Material
300,000.0
250,000.0
200,000.0
150,000.0
100,000.0
50,000.0
0.0
mmBTU
Aggregate
Bitumen (Asphalt Binder)
Cement
Steel
Water
Transportation Fuel
Construction Fuel
O&M fuel (DGEs)
Baseline
BAU
Mitigated

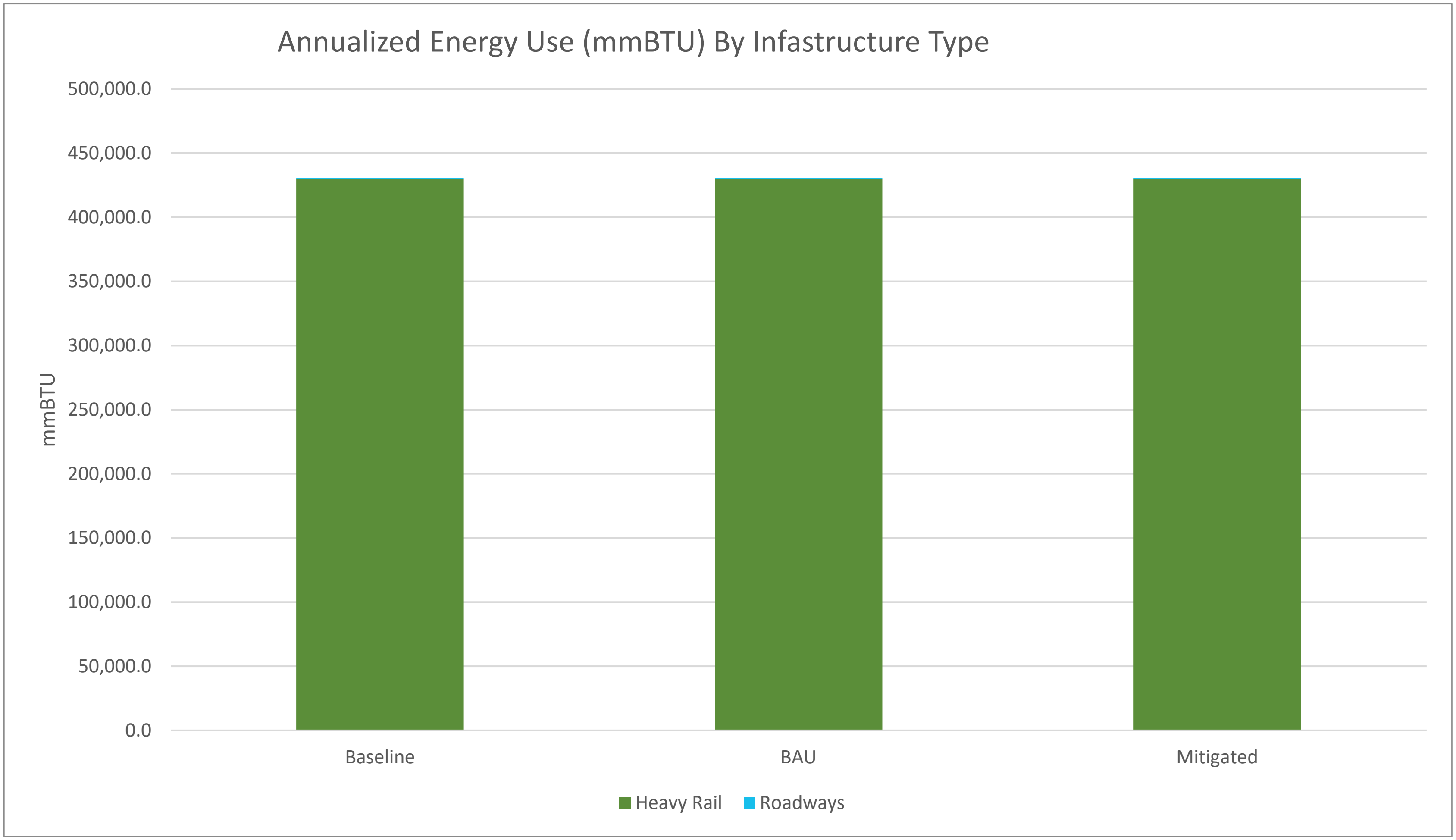


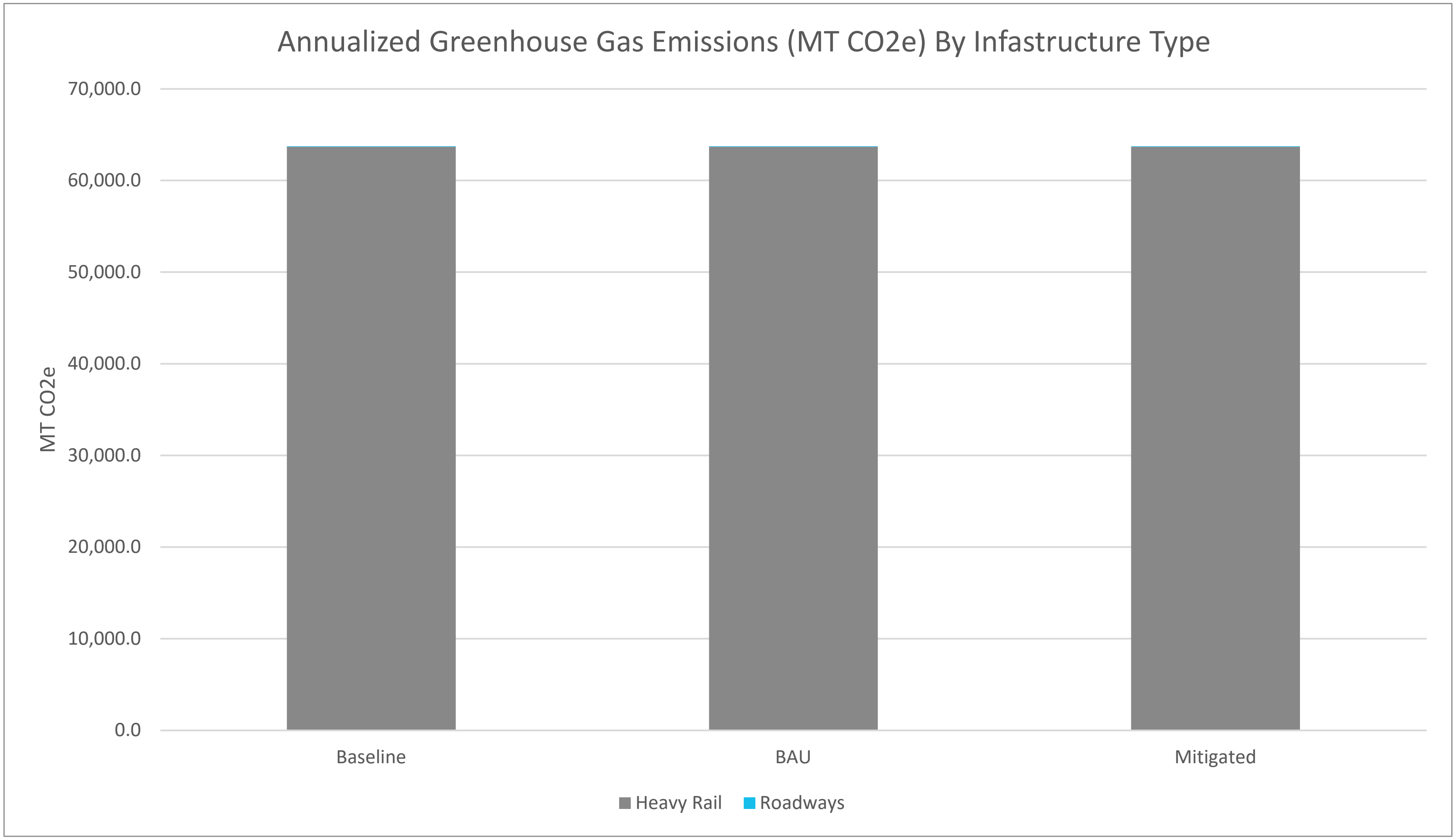
Annualized Greenhouse Gas Emissions (MT CO2e) by Material
60,000.0
50,000.0
40,000.0
30,000.0
20,000.0
10,000.0
0.0
MT CO2e
Aggregate
Bitumen (Asphalt Binder)
Cement
Steel
Water
Transportation Fuel
Construction Fuel
O&M fuel (DGEs)
Baseline
BAU
Mitigated



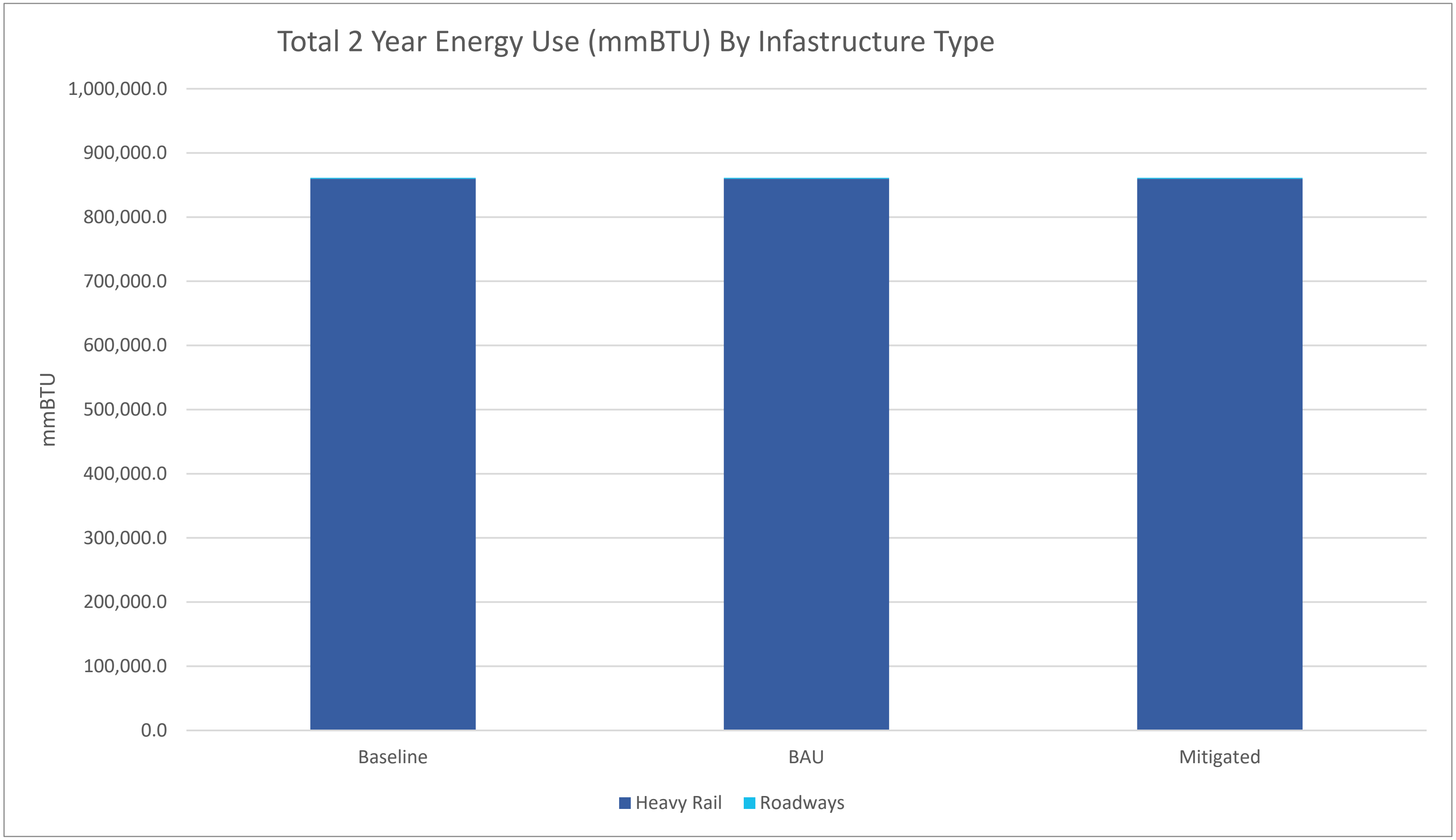
Total 2 Year Energy Use (mmBTU) by Material
mmBTU
600,000.0
500,000.0
400,000.0
300,000.0
200,000.0
100,000.0
0.0
Aggregate
Bitumen (Asphalt Binder)
Cement
Steel
Water
Transportation Fuel
Construction Fuel
O&M fuel (DGEs)
Baseline
BAU
Mitigated

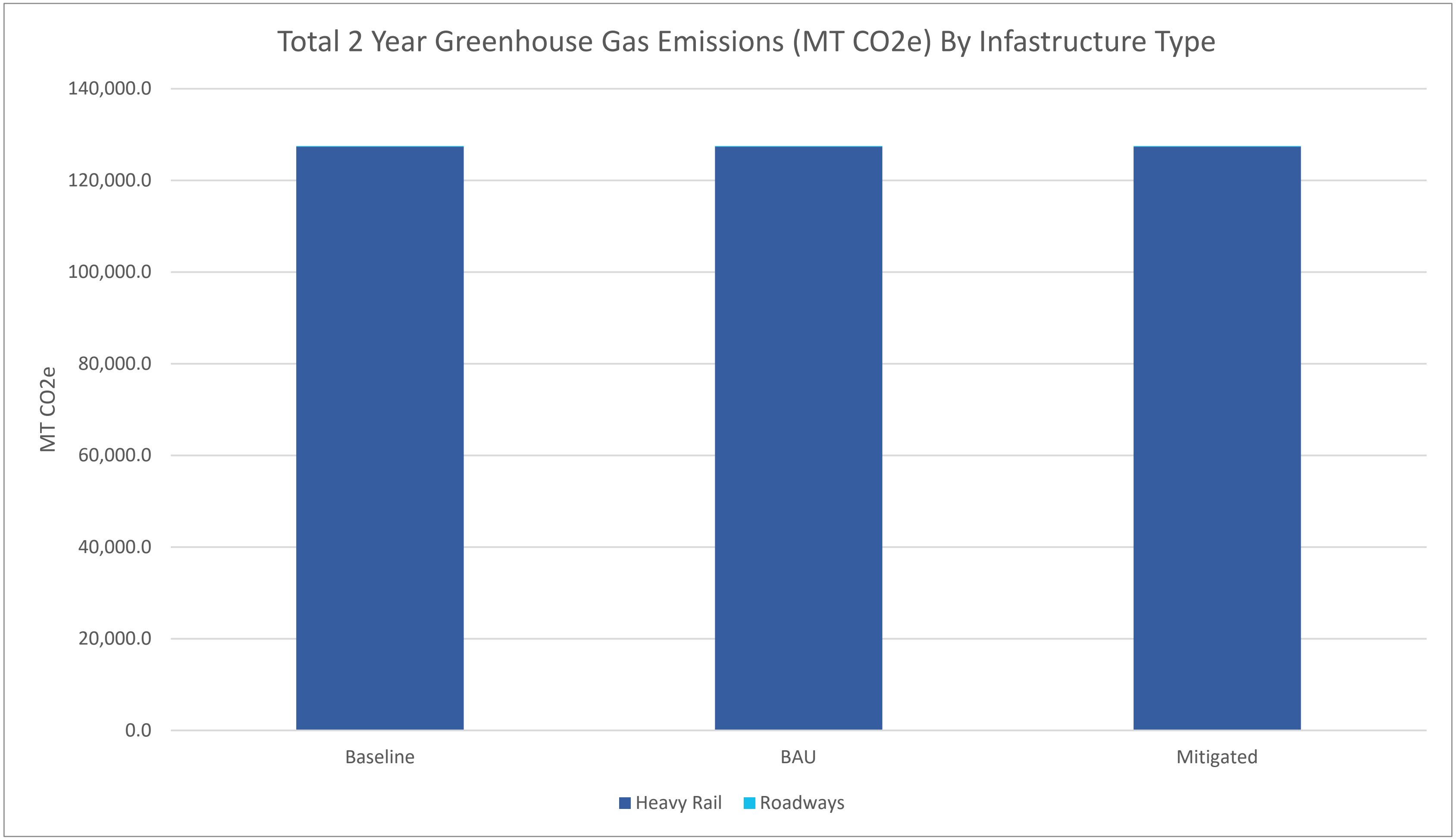

Total 2 Year Greenhouse Gas Emissions (MT CO2e) by Material
MT CO2e
120,000.0
100,000.0
80,000.0
60,000.0
40,000.0
20,000.0
0.0
Aggregate
Bitumen (Asphalt Binder)
Cement
Steel
Water
Transportation Fuel
Construction Fuel
O&M fuel (DGEs)
Baseline
BAU
Mitigated


Annualized Energy Use (mmBTU) By Infastructure Type
mmBTU
500,000.0
450,000.0
400,000.0
350,000.0
300,000.0
250,000.0
200,000.0
150,000.0
100,000.0
50,000.0
0.0
Baseline
BAU
Mitigated
Heavy Rail
Roadways



Annualized Greenhouse Gas Emissions (MT CO2e) By Infastructure Type
MT CO2e
70,000.0
60,000.0
50,000.0
40,000.0
30,000.0
20,000.0
10,000.0
0.0
Baseline
BAU
Mitigated
Heavy Rail
Roadways


Total 2 Year Energy Use (mmBTU) By Infastructure Type
mmBTU
1,000,000.0
900,000.0
800,000.0
700,000.0
600,000.0
500,000.0
400,000.0
300,000.0
200,000.0
100,000.0
0.0
Baseline
BAU
Mitigated
Heavy Rail
Roadways


Total 2 Year Greenhouse Gas Emissions (MT CO2e) By Infastructure Type
MT CO2e
140,000.0
120,000.0
100,000.0
80,000.0
60,000.0
40,000.0
20,000.0
0.0
Baseline
BAU
Mitigated
Heavy Rail
Roadways

	Annualized Energy Use		
	mmBTU	mmBTU	mmBTU
	Baseline	BAU	Mitigated
Materials	400,065	400,065	400,065
Transportation	19,396	19,396	19,396
Construction	10,950	10,950	10,950
O&M	153	153	153
Total	**430,565**	**430,565**	**430,565**

	Annualized Greenhouse Gas Emissions		
	MT CO2e	MT CO2e	MT CO2e
	Baseline	BAU	Mitigated
Materials	60,758	60,758	60,758
Transportation	1,900	1,900	1,900
Construction	1,073	1,073	1,073
O&M	15	15	15
Total	**63,746**	**63,746**	**63,746**

	Total Energy Use		
	mmBTU	mmBTU	mmBTU
	Baseline	BAU	Mitigated
Materials	800,131	800,131	800,131
Transportation	38,792	38,792	38,792
Construction	21,901	21,901	21,901
O&M	307	307	307
Total	**861,131**	**861,131**	**861,131**

	Total Greenhouse Gas Emissions		
	MT CO2e	MT CO2e	MT CO2e
	Baseline	BAU	Mitigated
Materials	121,516	121,516	121,516
Transportation	3,800	3,800	3,800
Construction	2,145	2,145	2,145
O&M	30	30	30
Total	**127,491**	**127,491**	**127,491**

	Annualized Energy Use		
	mmBTU	mmBTU	mmBTU
	Baseline	BAU	Mitigated
Aggregate	20,708	20,708	20,708
Bitumen (Asphalt Binder)	108	108	108
Cement	285,313	285,313	285,313
Steel	93,828	93,828	93,828
Water	108	108	108
Transportation Fuel	19,396	19,396	19,396
Construction Fuel	10,950	10,950	10,950
O&M fuel (DGEs)	153	153	153
Total	**430,565**	**430,565**	**430,565**

	Annualized Greenhouse Gas Emissions		
	MT CO2e	MT CO2e	MT CO2e
	Baseline	BAU	Mitigated
Aggregate	1,090	1,090	1,090
Bitumen (Asphalt Binder)	8	8	8
Cement	53,177	53,177	53,177
Steel	6,469	6,469	6,469
Water	14	14	14
Transportation Fuel	1,900	1,900	1,900
Construction Fuel	1,073	1,073	1,073
O&M fuel (DGEs)	15	15	15
Total	**63,746**	**63,746**	**63,746**

	Total Energy Use		
	mmBTU	mmBTU	mmBTU
	Baseline	BAU	Mitigated
Aggregate	41,416	41,416	41,416
Bitumen (Asphalt Binder)	216	216	216
Cement	570,627	570,627	570,627
Steel	187,657	187,657	187,657
Water	216	216	216
Transportation Fuel	38,792	38,792	38,792
Construction Fuel	21,901	21,901	21,901
O&M fuel (DGEs)	307	307	307
Total	**861,131**	**861,131**	**861,131**

	Total Greenhouse Gas Emissions		
	MT CO2e	MT CO2e	MT CO2e
	Baseline	BAU	Mitigated
Aggregate	2,180	2,180	2,180
Bitumen (Asphalt Binder)	17	17	17
Cement	106,353	106,353	106,353
Steel	12,937	12,937	12,937
Water	29	29	29
Transportation Fuel	3,800	3,800	3,800
Construction Fuel	2,145	2,145	2,145
O&M fuel (DGEs)	30	30	30
Total	**127,491**	**127,491**	**127,491**

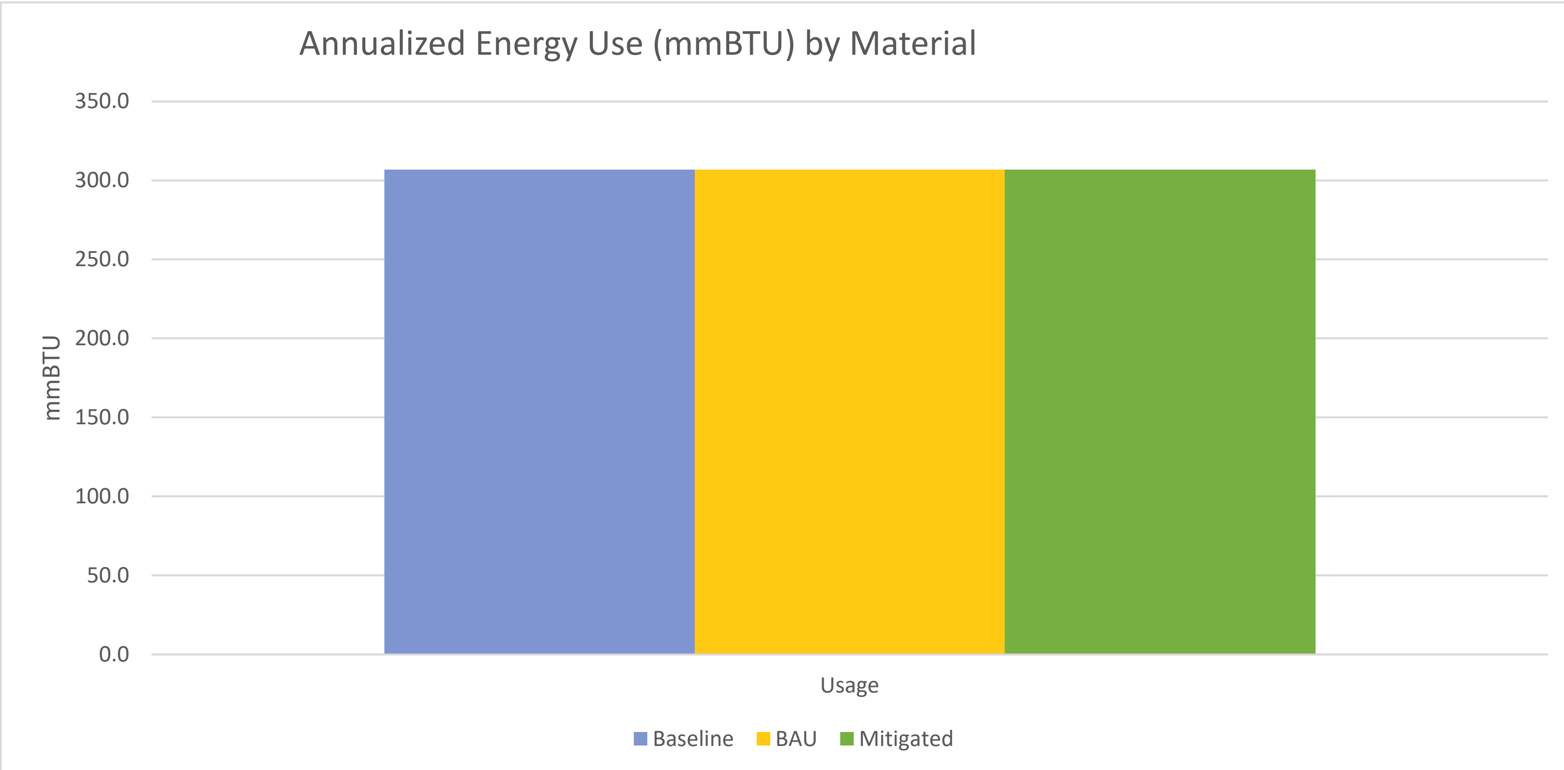
	Annualized Energy Use		
	mmBTU	mmBTU	mmBTU
	Baseline	BAU	Mitigated
Heavy Rail	429,803	429,803	429,803
Roadways	763	763	763
Total	**430,565**	**430,565**	**430,565**

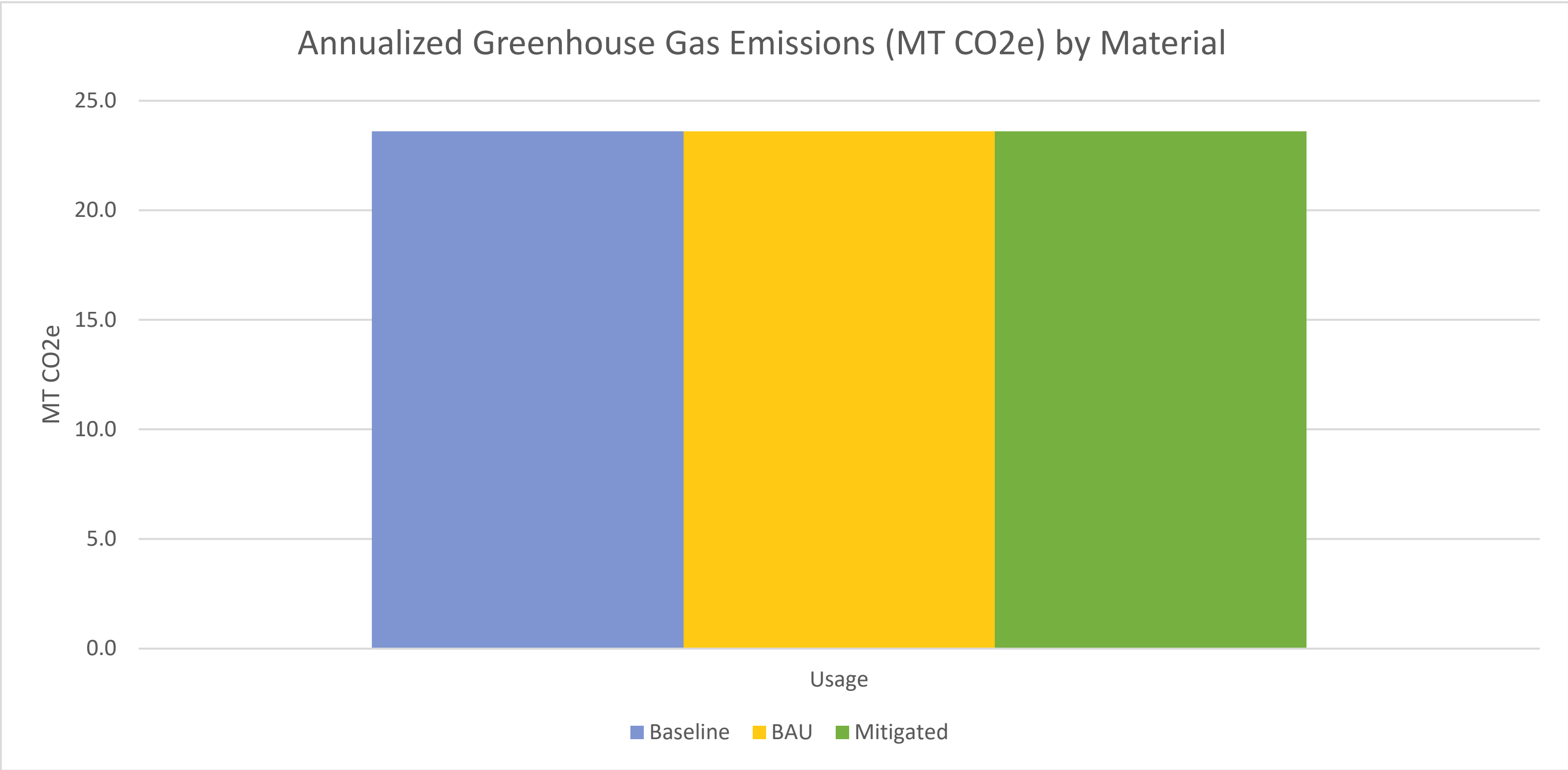
	Annualized Greenhouse Gas Emissions		
	MT CO2e	MT CO2e	MT CO2e
	Baseline	BAU	Mitigated
Heavy Rail	63,672	63,672	63,672
Roadways	74	74	74
Total	**63,746**	**63,746**	**63,746**

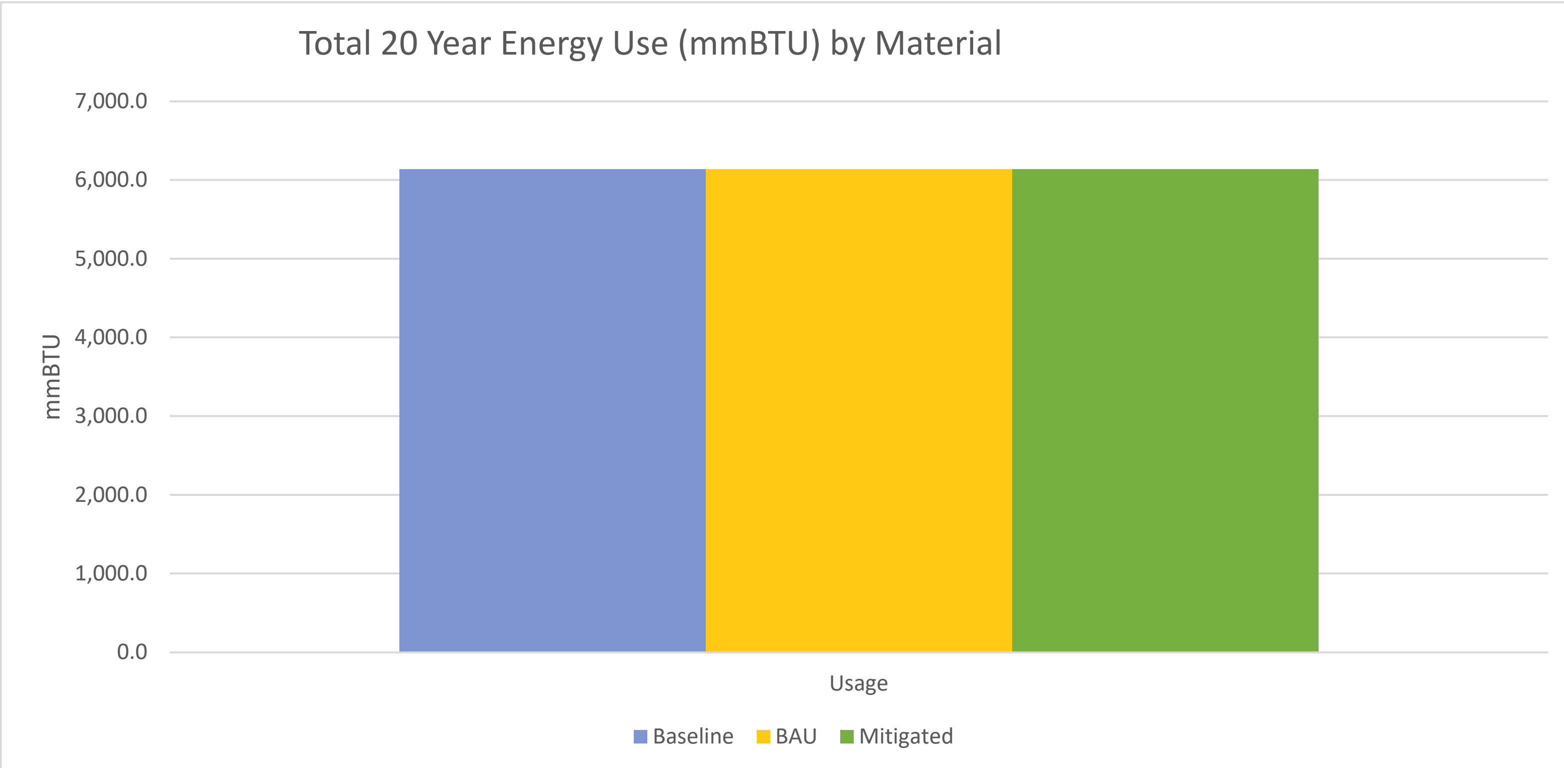
	Total Energy Use		
	mmBTU	mmBTU	mmBTU
	Baseline	BAU	Mitigated
Heavy Rail	859,605	859,605	859,605
Roadways	1,526	1,526	1,526
Total	**861,131**	**861,131**	**861,131**

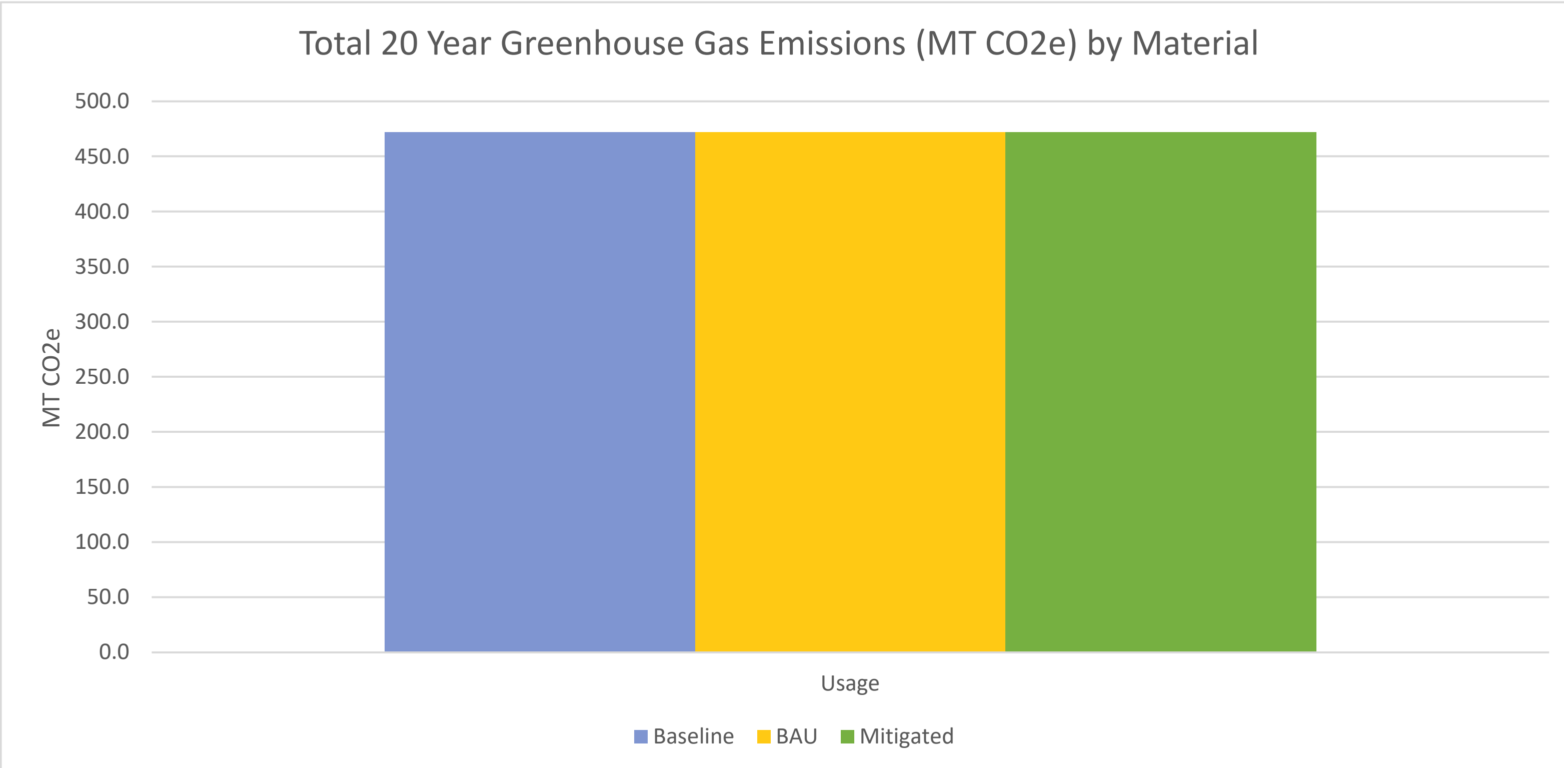
	Total Greenhouse Gas Emissions		
	MT CO2e	MT CO2e	MT CO2e
	Baseline	BAU	Mitigated
Heavy Rail	127,344	127,344	127,344
Roadways	148	148	148
Total	**127,491**	**127,491**	**127,491**

Infrastructure Carbon Estimator (ICE) Vehicle Operations Charts and Tables

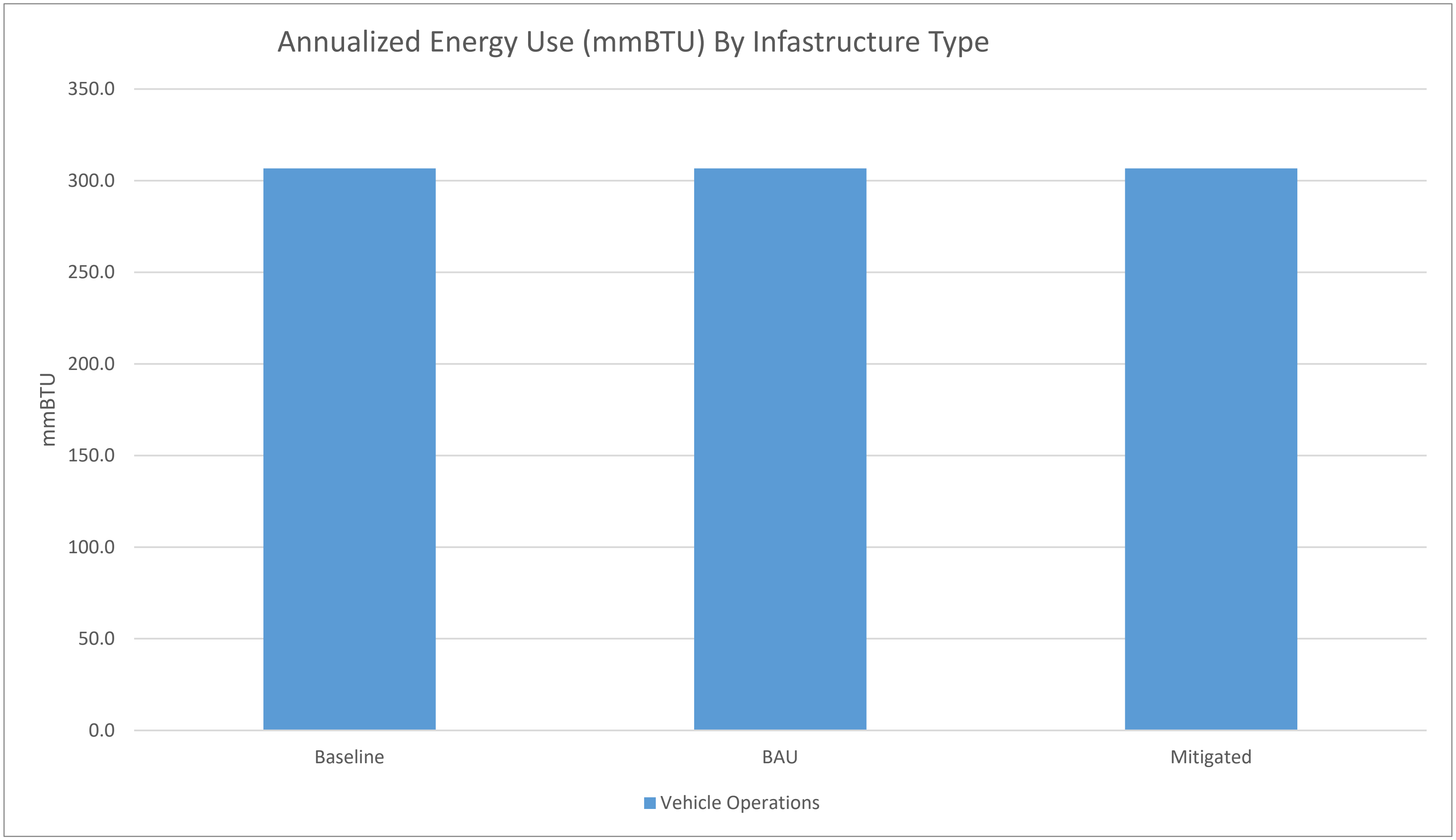

Annualized Energy Use (mmBTU) by Material
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
mmBTU
Usage
Baseline
BAU
Mitigated

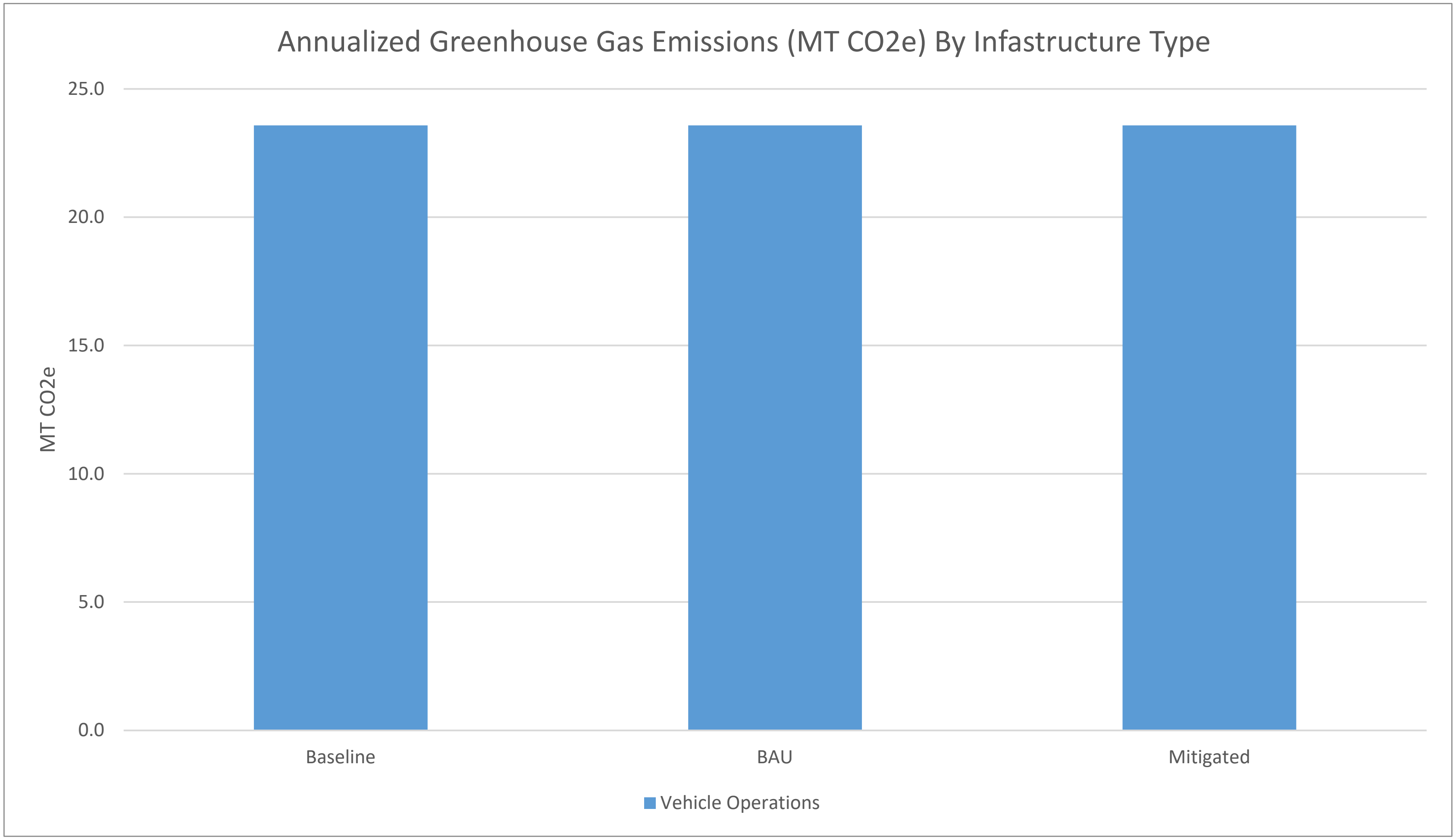

Annualized Greenhouse Gas Emissions (MT CO2e) by Material
25.0
20.0
15.0
10.0
5.0
0.0
MT CO2e
Usage
Baseline
BAU
Mitigated

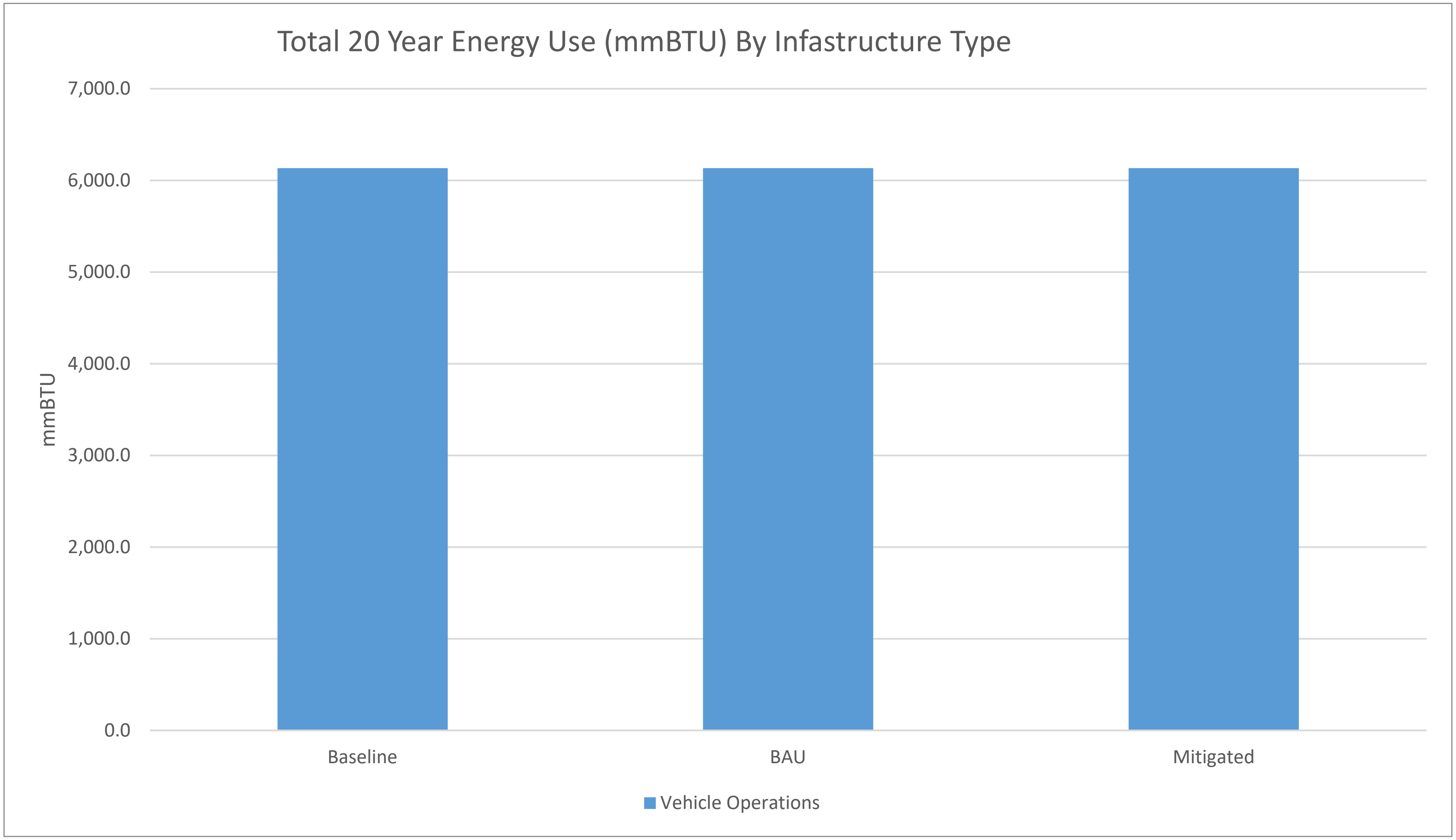

Total 20 Year Energy Use (mmBTU) by Material
mmBTU
7,000.0
6,000.0
5,000.0
4,000.0
3,000.0
2,000.0
1,000.0
0.0
Usage
Baseline
BAU
Mitigated

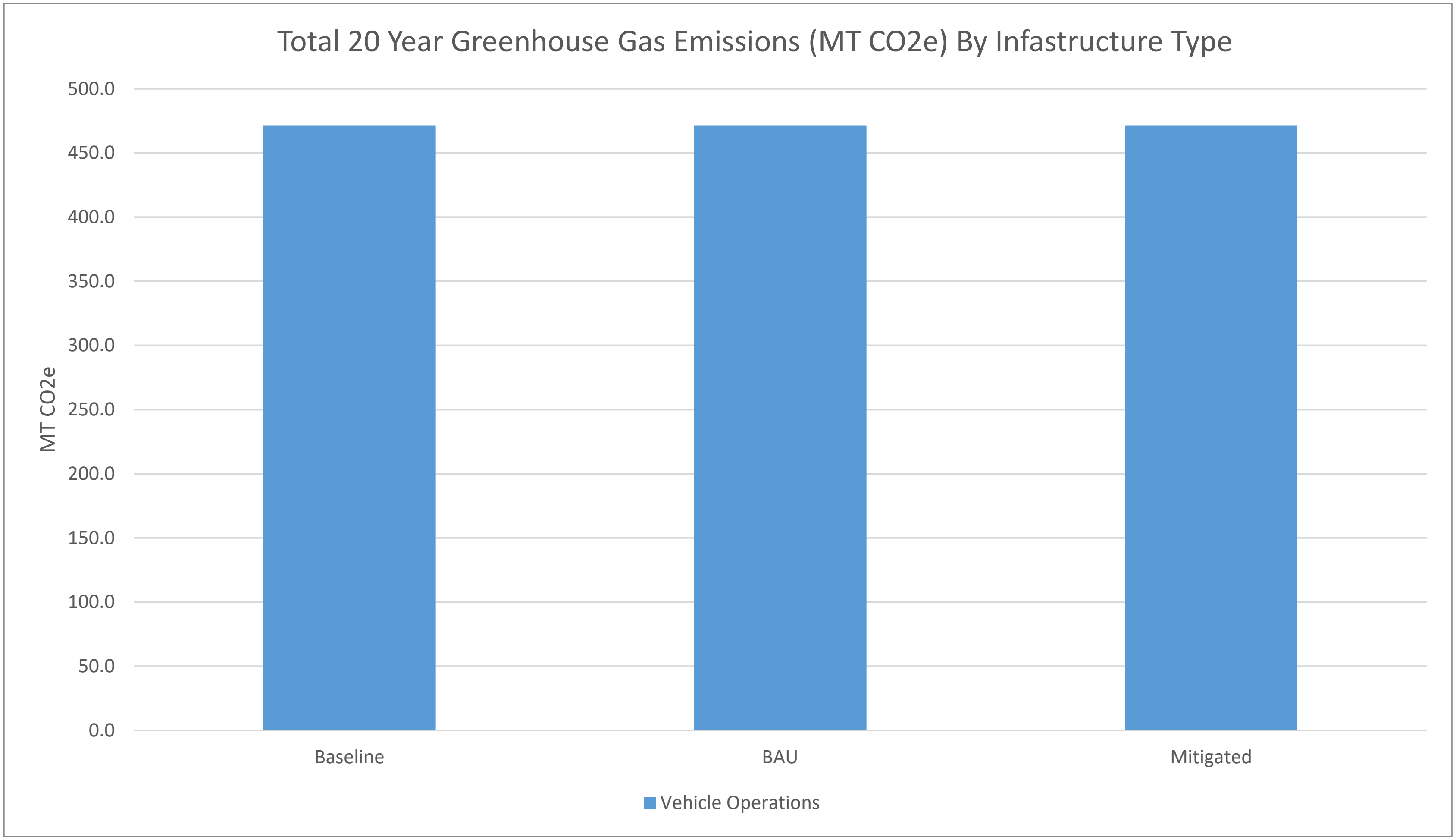


Total 20 Year Greenhouse Gas Emissions (MT CO2e) by Material
500.0
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
MT CO2e
Usage
Baseline
BAU
Mitigated


Annualized Energy Use (mmBTU) By Infastructure Type
mmBTU
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
Baseline
BAU
Mitigated
Vehicle Operations


Annualized Greenhouse Gas Emissions (MT CO2e) By Infastructure Type
MT CO2e
25.0
20.0
15.0
10.0
5.0
0.0
Baseline
BAU
Mitigated
Vehicle Operations


Total 20 Year Energy Use (mmBTU) By Infastructure Type
7,000.0
6,000.0
5,000.0
4,000.0
3,000.0
2,000.0
1,000.0
0.0
mmBTU
Baseline
BAU
Mitigated
Vehicle Operations


Total 20 Year Greenhouse Gas Emissions (MT CO2e) By Infastructure Type
MT CO2e
500.0
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
Baseline
BAU
Mitigated
Vehicle Operations

	Annualized Energy Use		
	mmBTU	mmBTU	mmBTU
	Baseline	BAU	Mitigated
Materials	-	-	-
Transportation	-	-	-
Construction	-	-	-
Usage	307	307	307
Total	**307**	**307**	**307**

	Annualized Greenhouse Gas Emissions		
	MT CO2e	MT CO2e	MT CO2e
	Baseline	BAU	Mitigated
Materials	-	-	-
Transportation	-	-	-
Construction	-	-	-
Usage	24	24	24
Total	**24**	**24**	**24**

	Total Energy Use		
	mmBTU	mmBTU	mmBTU
	Baseline	BAU	Mitigated
Materials	-	-	-
Transportation	-	-	-
Construction	-	-	-
Usage	6,134	6,134	6,134
Total	**6,134**	**6,134**	**6,134**

Appendix B – Traffic Impact Study

TRAFFIC IMPACT STUDY

INTERMODAL CONTAINER TRANSFER FACILITY (ICTF) - US Highway 31

MONTGOMERY, ALABAMA

SKIPPER
SKIPPER
SKIPPER
SKIPPER
SKIPPER
SKIPPER
SKIPPER
SKIPPER
SKIPPER

PREPARED FOR:

EMH&T ENGINEERS
(COLUMBUS, OHIO)

AND

ALABAMA STATE
PORT AUTHORITY
(MOBILE, AL)

Originally Submitted Apr. 2023
Revised Sept. 2023

TRAFFIC IMPACT STUDY

INTERMODAL CONTAINER TRANSFER FACILITY (ICTF)

MONTGOMERY, ALABAMA

Prepared for:
EMH&T ENGINEERS
(COLUMBUS, OHIO)

AND

ALABAMA STATE PORT AUTHORITY
(MOBILE, ALABAMA)

Prepared by:
Skipper Consulting, Inc. 3644 Vann Road
Suite 100
Birmingham, Alabama 35235 205.655.8855
skipperinc.com

ALABAMA
LICENSED
No. 28602
PROFESSIONAL
ENGINEER
ANTHONY SCOTT COTHRON
4-26-23

Originally Submitted Apr. 2023
Revised Sept. 2023

TABLE OF CONTENTS

Appendices

INTRODUCTION

The purpose of this report is to present the findings of traffic impact analyses performed for a proposed intermodal site by the Alabama State Port Authority. The proposed site is located on the west side of U.S. Highway 31 between Hyundai Boulevard and U.S. Highway 80 in Montgomery, Alabama. The development has a proposed full access driveway on U.S. Highway 31 aligning as the fourth leg of the Green Leaf Drive intersection. This US31 access will facilitate all the large truck traffic for the site. Another site access point will be constructed as an extension of Burnsdale Drive into the site. The Burnsdale Drive access will provide routing for passenger cars to the on-site maintenance facilities. The location of the proposed development relative to the surrounding roadways is illustrated in **Figure 1**.

The purpose of this study is to achieve the following objectives:

- To assess the existing traffic conditions in the vicinity of the proposed development;
- To estimate the amount of traffic expected to be generated by the planned development;
- To estimate the directional distribution of development related traffic and assign such traffic to the study access;
- To assess the access needs of the planned development; and
- To assess future traffic conditions within the study area assuming the planned development is in place.

Sources of information used in this report include: the Alabama Department of Transportation; the City of Montgomery, Alabama; EMH&T, Inc.; Alabama State Port Authority; CSX Transportation; the Institute of Transportation Engineers; Traffic Data, LLC; and the files and field reconnaissance efforts of Skipper Consulting, Inc.

SKIPPER
CONSULTING INC

Figure 1 - Site Location Map
Montgomery Intermodal
Montgomery, Alabama

LEGEND

Site Location

Scale: Not to Scale
Date: Apr. 2023

North

BACKGROUND INFORMATION

Site Description

The proposed development on the west side of U.S. Highway 31 has a proposed full access driveway on U.S. Highway 31 aligning with Green Leaf Drive and another connection as an extension to Burnsdale Drive. The existing undeveloped site is proposed to be an intermodal site associated with the Alabama Port Authority and is assumed to have an opening day in 2025 with added operations continually until full buildout of the site. For reference, the preliminary site plan including all elements envisioned at full build out of the site is provided in **Appendix A**.

Study Area Roadways

Adjacent to the site, U.S. Highway 31 is a five-lane minor arterial roadway with a two-way left turn lane and a posted speed limit of 45 miles per hour. For the purposes of this study, U.S. Highway 31 is a roadway oriented in a north/south direction.

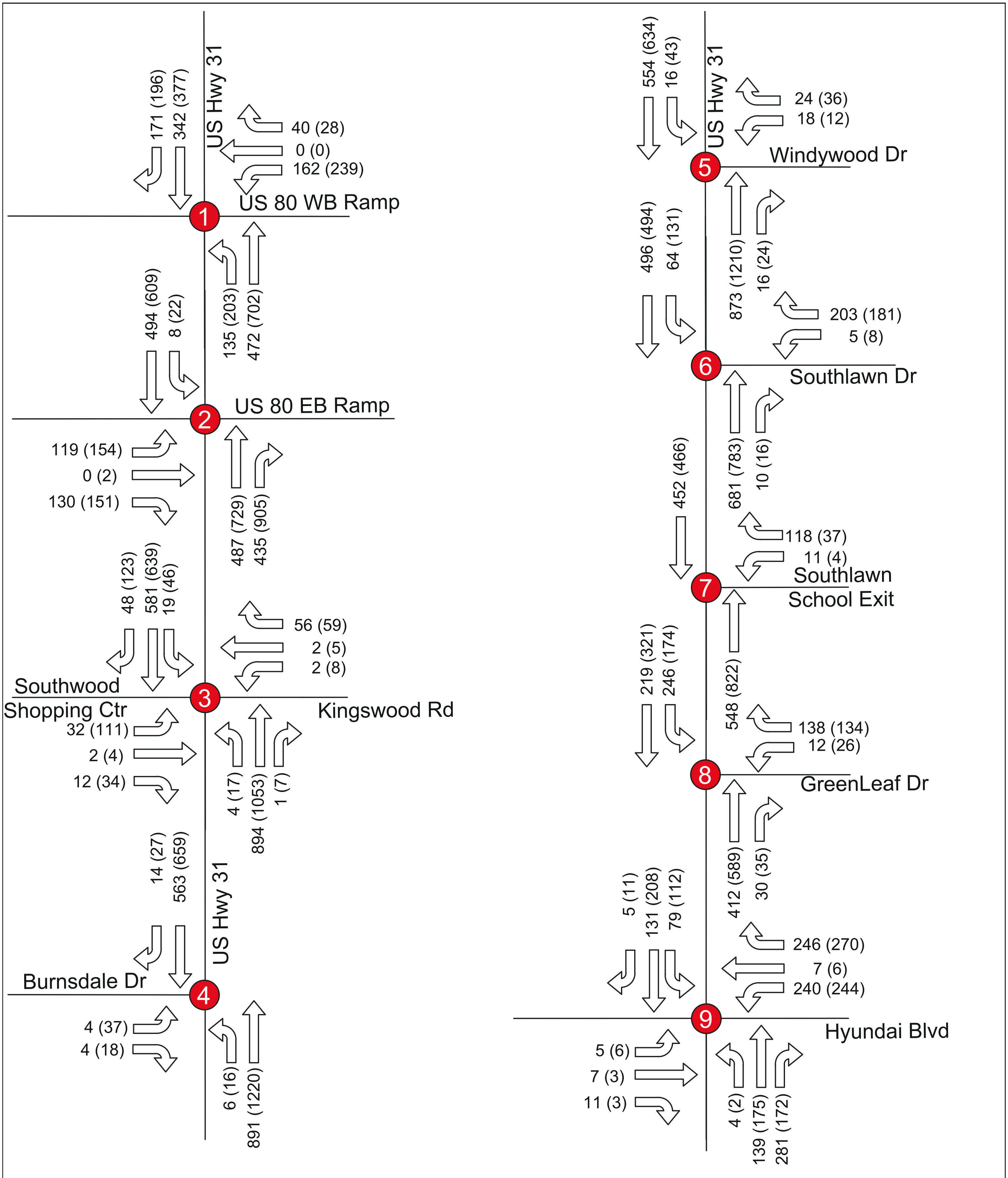
Existing Traffic Conditions

Existing Traffic Counts

Morning, midday, and afternoon peak hour turning movement counts (*visually observed*) were recorded for a typical weekday beginning Tuesday, February 21, 2023, at the following intersections:

- U.S. Highway 31 at U.S. Highway 80 Westbound Exit Ramp (signalized)
- U.S. Highway 31 at U.S. Highway 80 Eastbound Exit Ramp (signalized)
- U.S. Highway 31 at Southlawn Shopping Center/Kingswood Road (signalized)
- U.S. Highway 31 at Burnsdale Drive (signalized)
- U.S. Highway 31 at Windy Wood Drive (signalized)
- U.S. Highway 31 at Southlawn Drive (signalized)
- U.S. Highway 31 at Southlawn Middle School Access (unsignalized)
- U.S. Highway 31 at Green Leaf Drive (signalized)
- U.S. Highway 31 at Pyramid Avenue/Hyundai Boulevard (signalized)

Daily, bidirectional counts with speed were recorded hourly on U.S. Highway 31 north of the proposed site access beginning Tuesday, February 21, 2023. The 85^{th} percentile speed on U.S. Highway 31 Northbound was 51.4 miles per hour. The 85^{th} percentile speed on U.S. Highway 31 Southbound was 57.4 miles per hour. Existing morning and afternoon peak hour volumes are illustrated in **Figure 2**. Detailed traffic count data is provided in **Appendix B** for reference.



SKIPPER CONSULTING INC

Figure 2 - Existing Peak Hour Counts
Montgomery Intermodal (U.S. 31)
Montgomery, Alabama

LEGEND

AM {PM} Peak Hour Counts

X Study Intersection

Scale: Not to Scale
Date: Apr. 2023

North

Existing Intersection Capacity Analysis

Using methods as outlined in the *Highway Capacity Manual,* published by the Transportation Research Board, the capacity and operation of the study intersections were evaluated for existing conditions. According to methods of analysis, intersection capacity is expressed as levels of service, ranging from "A" (best) to "F" (worst). In general, a level of service (LOS) "C" is considered desirable, while a level of service "D" is considered acceptable during peak hours of traffic flow. The level of service for each approach is illustrated in **Table 1**.

Table 1 – Existing Intersection Levels of Service

Intersection (control)	Approach	AM LOS	PM LOS
US-31 at US-80 WB Ramp (signalized)	US-31 - NB	B	B
	US-31 - SB	B	B
	US-80 WB Ramp - WB	B	B
US-31 at US-80 EB Ramp (signalized)	US-31 - NB	B	B
	US-31 - SB	A	A
	US-80 EB Ramp - EB	C	C
US-31 at Winn Dixie/ Kingswood Rd (signalized)	US-31 - NB	B	B
	US-31 - SB	B	B
	Winn Dixie - EB	B	C
	Kingswood Rd - WB	C	C
US-31 at Burnsdale Dr (signalized)	US-31 - NB	A	A
	US-31 - SB	A	B
	Burnsdale Dr - EB	**E**	**E**
US-31 at Windy Wood Dr (signalized)	US-31 - NB	B	C
	US-31 - SB	A	A
	Windy Wood Dr - WB	**E**	**E**
US-31 at Southlawn Dr (signalized)	US-31 - NB	B	B
	US-31 - SB	A	A
	Southlawn Dr - WB	B	C
US-31 at Southlawn School Exit (unsignalized)	US-31 - NB	A	A
	US-31 - SB	A	A
	Southlawn School - WB	B	C
US-31 at Green Leaf Dr (signalized) *	US-31 - NB	B	B
	US-31 - SB	A	A
	Green Leaf Dr - WB	B	B
US-31 at Hyundai Blvd/Pyramid Ave (signalized)	US-31 - NB	C	C
	US-31 - SB	B	B
	Pyramid Ave - EB	D	D
	Hyundai Blvd - WB	B	C

*Provides Routing to Southlawn Schools

As indicated in **Table 1**, the capacity analyses indicate that most approaches at the study intersection currently operate with acceptable levels of service during the morning and afternoon peak hours. The exceptions would be the Burnsdale Drive and Windy Wood Drive approaches to U.S. Highway 31 which operate with below desirable levels of service under existing conditions. Capacity printouts that illustrate the results of the analyses for existing conditions are provided in **Appendix C** for reference.

Future 2025 Traffic Conditions

Trip Generation / Trip Distribution

The operator of the proposed intermodal facility has provided specific trip generation data based on the anticipated use of the facility. Weekday morning and afternoon peak hour trip generation estimates for the proposed intermodal development are presented in **Table 2**.

Table 2 – 2025 Trip Generation Estimates (Opening Day)

Land Use	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
Truck Trips	7	7	5	5
Passenger Vehicle Trips	15	24	13	15
Total	22	31	18	20

The directional distribution of new traffic generated by the proposed development was estimated based upon population concentrations within the site's area, area destinations/attractions, and the planned access system for the development.

The distribution pattern for the new truck trips is summarized as follows:

- Approximately 5% to/from the northwest via U.S. Highway 80;
- Approximately 30% to/from the northeast via U.S. Highway 80;
- Approximately 15% to/from the south via U.S. Highway 31; and
- Approximately 50% to/from the southeast via Hyundai Boulevard.

The distribution pattern for the new passenger vehicle trips is summarized as follows:

- Approximately 25% to/from the northwest via U.S. Highway 80;
- Approximately 40% to/from the northeast via U.S. Highway 80;
- Approximately 20% to/from the north via U.S. Highway 31;
- Approximately 10% to/from the south via U.S. Highway 31; and
- Approximately 5% to/from the southeast via Hyundai Boulevard.

Background Growth / Trip Assignment and Future Traffic Volumes

The proposed development is estimated to be open by 2025. A growth rate of 1.0% (one percent) per year was estimated for the study area roadways. The growth rate of 1.0% was applied annually over a 2-year period to the existing traffic volumes to estimate future traffic volumes. This growth rate was also applied for 2045 Full Buildout conditions.

Future traffic volumes can be defined as the sum of the existing counts, background growth, and the trips generated by the proposed development. Using the distribution pattern previously outlined, future traffic volumes were assigned to the study roadway. Future morning and afternoon peak hour turning movement volumes were used as the basis for assessing future traffic conditions. **Figure 3** illustrates the resultant future 2025 morning and afternoon peak hour volumes.

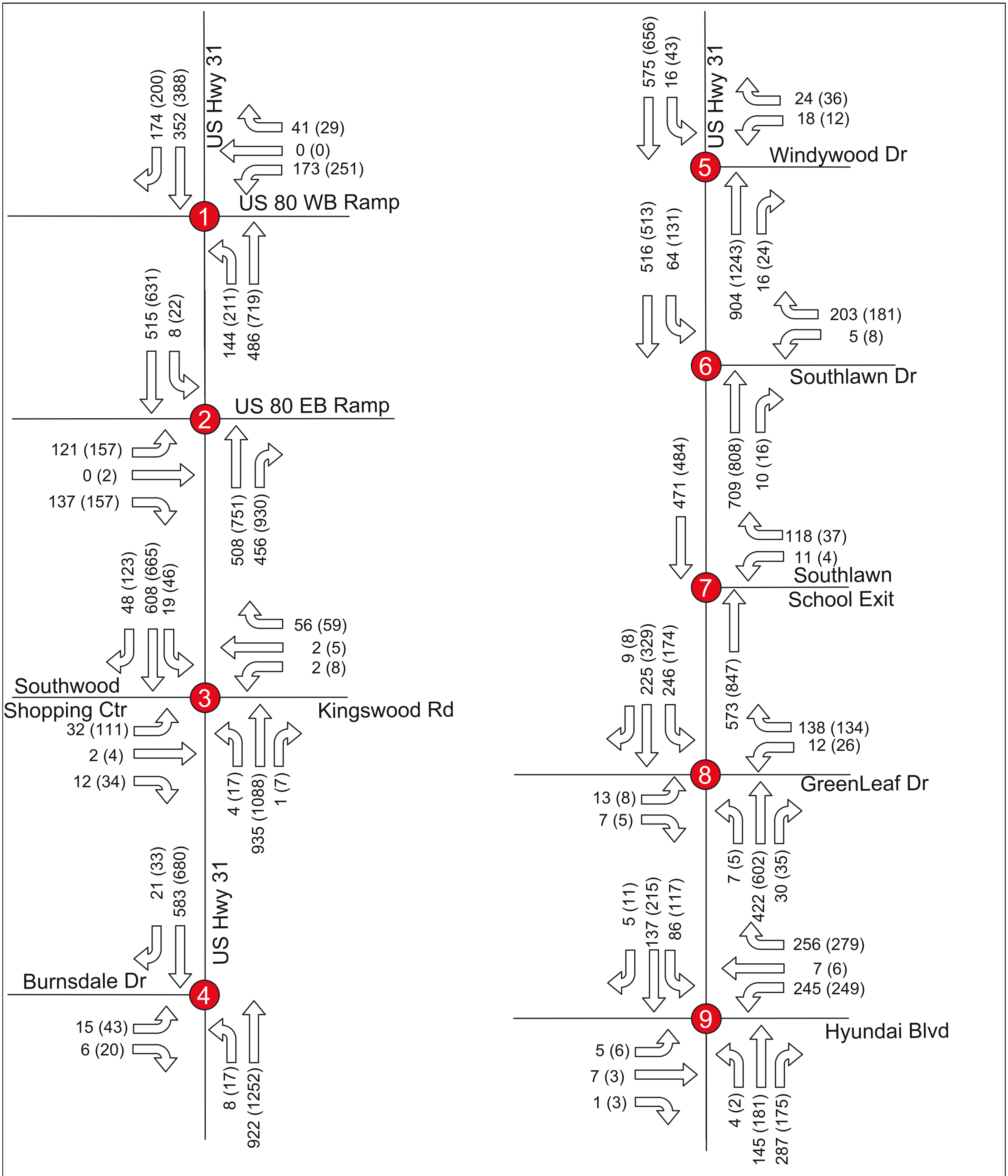


Figure 3 - Future 2025 Peak Hour Volumes
Montgomery Intermodal (U.S. 31)
Montgomery, Alabama

LEGEND
AM {PM} Peak Hour Volumes
Study Intersection

Scale: Not to Scale
Date: Apr. 2023
North

Recommended Improvements

Based upon analysis of the future 2025 conditions and the purpose of this study the following recommendations can be made:

- Operationally, the proposed site truck access should be constructed as a two-lane cross-section (one inbound lane and one outbound lane) with a 475 foot (full width plus taper) southbound deceleration lane on U.S. Highway 31, and striping modification for the northbound left turn lane at the intersection; however, **to best facilitate truck maneuverability, we recommend the new leg be constructed as a three-lane cross-section on the intersection approach (one lane inbound, a shared through/left turn lane, and a right turn lane)**; and
- The proposed site access should be incorporated in the existing traffic signal for U.S. Highway 31 and Green Leaf Drive and meet all current City of Montgomery and ALDOT standards including but not limited to providing appropriate turning radii, adequate sight distance, etc.

Intersection Capacity Analysis

Using methods outlined in the *Highway Capacity Manual*, the peak hour capacity and operation of the site access and intersection were evaluated for the morning and afternoon peak hours for future conditions with trips generated by the development assigned as outlined in the previous distribution pattern.

Table 3 – Future 2025 Intersection Levels of Service (Opening Day)

Intersection (control)	Approach	AM LOS	PM LOS
US-31 at US-80 WB Ramp (signalized)	US-31 - NB	B	B
	US-31 - SB	B	B
	US-80 WB Ramp - WB	B	B
US-31 at US-80 EB Ramp (signalized)	US-31 - NB	B	B
	US-31 - SB	A	A
	US-80 EB Ramp - EB	C	C
US-31 at Winn Dixie/ Kingswood Rd (signalized)	US-31 - NB	B	B
	US-31 - SB	B	B
	Winn Dixie - EB	C	C
	Kingswood Rd - WB	C	C
US-31 at Burnsdale Dr (signalized)	US-31 - NB	A	A
	US-31 - SB	A	B
	Burnsdale Dr - EB	**E**	**E**
US-31 at Windy Wood Dr (signalized)	US-31 - NB	B	C
	US-31 - SB	A	A
	Windy Wood Dr - WB	**E**	**E**
US-31 at Southlawn Dr (signalized)	US-31 - NB	B	B
	US-31 - SB	A	A
	Southlawn Dr - WB	C	C
US-31 at Southlawn School Exit (unsignalized)	US-31 - NB	A	A
	US-31 - SB	A	A
	Southlawn School - WB	B	C
US-31 at Green Leaf Dr (signalized)	US-31 - NB	B	B
	US-31 - SB	A	A
	Site Access - EB	B	B
	Green Leaf Dr - WB	B	B
US-31 at Hyundai Blvd/Pyramid Ave (signalized)	US-31 - NB	C	C
	US-31 - SB	B	B
	Pyramid Ave - EB	D	D
	Hyundai Blvd - WB	C	C

As indicated in **Table 3**, the future 2025 capacity analyses indicate that most approaches at the study intersections continue to operate with acceptable levels of service during the morning and afternoon peak hours including the proposed site access on U.S. Highway 31. The exceptions would be the Burnsdale Drive and Windy Wood Drive approaches to U.S. Highway 31 which continue to operate with below acceptable levels of service for future 2025 conditions. Capacity printouts that illustrate the results of the analyses for future 2025 conditions are provided in **Appendix C** for reference.

Future 2045 Traffic Conditions

Trip Generation Estimates / Trip Distribution

The operator of the proposed intermodal facility has provided specific trip generation data based on the anticipated use of the facility in the year 2045. Weekday morning and afternoon peak hour trip generation estimates for the proposed intermodal development are presented in **Table 4**.

Table 4 – 2045 Trip Generation Estimates

Land Use	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
Truck Trips	59	59	38	37
Passenger Vehicle Trips	15	24	13	15
Total	74	83	51	52

The directional distribution of new traffic generated by the proposed development was estimated based upon population concentrations within the site's area, area destinations/attractions, and the planned access system for the development.

The distribution pattern for the new truck trips is summarized as follows:

- Approximately 15% to/from the northwest via U.S. Highway 80;
- Approximately 60% to/from the northeast via U.S. Highway 80;
- Approximately 15% to/from the south via U.S. Highway 31; and
- Approximately 10% to/from the southeast via Hyundai Boulevard.

The distribution pattern for the new passenger vehicle trips is summarized as follows:

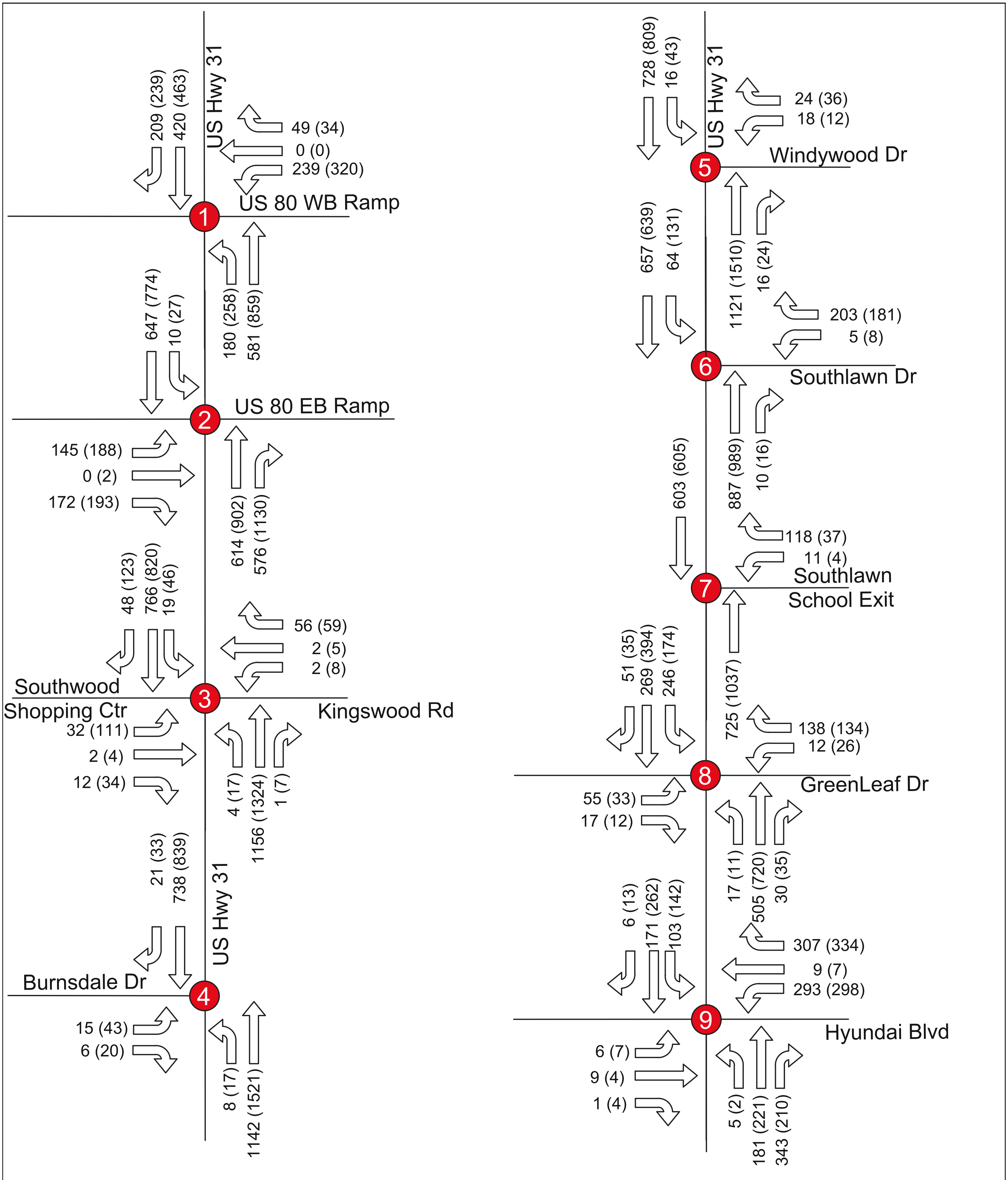
- Approximately 25% to/from the northwest via U.S. Highway 80;
- Approximately 40% to/from the northeast via U.S. Highway 80;
- Approximately 20% to/from the north via U.S. Highway 31;
- Approximately 10% to/from the south via U.S. Highway 31; and
- Approximately 5% to/from the southeast via Hyundai Boulevard.

Background Growth

The proposed development is estimated to be fully built by 2045. A growth rate of 1.0% (one percent) per year was estimated for the study area roadways. The growth rate of 1.0% was applied annually over a 22-year period to the existing traffic volumes to estimate future traffic volumes.

Trip Assignment and Future Traffic Volumes

Future traffic volumes can be defined as the sum of the existing counts, background growth, and the trips generated by the proposed development. Using the distribution pattern previously outlined, future traffic volumes were assigned to the study roadway. Future morning and afternoon peak hour turning movement volumes were used as the basis for assessing future traffic conditions. **Figure 4** illustrates the resultant future 2045 morning and afternoon peak hour volumes.



SKIPPER CONSULTING INC

Figure 4 - Future 2045 Peak Hour Volumes
Montgomery Intermodal (U.S. 31)
Montgomery, Alabama

LEGEND

AM {PM} Peak Hour Volumes

Study Intersection

Scale: Not to Scale
Date: Apr. 2023

North

Recommended Improvements

Based upon analysis of the future 2045 conditions and the purpose of this study the following recommendations can be made:

- All recommended improvements for 2025 conditions (opening day) are sufficient for 2045 conditions (full buildout).

Intersection Capacity Analysis

Using methods outlined in the *Highway Capacity Manual*, the peak hour capacity and operation of the site access and intersection were evaluated for the morning and afternoon peak hours for future 2045 conditions with trips generated by the development assigned as outlined in the previous distribution pattern.

Table 5 – Future 2045 Intersection Levels of Service

Intersection (control)	Approach	AM LOS	PM LOS
US-31 at US-80 WB Ramp (signalized)	US-31 - NB	B	B
	US-31 - SB	B	C
	US-80 WB Ramp - WB	B	C
US-31 at US-80 EB Ramp (signalized)	US-31 - NB	C	C
	US-31 - SB	A	A
	US-80 EB Ramp - EB	C	C
US-31 at Winn Dixie/ Kingswood Rd (signalized)	US-31 - NB	B	C
	US-31 - SB	A	B
	Winn Dixie - EB	C	D
	Kingswood Rd - WB	C	D
US-31 at Burnsdale Dr (signalized)	US-31 - NB	A	A
	US-31 - SB	B	B
	Burnsdale Dr - EB	**F**	**E**
US-31 at Windy Wood Dr (signalized)	US-31 - NB	B	C
	US-31 - SB	A	A
	Windy Wood Dr - WB	**E**	**E**
US-31 at Southlawn Dr (signalized)	US-31 - NB	B	B
	US-31 - SB	A	A
	Southlawn Dr - WB	C	C
US-31 at Southlawn School Exit (unsignalized)	US-31 - NB	A	A
	US-31 - SB	A	A
	Southlawn School - WB	C	C
US-31 at Green Leaf Dr (signalized)	US-31 - NB	B	B
	US-31 - SB	A	A
	Site Access - EB	B	B
	Green Leaf Dr - WB	B	B
US-31 at Hyundai Blvd/Pyramid Ave (signalized)	US-31 - NB	D	C
	US-31 - SB	C	C
	Pyramid Ave - EB	**E**	D
	Hyundai Blvd - WB	C	C

As indicated in **Table 5**, the future 2045 capacity analyses indicate that most approaches at the study intersections continue to operate with acceptable levels of service during the morning and afternoon peak hours including the proposed site access on U.S. Highway 31. The exceptions would be the Burnsdale Drive, Windy Wood Drive, and Pyramid Avenue approaches to U.S. Highway 31 which operate with below acceptable levels of service for future 2045 conditions. This is associated with having limited capacity of side street one lane approaches for these specific streets. The Burnsdale Drive and Windy Wood Drive approaches operated with below acceptable levels of service during both existing and 2025 conditions. Capacity printouts that illustrate the results of the 2045 analyses are provided in **Appendix C**.

Concerns with Trucks In/Out from the New Fourth Leg and Alternative Signal Operations

It is our understanding the residents from the Southlawn Neighborhood have indicated concerns with large trucks operating In/Out from the new fourth leg to the signalized intersection of US31 at Green Leaf Dr. associated with the new Inland Port site. The number of trucks entering and exiting from the Inland Port access road/driveway will be in the range of 15-20 trucks each hour. This equates to <u>one (1) truck</u> entering and/or exiting approximately every 3 to 4 minutes over the course of one full hour (*60 minutes*) of time. Also, there will be no nighttime or weekend hours for large trucks activity to/from the new fourth leg at the intersection.

With the concerns from the neighborhood coupled with the known low hourly traffic volumes expected to be generated for the new fourth leg to the signalized intersection, an alternative signal operation often referred to in traffic engineering as side street "Split Phasing" is possible and advisable to be implemented for this particular location. Side street "Split Phasing" is defined as a type of traffic signal operation that gives a "Green" phase for all vehicles movements from the same approach/ movement / direction while the opposing direction traffic is given a "Red" indication to remain stopped. When the "Green" phase terminates by displaying a "Red" indication for the intersection approach leg, the opposing direction traffic is given a "Green" to proceed and once again opposing direction traffic is given a "Red" indication for no movement and remaining stopped.

The "Split Phasing" operation and application to the US31 at Greenleaf Dr. signalized intersection would mean the Greenleaf Dr. traffic would be given a "Green" indication while the new fourth leg to the intersection would be given a "Red" indication along with the northbound and southbound approaches on US31. As a result, the Greenleaf Dr. traffic exiting the neighborhood would not have exposure to moving truck traffic from the Inland Port approach, as the truck traffic will be stopped and remain in place until the Greenleaf Dr. traffic has been completely and independently serviced within the traffic signal cycle operation. In summary, the side street "Split Phasing" traffic signal operation achieves the same limiting exposure and interaction between Greenleaf Drive traffic and Inland Port truck as would be the case with the Inland Port access moved elsewhere. This is a desirable scenario as it address the specific mixing of vehicle types issue while still maintaining traffic signal access and higher safety for supporting the trucks ingress/egress to the Inland Port site.

Table 6 shows the future capacity analysis results for the **"Split Phasing"** operation for the intersection of US31 at Greenleaf Dr./Inland Port Access. Capacity printouts that illustrate the results are provided in **Appendix C** for reference.

Table 6 – US31 at Greenleaf Dr. *Full Build* LOS (w/ Side Street "Split Phasing" Operation)

Intersection (Control)	Approach	AM LOS	PM Delay (Seconds)	PM LOS	PM Delay (Seconds)
US-31 at Green Leaf Dr. (signalized) with Side Street **"Split Phasing"**	US-31 – NB Left	B	13	B	10
	US-31 – NB Thru/Right	D	37	C	30
	US-31 – SB Left	B	20	B	14
	US-31 – SB Thru	B	12	A	10
	US-31 – SB Right	A	1	A	1
	Site Access – EB Left	E	58	D	51
	Site Access – EB Right	A	1	A	1
	Green Leaf Dr – WB Left	D	49	D	46
	Green Leaf Dr – WB Right	A	3	A	1

As indicated in **Table 6**, the future 2045 Full Build capacity analyses indicate that most approaches at the study intersections continue to operate with acceptable levels of service during the morning and afternoon peak hours including the proposed site access on U.S. Highway 31 when including the side street split phasing operation. The exception would be the eastbound left turns from the new site access. However, this analysis assumes an eastbound single lane left turn operation. The LOS and amount of side street delay could be improved with an eastbound dual left maneuver which would be possible with the proposed "Split Phasing" operation.

Intermodal (Inland Port) Site Alternative (South) Access Location

The Intermodal Site has additional parcel frontage farther south along US31 which is immediately south of the Southlawn Baptist Church. Further study has been requested to determine the traffic operations and safety with the Intermodal Site access constructed on this segment of US31 as another option. Such an access would operate as either a T-intersection or a four (4) leg intersection. The four (4) leg intersection is a possibility related to the undeveloped parcel (~9.5 Acres) on the eastern side of US31 requiring future driveway access needs that may impact the Intermodal Site operations adversely should the site develop. As such an operational analysis on the alternative (south) access considers findings when configured as a T-intersection and a four (4) leg intersection as shown in Tables 7,8,9 and 10. Figure 5 shows conceptually a proposed location for a "South" access as a T-intersection approximately 950 feet south of the driveway for Southlawn Baptist Church. This spacing distance does not satisfy the requirements of the ALDOT Access Management Manual for installation of a traffic signal.

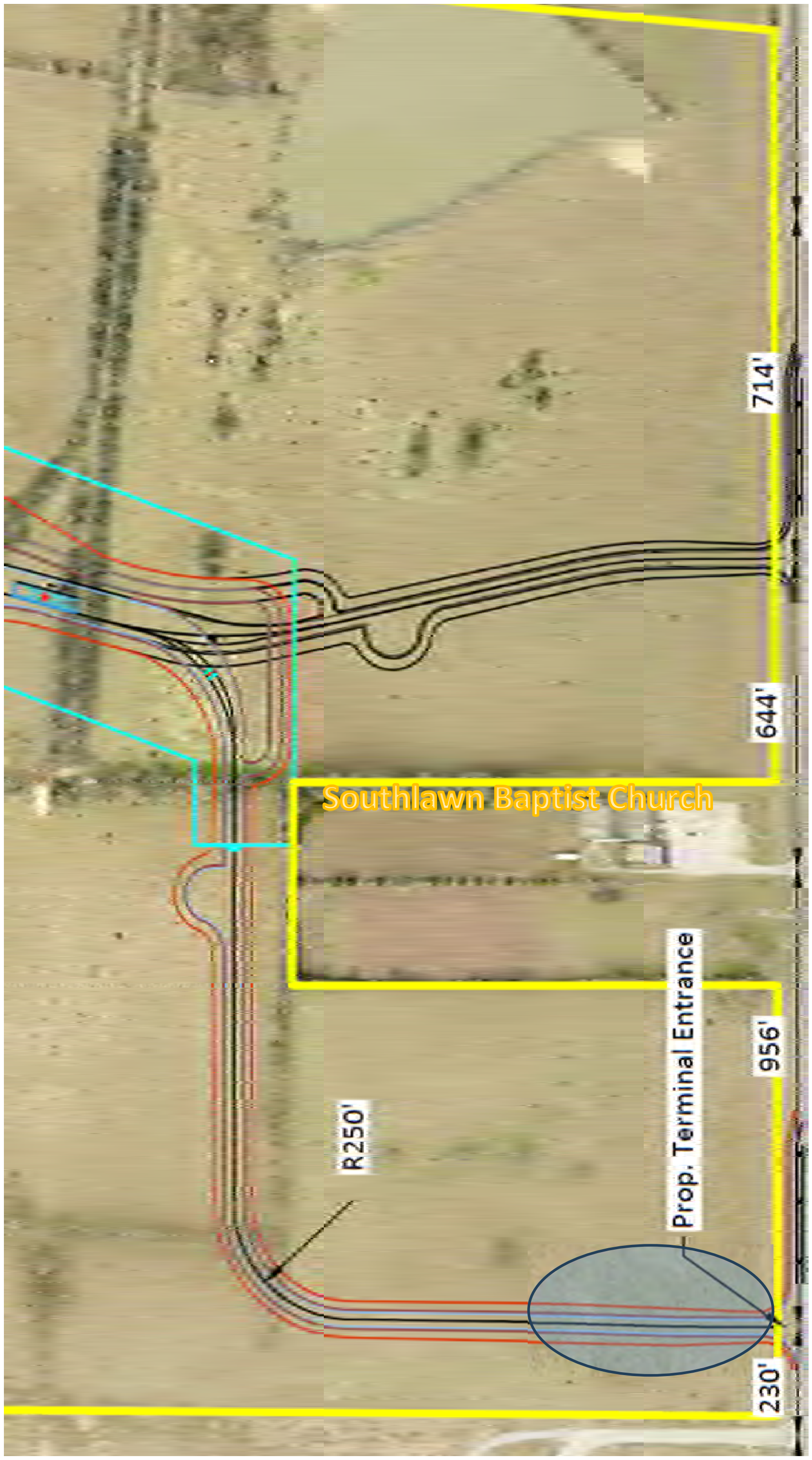


Figure 5 – South Driveway Access Concept

Table 7 – US31 at Intermodal Driveway (South) as T-Intersection (Opening Day)

Intersection	Approach	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
		Unsignalized Operation		Signalized Operation	
US31 at Intermodal Rd. (T-Intersection)	Intermodal Driveway (EBL)	C	C	B	B
	Intermodal Driveway (EBR)	B	B	B	B
	US31 (NBLT)	A	B	A	A
	US31 (NBT)	A	A	A	A
	US31 (SBT)	A	A	A	A
	US31 (SBRT)	A	A	A	A

Table 8 – US31 at Intermodal Driveway (South) as T-Intersection (2045)

Intersection	Approach	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
		Unsignalized Operation		Signalized Operation	
US31 at Intermodal Rd. (T-Intersection)	Intermodal Driveway (EBL)	C	C	B	B
	Intermodal Driveway (EBR)	B	B	A	B
	US31 (NBLT)	A	A	A	A
	US31 (NBT)	A	A	A	A
	US31 (SBT)	A	A	A	A
	US31 (SBRT)	A	A	A	A

Table 9 – US31 at Intermodal Driveway (South) Four Leg Intersection (Opening Day)

Intersection	Approach	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
		Unsignalized Operation		Signalized Operation	
US31 at Intermodal Rd./ 9.5 Acres Commercial (4 Leg Intersection)	Intermodal Driveway (EBL)	D	D	B	B
	Intermodal Driveway (EBR)	B	B	A	A
	9.5 Acres Commercial (WBL)	C	D	A	B
	9.5 Acres Commercial (WBR)	B	B	A	A
	US31 (NB)	A	A	A	A
	US31 (SB)	A	A	A	A

Table 10 – US31 at Intermodal Driveway (South) Four Leg Intersection (2045)

Intersection	**Approach**	**AM Peak Hour**	**PM Peak Hour**	**AM Peak Hour**	**PM Peak Hour**
		Unsignalized Operation		Signalized Operation	
US31 at Intermodal Rd./ 9.5 Acres Commercial (4 Leg Intersection)	Intermodal Driveway (EBL)	**F**	**F**	**C**	C
	Intermodal Driveway (EBR)	B	B	A	A
	9.5 Acres Commercial (WBL)	D	**E**	**B**	B
	9.5 Acres Commercial (WBR)	B	B	A	A
	US31 (NB)	A	A	A	A
	US31 (SB)	A	A	A	A

As shown in **Table 10**, the Intermodal Driveway (South) alternative will only function in the long term when operated with a traffic signal for the Four (4) leg intersection. Consideration for installing a new traffic signal requires the location to justify a traffic signal according to specifications outlined in the Manual of Uniform Traffic Control Devices (MUTCD).

Figures 6 and **7** show the "Peak Hour Vehicular Volume" Warrant analysis of the Intermodal Driveway (South) alternative for Years 2025 and 2045 per requirements of the MUTCD. The Peak Hour Vehicular Volume warrant is not met for either 2025 or 2045 for the Intermodal Site driveway due to not reaching the volumes thresholds for its traffic generated. Therefore, the potential for a future warranted signalized intersection for the Intermodal Driveway (South) alternative would be contingent on traffic volumes generated from the east of US31 9.5-acre parcel when developed and the types of land use(s) applied.

TRAFFIC SIGNAL WARRANTS

WARRANT 3 - PEAK HOUR VEHICULAR VOLUME

Applicable: [X] Yes [ ] No

Satisfied: [ ] Yes [X] No

This signal warrant sahll be applied only in unsual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time period.

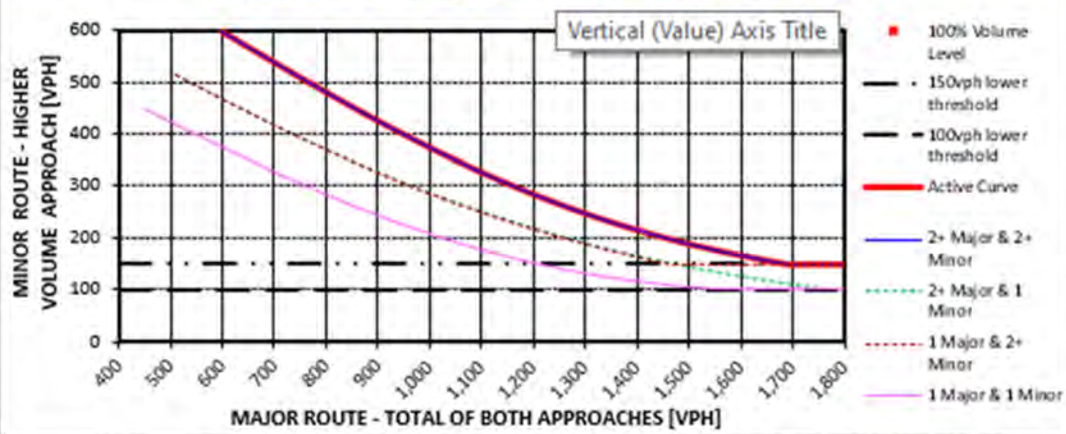
Signalization shall be considered if a point lies above the appropriate line or the Delay criteria is met.

Unusual case(s) justifying this Warrant:

Commercial/Industrial

Peak Hour Data		
Peak Hour	Major Route	Minor Route
7 AM	636	20

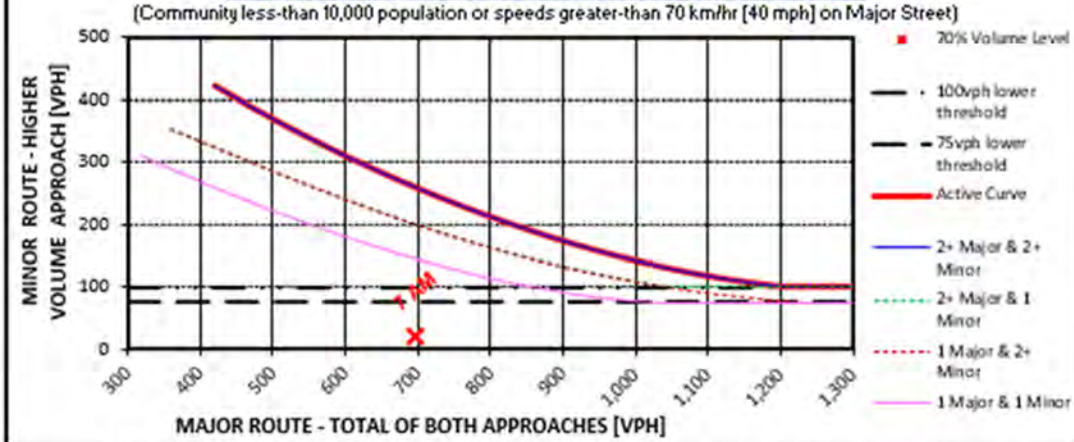
FIGURE W-3: Criteria for "100%" Volume Level



Note: 150 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor route approach with one lane.

FIGURE W-3: Criteria for "70%" Volume Level

(Community less-than 10,000 population or speeds greater-than 70 km/hr [40 mph] on Major Street)



Note: 100 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor route approach with one lane.

Figure 6 – Driveway (South) Alternative – Year 2025 Peak Hour Signal Warrant

TRAFFIC SIGNAL WARRANTS

WARRANT 3 - PEAK HOUR VEHICULAR VOLUME

Applicable: [X] Yes [ ] No

Satisfied: [ ] Yes [X] No

This signal warrant sahll be applied only in unsual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time period.

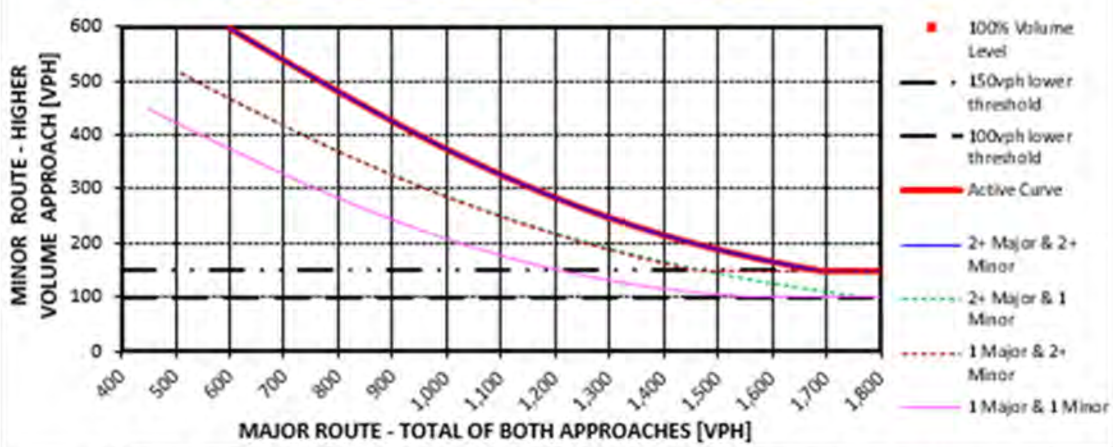
Signalization shall be considered if a point lies above the appropriate line or the Delay criteria is met.

Unusual case(s) justifying this Warrant:

Commercial/Industrial

Peak Hour Data		
Peak Hour	Major Route	Minor Route
7 AM	894	72

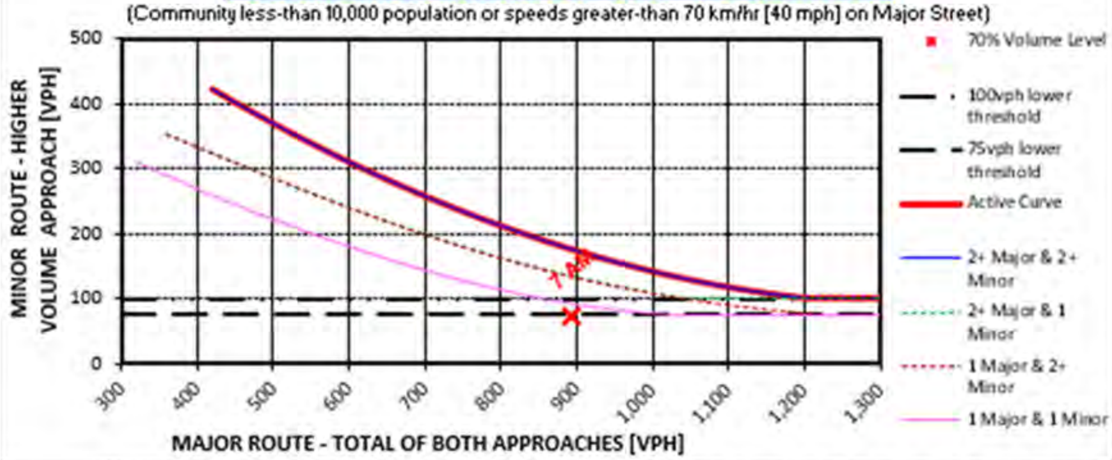
FIGURE W-3: Criteria for "100%" Volume Level



Note: 150 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor route approach with one lane.

FIGURE W-3: Criteria for "70%" Volume Level

(Community less-than 10,000 population or speeds greater-than 70 km/hr [40 mph] on Major Street)



Note: 100 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor route approach with one lane.

Figure 7 – Driveway (South) Alternative – Year 2045 Peak Hour Signal Warrant

Conclusion

Based upon the site review and analyses documented in this report, the following conclusions can be stated:

1. An undeveloped parcel located on the west side of U.S. Highway 31 in Montgomery, Alabama is proposed as an intermodal development. Access to the proposed development is planned via a proposed full access driveway for trucks access on U.S. Highway 31 aligns with Green Leaf Drive and then a connection as an extension to Burnsdale Drive as a secondary access.

2. Capacity analyses for existing conditions indicate that most approaches at the study intersection currently operate with acceptable levels of service during the morning and afternoon peak hours. The exceptions would be the Burnsdale Drive and Windy Wood Drive approaches to U.S. Highway 31 which operate with below desirable levels of service under existing conditions, but acceptable for side street operations during peak commuter travel times.

3. For 2025 conditions (opening day), the proposed development is expected to generate a combined total of approximately 53 morning peak hour trips (22 entering and 31 exiting) and approximately 38 afternoon peak hour trips (18 entering and 20 exiting) combined between the two accesses.

4. Based upon analysis of the future conditions and the purpose of this study the following recommendations can be made:

    - Operationally, the proposed site truck access should be constructed as a two-lane cross-section (one inbound lane and one outbound lane) with a 475 foot (full width plus taper) southbound deceleration lane on U.S. Highway 31, and striping modification for the northbound left turn lane at the intersection; however, **to best facilitate truck maneuverability, we recommend the new leg be constructed as a three-lane cross-section on the intersection approach (one lane inbound, a shared through/left turn lane, and a right turn lane)**; and

    - The proposed site access should be incorporated in the existing traffic signal for U.S. Highway 31 and Green Leaf Drive and meet all current City of Montgomery and ALDOT standards including but not limited to providing appropriate turning radii, adequate sight distance, etc.

5. Capacity analyses for future 2025 (opening day) conditions indicate that most approaches at the study intersections continue to operate with acceptable levels of service during the morning and afternoon peak hours including the proposed site access on U.S. Highway 31. The exceptions would be the Burnsdale Drive and Windy Wood Drive approaches to U.S. Highway 31 which continue to operate with below acceptable levels of service for future 2025 conditions.

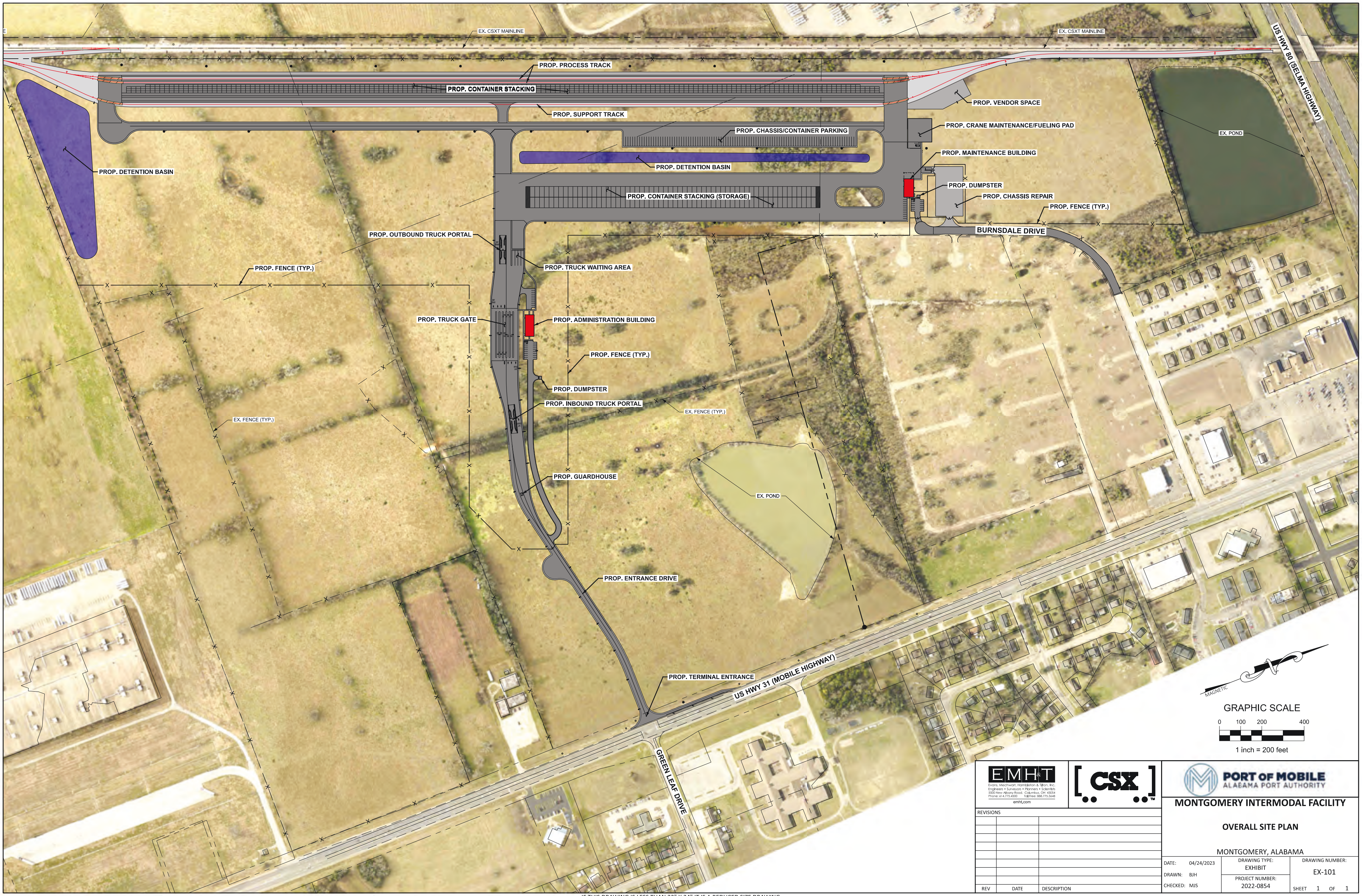
6. For 2045 conditions (full buildout), the proposed development is expected to generate a combined total of approximately 157 morning peak hour trips (74 entering and 83 exiting) and approximately 103 afternoon peak hour trips (51 entering and 52 exiting).

7. Based upon analysis of the future conditions and the purpose of this study the following recommendations can be made:
    - All recommended improvements for 2025 conditions (opening day) are sufficient for 2045 conditions (full buildout).
8. Capacity analyses for future 2045 (full buildout) conditions indicate that most approaches at the study intersections continue to operate with acceptable levels of service during the morning and afternoon peak hours including the proposed site access on U.S. Highway 31. The exceptions would be the Burnsdale Drive, Windy Wood Drive, and Pyramid Avenue approaches to U.S. Highway 31 which operate with below acceptable levels of service for future 2045 conditions. This is associated with having limited capacity of side street one lane approaches for these specific streets. The Burnsdale Drive and Windy Wood Drive approaches operated with below acceptable levels of service during both existing and 2025 conditions. In general, it is desirable for signalized intersections with a "T" configuration or operated with "Split Phasing" to have a minimum of two (2) approach lanes to efficiently service side street traffic with as minimal delay possible during its "green phase". A minimum of two (2) approach lanes addresses the issues of having a single left turning or through movement vehicle from preventing right turning traffic from making a right turn on red when gaps are available. This is particularly applicable for the 2045 Burnsdale Dr. intersection operations where approximately 1/3 of the single lane approach traffic will be making right turn maneuvers to continue southbound on US 31. A similar scenario will be realized for the 2045 Windy Wood Dr. intersection operations where approximately 2/3 of the single lane approach traffic will be making right turn maneuvers to continue northbound on US 31. To summarize, providing two approach lanes should be considered and pursued in the future for these signalized intersections which have a one lane side street approach; thereby improving overall intersection operations and reducing the side street delay.

9. The Southlawn neighborhood has concerns with large trucks operating In/Out from the new fourth leg to the signalized intersection of US31 at Green Leaf Dr. to be associated with the new Inland Port site mixing with the Southlawn neighborhood generated traffic. The number of trucks entering and exiting from the Inland Port access road/driveway will be in the range of 15-20 trucks each hour throughout the working hours of operation. This equates to <u>one (1) truck</u> entering and/or exiting approximately every 3 to 4 minutes over the course of one full hour (60 minutes) of time. <u>An alternative signal operation known as side street "Split Phasing" is possible and advisable to be implemented to limit the traffic operational interaction between Southlawn neighborhood generated traffic and the Inland Port generated truck traffic.</u>

10. With the Intermodal site having additional parcel frontage farther south along US31, an alternative site driveway location was assessed to determine its traffic operational feasibility. It is likely the proposed driveway location would operate as a four (4) leg intersection in the long term as there is an undeveloped 9.5-acre parcel immediately across US31. Additionally, it was determined the four (4) leg intersection would need to be operated as a signalized intersection to operate effectively. Regarding the Intermodal site driveway in the short term, the Peak Hour Vehicular Volume warrant is not met for either 2025 or 2045 due to not reaching the volumes thresholds when assessing the traffic generated solely by the Intermodal site. Therefore, the potential for a future warranted signalized intersection for the Intermodal Driveway (South) alternative would be contingent on traffic volumes generated from the east of US31 9.5-acre parcel when developed and the types of land use(s) applied. Consequently, a non-signalized access driveway at this location presents traffic operational and safety concerns for the Alabama Port Authority and its associated entering and exiting traffic to its facility from U.S. Highway 31.

Appendix A – Preliminary Site Plan



IF THIS DRAWING IS LESS THAN 22" X 34" IT IS A REDUCED SIZE DRAWING

Appendix B – Traffic Count Data

TRAFFIC DATA, LLC

PO Box 187
Cullman, AL 35056
205-824-0125

Montgomery, AL

File Name : montgomery12
Site Code : 00000000
Start Date : 02/21/2023
Page No : 1

Groups Printed- 1 - Unshifted

	US 31 Southbound		US 80 WB EXIT RAMP Westbound			US 31 Northbound		
Start Time	Thru	Right	Left	Thru	Right	Left	Thru	Int. Total
11:00 AM	67	29	22	0	7	22	95	242
11:15 AM	77	31	42	0	12	20	97	279
11:30 AM	61	46	34	0	3	39	86	269
11:45 AM	77	32	33	0	2	29	100	273
Total	282	138	131	0	24	110	378	1063
12:00 PM	90	46	26	1	6	35	98	302
12:15 PM	81	45	27	0	2	37	99	291
12:30 PM	90	36	35	0	7	26	84	278
12:45 PM	77	47	47	3	4	36	89	303
Total	338	174	135	4	19	134	370	1174
02:00 PM	104	34	48	0	3	32	94	315
02:15 PM	108	52	44	0	7	41	107	359
02:30 PM	125	46	42	0	6	31	96	346
02:45 PM	110	30	62	0	7	60	175	444
Total	447	162	196	0	23	164	472	1464
03:00 PM	98	45	33	0	5	63	206	450
03:15 PM	86	53	87	0	4	53	188	471
03:30 PM	89	50	59	0	12	42	161	413
03:45 PM	104	48	60	0	7	45	147	411
Total	377	196	239	0	28	203	702	1745
04:00 PM	96	47	49	0	11	38	131	372
04:15 PM	127	46	76	0	9	38	137	433
04:30 PM	118	59	95	0	7	37	157	473
04:45 PM	129	52	65	0	8	42	165	461
Total	470	204	285	0	35	155	590	1739
05:00 PM	133	43	55	0	6	42	132	411
05:15 PM	117	51	63	0	5	43	120	399
05:30 PM	100	35	76	0	4	41	116	372
05:45 PM	86	29	58	0	5	31	89	298
Total	436	158	252	0	20	157	457	1480
06:30 AM	60	41	31	0	2	29	86	249
06:45 AM	50	44	27	0	12	26	79	238
Total	110	85	58	0	14	55	165	487
07:00 AM	61	42	29	0	7	43	109	291
07:15 AM	88	48	52	0	13	37	113	351
07:30 AM	102	35	45	0	5	33	134	354
07:45 AM	91	46	36	0	15	22	116	326
Total	342	171	162	0	40	135	472	1322
08:00 AM	60	46	29	0	12	25	88	260
08:15 AM	61	36	43	0	4	17	82	243
Grand Total	2923	1370	1530	4	219	1155	3776	10977
Apprch %	68.1	31.9	87.3	0.2	12.5	23.4	76.6	
Total %	26.6	12.5	13.9	0.0	2.0	10.5	34.4	

TRAFFIC DATA, LLC
PO Box 187
Cullman, AL 35056
205-824-0125

File Name : montgomery12
Site Code : 00000000
Start Date : 02/21/2023

	US 31 Southbound			US 80 WB EXIT RAMP Westbound				US 31 Northbound				
Start Time	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	App. Total	App. Total	Int. Total
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1												
Intersection	12:00 PM											
Volume	338	174	512	135	4	19	158	134	370	504	0	1174
Percent	66.0	34.0		85.4	2.5	12.0		26.6	73.4			
12:45 Volume	77	47	124	47	3	4	54	36	89	125	0	303
Peak Factor												0.969
High Int.	12:00 PM			12:45 PM				12:15 PM			10:45:00 AM	
Volume	90	46	136	47	3	4	54	37	99	136		
Peak Factor			0.941				0.731			0.926		
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1												
By Approach	12:00 PM			11:15 AM				11:30 AM			11:00 AM	
Volume	338	174	512	135	1	23	159	140	383	523	0	
Percent	66.0	34.0		84.9	0.6	14.5		26.8	73.2			
High Int.	12:00 PM			11:15 AM				12:15 PM			-	
Volume	90	46	136	42	0	12	54	37	99	136	-	
Peak Factor			0.941				0.736			0.961	-	
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1												
Intersection	02:45 PM											
Volume	383	178	561	241	0	28	269	218	730	948	0	1778
Percent	68.3	31.7		89.6	0.0	10.4		23.0	77.0			
03:15 Volume	86	53	139	87	0	4	91	53	188	241	0	471
Peak Factor												0.944
High Int.	03:00 PM			03:15 PM				03:00 PM				
Volume	98	45	143	87	0	4	91	63	206	269		
Peak Factor			0.981				0.739			0.881		
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1												
By Approach	04:15 PM			04:15 PM				02:45 PM			02:00 PM	
Volume	507	200	707	291	0	30	321	218	730	948	0	
Percent	71.7	28.3		90.7	0.0	9.3		23.0	77.0			
High Int.	04:45 PM			04:30 PM				03:00 PM			-	
Volume	129	52	181	95	0	7	102	63	206	269	-	
Peak Factor			0.977				0.787			0.881	-	
Peak Hour From 07:00 AM to 08:15 AM - Peak 1 of 1												
Intersection	07:00 AM											
Volume	342	171	513	162	0	40	202	135	472	607	0	1322
Percent	66.7	33.3		80.2	0.0	19.8		22.2	77.8			
07:30 Volume	102	35	137	45	0	5	50	33	134	167	0	354
Peak Factor												0.934
High Int.	07:30 AM			07:15 AM				07:30 AM				
Volume	102	35	137	52	0	13	65	33	134	167		
Peak Factor			0.936				0.777			0.909		
Peak Hour From 07:00 AM to 08:15 AM - Peak 1 of 1												
By Approach	07:15 AM			07:15 AM				07:00 AM			07:00 AM	
Volume	341	175	516	162	0	45	207	135	472	607	0	
Percent	66.1	33.9		78.3	0.0	21.7		22.2	77.8			
High Int.	07:30 AM			07:15 AM				07:30 AM			-	
Volume	102	35	137	52	0	13	65	33	134	167	-	
Peak Factor			0.942				0.796			0.909	-	

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Montgomery, AL

File Name : montgomery14
Site Code : 00000000
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Groups Printed- 1 - Unshifted

	US 31 Southbound		US 31 Northbound		US 80 EB EXIT RAMP Eastbound			
Start Time	Left	Thru	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	2	90	89	44	33	1	28	287
11:15 AM	2	121	85	48	29	1	37	323
11:30 AM	3	98	98	63	27	1	32	322
11:45 AM	3	106	96	46	30	0	26	307
Total	10	415	368	201	119	3	123	1239
12:00 PM	8	106	101	55	38	1	43	352
12:15 PM	5	109	97	51	31	0	29	322
12:30 PM	4	120	99	42	22	0	29	316
12:45 PM	4	116	97	48	37	0	40	342
Total	21	451	394	196	128	1	141	1332
02:00 PM	3	149	97	49	25	3	41	367
02:15 PM	5	142	126	81	22	1	25	402
02:30 PM	2	158	96	106	25	0	52	439
02:45 PM	2	141	185	165	38	1	34	566
Total	12	590	504	401	110	5	152	1774
03:00 PM	7	133	208	261	41	0	35	685
03:15 PM	7	158	215	269	32	0	29	710
03:30 PM	3	151	150	204	55	0	48	611
03:45 PM	5	167	156	171	26	2	39	566
Total	22	609	729	905	154	2	151	2572
04:00 PM	6	145	133	158	24	0	48	514
04:15 PM	8	188	148	172	31	0	33	580
04:30 PM	8	194	159	199	33	0	40	633
04:45 PM	4	192	180	183	24	0	42	625
Total	26	719	620	712	112	0	163	2352
05:00 PM	4	180	133	206	38	0	38	599
05:15 PM	3	171	138	148	31	0	42	533
05:30 PM	4	180	131	156	16	0	35	522
05:45 PM	3	144	112	84	23	1	36	403
Total	14	675	514	594	108	1	151	2057
06:30 AM	0	86	94	67	22	0	27	296
06:45 AM	2	83	90	120	19	0	22	336
Total	2	169	184	187	41	0	49	632
07:00 AM	2	87	124	133	24	0	29	399
07:15 AM	1	135	120	100	28	0	26	410
07:30 AM	4	151	131	121	38	0	42	487
07:45 AM	1	121	112	81	29	0	33	377
Total	8	494	487	435	119	0	130	1673
08:00 AM	2	89	91	59	26	2	31	300
08:15 AM	5	105	78	43	22	1	14	268
Grand Total	122	4316	3969	3733	939	15	1105	14199
Apprch %	2.7	97.3	51.5	48.5	45.6	0.7	53.7	
Total %	0.9	30.4	28.0	26.3	6.6	0.1	7.8	

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File Name : montgomery14
Site Code : 00000000
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	US 31 Southbound				US 31 Northbound			US 80 EB EXIT RAMP Eastbound				
Start Time	Left	Thru	App. Total	App. Total	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1												
Intersection	12:00 PM											
Volume	21	451	472	0	394	196	590	128	1	141	270	1332
Percent	4.4	95.6			66.8	33.2		47.4	0.4	52.2		
12:00 Volume	8	106	114	0	101	55	156	38	1	43	82	352
Peak Factor												0.946
High Int.	12:30 PM			10:45:00 AM	12:00 PM			12:00 PM				
Volume	4	120	124	0	101	55	156	38	1	43	82	
Peak Factor			0.952				0.946				0.823	
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1												
By Approach	12:00 PM			11:00 AM	11:30 AM			12:00 PM				
Volume	21	451	472	0	392	215	607	128	1	141	270	
Percent	4.4	95.6			64.6	35.4		47.4	0.4	52.2		
High Int.	12:30 PM			-	11:30 AM			12:00 PM				
Volume	4	120	124	-	98	63	161	38	1	43	82	
Peak Factor			0.952	-			0.943				0.823	
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1												
Intersection	02:45 PM											
Volume	19	583	602	0	758	899	1657	166	1	146	313	2572
Percent	3.2	96.8			45.7	54.3		53.0	0.3	46.6		
03:15 Volume	7	158	165	0	215	269	484	32	0	29	61	710
Peak Factor												0.906
High Int.	03:15 PM				03:15 PM			03:30 PM				
Volume	7	158	165	0	215	269	484	55	0	48	103	
Peak Factor			0.912				0.856				0.760	
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1												
By Approach	04:15 PM			02:00 PM	02:45 PM			02:45 PM				
Volume	24	754	778	0	758	899	1657	166	1	146	313	
Percent	3.1	96.9			45.7	54.3		53.0	0.3	46.6		
High Int.	04:30 PM			-	03:15 PM			03:30 PM				
Volume	8	194	202	-	215	269	484	55	0	48	103	
Peak Factor			0.963	-			0.856				0.760	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1												
Intersection	07:00 AM											
Volume	8	494	502	0	487	435	922	119	0	130	249	1673
Percent	1.6	98.4			52.8	47.2		47.8	0.0	52.2		
07:30 Volume	4	151	155	0	131	121	252	38	0	42	80	487
Peak Factor												0.859
High Int.	07:30 AM				07:00 AM			07:30 AM				
Volume	4	151	155	0	124	133	257	38	0	42	80	
Peak Factor			0.810				0.897				0.778	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1												
By Approach	07:15 AM			06:30 AM	06:45 AM			07:15 AM				
Volume	8	496	504	0	465	474	939	121	2	132	255	
Percent	1.6	98.4			49.5	50.5		47.5	0.8	51.8		
High Int.	07:30 AM			-	07:00 AM			07:30 AM				
Volume	4	151	155	-	124	133	257	38	0	42	80	
Peak Factor			0.813	-			0.913				0.797	

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Montgomery, AL

File Name : montgomery10
Site Code : 00000000
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Groups Printed- 1 - Unshifted

	US 31 Southbound			KINGSWOOD RD Westbound			US 31 Northbound			SOUTHLAWN SHOPPING CENTER Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	10	106	32	2	0	10	5	118	0	19	0	7	309
11:15 AM	3	109	26	1	1	7	1	102	0	11	0	2	263
11:30 AM	7	122	26	3	1	5	2	140	0	20	0	4	330
11:45 AM	8	100	28	4	0	15	0	104	0	19	0	12	290
Total	28	437	112	10	2	37	8	464	0	69	0	25	1192
12:00 PM	7	126	31	0	1	12	2	98	1	28	0	5	311
12:15 PM	8	135	33	1	0	10	1	150	0	27	0	8	373
12:30 PM	13	144	34	2	1	9	3	128	0	12	1	7	354
12:45 PM	6	136	19	3	2	13	3	119	1	18	0	5	325
Total	34	541	117	6	4	44	9	495	2	85	1	25	1363
02:00 PM	6	177	32	4	1	11	1	153	0	22	0	9	416
02:15 PM	13	150	16	1	0	15	3	182	0	15	0	6	401
02:30 PM	11	157	23	1	1	10	6	154	1	14	2	10	390
02:45 PM	3	158	24	0	3	17	4	279	0	15	0	4	507
Total	33	642	95	6	5	53	14	768	1	66	2	29	1714
03:00 PM	7	150	20	1	2	14	3	345	4	29	0	7	582
03:15 PM	11	163	39	3	2	16	2	276	1	23	2	7	545
03:30 PM	11	151	26	3	0	17	6	215	0	33	1	10	473
03:45 PM	17	175	38	1	1	12	6	217	2	26	1	10	506
Total	46	639	123	8	5	59	17	1053	7	111	4	34	2106
04:00 PM	10	154	36	5	1	13	1	178	0	25	1	6	430
04:15 PM	8	173	38	1	0	17	1	156	0	26	0	7	427
04:30 PM	15	210	35	5	0	14	5	241	0	26	1	7	559
04:45 PM	10	219	38	0	0	12	3	252	0	27	0	11	572
Total	43	756	147	11	1	56	10	827	0	104	2	31	1988
05:00 PM	8	175	57	1	1	10	3	233	0	20	1	12	521
05:15 PM	8	194	47	4	0	15	7	189	0	33	1	13	511
05:30 PM	3	178	40	0	1	7	4	166	0	29	1	12	441
05:45 PM	7	163	35	0	1	9	4	167	0	29	1	11	427
Total	26	710	179	5	3	41	18	755	0	111	4	48	1900
06:30 AM	1	103	3	1	0	16	0	150	0	1	0	0	275
06:45 AM	5	114	4	0	0	7	1	202	1	1	0	0	335
Total	6	217	7	1	0	23	1	352	1	2	0	0	610
07:00 AM	4	123	7	1	1	14	0	277	1	1	0	2	431
07:15 AM	5	143	13	1	0	17	1	215	0	7	1	5	408
07:30 AM	7	160	12	0	1	16	0	219	0	9	1	2	427
07:45 AM	3	155	16	0	0	9	3	183	0	15	0	3	387
Total	19	581	48	2	2	56	4	894	1	32	2	12	1653
08:00 AM	5	118	18	0	0	12	2	158	1	8	0	1	323
08:15 AM	3	131	12	1	0	9	2	120	1	13	0	5	297
Grand Total	243	4772	858	50	22	390	85	5886	14	601	15	210	13146
Apprch %	4.1	81.3	14.6	10.8	4.8	84.4	1.4	98.3	0.2	72.8	1.8	25.4	
Total %	1.8	36.3	6.5	0.4	0.2	3.0	0.6	44.8	0.1	4.6	0.1	1.6	

TRAFFIC DATA, LLC

PO Box 187
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File Name : montgomery10
Site Code : 00000000
Start Date : 02/28/2023
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	US 31 Southbound				KINGSWOOD RD Westbound				US 31 Northbound				SOUTHLAWN SHOPPING CENTER Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Intersection	12:00 PM																
Volume	34	541	117	692	6	4	44	54	9	495	2	506	85	1	25	111	1363
Percent	4.9	78.2	16.9		11.1	7.4	81.5		1.8	97.8	0.4		76.6	0.9	22.5		
12:15 Volume	8	135	33	176	1	0	10	11	1	150	0	151	27	0	8	35	373
Peak Factor																	0.914
High Int.	12:30 PM				12:45 PM				12:15 PM				12:15 PM				
Volume	13	144	34	191	3	2	13	18	1	150	0	151	27	0	8	35	
Peak Factor				0.906				0.750				0.838				0.793	
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1																	
By Approach	12:00 PM				11:45 AM				12:00 PM				11:30 AM				
Volume	34	541	117	692	7	2	46	55	9	495	2	506	94	0	29	123	
Percent	4.9	78.2	16.9		12.7	3.6	83.6		1.8	97.8	0.4		76.4	0.0	23.6		
High Int.	12:30 PM				11:45 AM				12:15 PM				12:15 PM				
Volume	13	144	34	191	4	0	15	19	1	150	0	151	27	0	8	35	
Peak Factor				0.906				0.724				0.838				0.879	
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection	04:30 PM																
Volume	41	798	177	1016	10	1	51	62	18	915	0	933	106	3	43	152	2163
Percent	4.0	78.5	17.4		16.1	1.6	82.3		1.9	98.1	0.0		69.7	2.0	28.3		
04:45 Volume	10	219	38	267	0	0	12	12	3	252	0	255	27	0	11	38	572
Peak Factor																	0.945
High Int.	04:45 PM				04:30 PM				04:45 PM				05:15 PM				
Volume	10	219	38	267	5	0	14	19	3	252	0	255	33	1	13	47	
Peak Factor				0.951				0.816				0.915				0.809	
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1																	
By Approach	04:30 PM				02:45 PM				02:45 PM				05:00 PM				
Volume	41	798	177	1016	7	7	64	78	15	1115	5	1135	111	4	48	163	
Percent	4.0	78.5	17.4		9.0	9.0	82.1		1.3	98.2	0.4		68.1	2.5	29.4		
High Int.	04:45 PM				03:15 PM				03:00 PM				05:15 PM				
Volume	10	219	38	267	3	2	16	21	3	345	4	352	33	1	13	47	
Peak Factor				0.951				0.929				0.806				0.867	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Intersection	07:00 AM																
Volume	19	581	48	648	2	2	56	60	4	894	1	899	32	2	12	46	1653
Percent	2.9	89.7	7.4		3.3	3.3	93.3		0.4	99.4	0.1		69.6	4.3	26.1		
07:00 Volume	4	123	7	134	1	1	14	16	0	277	1	278	1	0	2	3	431
Peak Factor																	0.959
High Int.	07:30 AM				07:15 AM				07:00 AM				07:45 AM				
Volume	7	160	12	179	1	0	17	18	0	277	1	278	15	0	3	18	
Peak Factor				0.905				0.833				0.808				0.639	

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File Name : montgomery10
Site Code : 00000000
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	US 31 Southbound				KINGSWOOD RD Westbound				US 31 Northbound				SOUTHLAWN SHOPPING CENTER Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																	
By Approach	07:15 AM				07:00 AM				06:45 AM				07:30 AM				
Volume	20	576	59	655	2	2	56	60	2	913	2	917	45	1	11	57	
Percent	3.1	87.9	9.0		3.3	3.3	93.3		0.2	99.6	0.2		78.9	1.8	19.3		
High Int.	07:30 AM				07:15 AM				07:00 AM				07:45 AM				
Volume	7	160	12	179	1	0	17	18	0	277	1	278	15	0	3	18	
Peak Factor				0.915				0.833				0.825				0.792	

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Montgomery, AL

File Name : montgomery07
Site Code : 00000000
Start Date : 03/01/2023
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Groups Printed- 1 - Unshifted

	US 31 Southbound		US 31 Northbound		BURNSDALE DR Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
11:00 AM	97	10	4	118	6	6	241
11:15 AM	130	8	3	138	9	4	292
11:30 AM	111	7	5	138	9	4	274
11:45 AM	128	8	2	111	4	5	258
Total	466	33	14	505	28	19	1065
12:00 PM	110	5	4	134	12	3	268
12:15 PM	116	5	6	117	8	6	258
12:30 PM	137	6	5	119	13	3	283
12:45 PM	130	5	4	128	5	3	275
Total	493	21	19	498	38	15	1084
02:00 PM	166	12	2	136	11	6	333
02:15 PM	151	7	5	151	12	5	331
02:30 PM	181	5	1	159	5	8	359
02:45 PM	188	7	6	293	3	6	503
Total	686	31	14	739	31	25	1526
03:00 PM	169	2	1	489	5	1	667
03:15 PM	189	11	7	313	11	5	536
03:30 PM	144	5	4	231	13	6	403
03:45 PM	157	9	4	187	8	6	371
Total	659	27	16	1220	37	18	1977
04:00 PM	154	9	3	167	10	8	351
04:15 PM	187	14	5	164	9	10	389
04:30 PM	216	17	7	218	12	10	480
04:45 PM	195	12	8	211	16	10	452
Total	752	52	23	760	47	38	1672
05:00 PM	198	9	3	223	10	11	454
05:15 PM	176	8	2	209	10	8	413
05:30 PM	176	10	4	190	8	6	394
05:45 PM	155	10	4	156	3	13	341
Total	705	37	13	778	31	38	1602
06:30 AM	95	1	0	139	3	1	239
06:45 AM	106	1	1	217	0	0	325
Total	201	2	1	356	3	1	564
07:00 AM	118	3	0	262	2	1	386
07:15 AM	138	1	2	218	1	0	360
07:30 AM	185	2	0	223	0	0	410
07:45 AM	122	8	4	188	1	3	326
Total	563	14	6	891	4	4	1482
08:00 AM	125	6	3	124	2	2	262
08:15 AM	114	2	3	110	3	1	233
Grand Total	4764	225	112	5981	224	161	11467
Apprch %	95.5	4.5	1.8	98.2	58.2	41.8	
Total %	41.5	2.0	1.0	52.2	2.0	1.4	

TRAFFIC DATA, LLC
PO Box 187
Cullman, AL 35056
205-824-0125

File Name : montgomery07
Site Code : 00000000
Start Date : 03/01/2023

	US 31 Southbound				US 31 Northbound			BURNSDALE DR Eastbound			
Start Time	Thru	Right	App. Total	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1											
Intersection	11:15 AM										
Volume	479	28	507	0	14	521	535	34	16	50	1092
Percent	94.5	5.5			2.6	97.4		68.0	32.0		
11:15 Volume	130	8	138	0	3	138	141	9	4	13	292
Peak Factor											0.935
High Int.	11:15 AM			10:45:00 AM	11:30 AM			12:00 PM			
Volume	130	8	138	0	5	138	143	12	3	15	
Peak Factor			0.918				0.935			0.833	
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1											
By Approach	11:45 AM			11:00 AM	11:15 AM			11:45 AM			
Volume	491	24	515	0	14	521	535	37	17	54	
Percent	95.3	4.7			2.6	97.4		68.5	31.5		
High Int.	12:30 PM			-	11:30 AM			12:30 PM			
Volume	137	6	143	-	5	138	143	13	3	16	
Peak Factor			0.900	-			0.935			0.844	
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1											
Intersection	02:45 PM										
Volume	690	25	715	0	18	1326	1344	32	18	50	2109
Percent	96.5	3.5			1.3	98.7		64.0	36.0		
03:00 Volume	169	2	171	0	1	489	490	5	1	6	667
Peak Factor											0.790
High Int.	03:15 PM				03:00 PM			03:30 PM			
Volume	189	11	200	0	1	489	490	13	6	19	
Peak Factor			0.894				0.686			0.658	
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1											
By Approach	04:15 PM			02:00 PM	02:45 PM			04:15 PM			
Volume	796	52	848	0	18	1326	1344	47	41	88	
Percent	93.9	6.1			1.3	98.7		53.4	46.6		
High Int.	04:30 PM			-	03:00 PM			04:45 PM			
Volume	216	17	233	-	1	489	490	16	10	26	
Peak Factor			0.910	-			0.686			0.846	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1											
Intersection	07:00 AM										
Volume	563	14	577	0	6	891	897	4	4	8	1482
Percent	97.6	2.4			0.7	99.3		50.0	50.0		
07:30 Volume	185	2	187	0	0	223	223	0	0	0	410
Peak Factor											0.904
High Int.	07:30 AM				07:00 AM			07:45 AM			
Volume	185	2	187	0	0	262	262	1	3	4	
Peak Factor			0.771				0.856			0.500	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1											
By Approach	07:15 AM			06:30 AM	06:45 AM			07:30 AM			
Volume	570	17	587	0	3	920	923	6	6	12	
Percent	97.1	2.9			0.3	99.7		50.0	50.0		
High Int.	07:30 AM			-	07:00 AM			07:45 AM			
Volume	185	2	187	-	0	262	262	1	3	4	
Peak Factor			0.785	-			0.881			0.750	

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Montgomery, AL

File Name : montgomery08
Site Code : 00000000
Start Date : 03/01/2023
Page No : 1

Groups Printed- Unshifted

	US 31 Southbound		WINDY WOOD DR Westbound		US 31 Northbound		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
11:00 AM	7	96	2	5	117	4	231
11:15 AM	10	124	4	11	130	3	282
11:30 AM	8	107	2	4	139	0	260
11:45 AM	7	126	2	3	110	0	248
Total	32	453	10	23	496	7	1021
12:00 PM	10	103	1	8	130	2	254
12:15 PM	9	113	0	9	114	2	247
12:30 PM	5	135	8	6	118	2	274
12:45 PM	5	128	0	10	122	3	268
Total	29	479	9	33	484	9	1043
02:00 PM	13	159	4	10	128	2	316
02:15 PM	11	145	5	6	150	0	317
02:30 PM	10	179	6	10	150	2	357
02:45 PM	6	188	9	8	291	5	507
Total	40	671	24	34	719	9	1497
03:00 PM	7	163	3	6	484	14	677
03:15 PM	16	178	3	10	310	4	521
03:30 PM	10	140	4	13	232	3	402
03:45 PM	10	153	2	7	184	3	359
Total	43	634	12	36	1210	24	1959
04:00 PM	10	152	1	8	162	5	338
04:15 PM	14	183	8	12	157	7	381
04:30 PM	15	210	5	18	207	10	465
04:45 PM	13	192	7	11	208	4	435
Total	52	737	21	49	734	26	1619
05:00 PM	21	188	6	13	213	3	444
05:15 PM	17	167	4	17	194	3	402
05:30 PM	16	166	10	15	179	8	394
05:45 PM	24	144	7	19	141	10	345
Total	78	665	27	64	727	24	1585
06:30 AM	6	90	0	10	129	7	242
06:45 AM	2	104	0	12	206	4	328
Total	8	194	0	22	335	11	570
07:00 AM	6	113	4	6	256	0	385
07:15 AM	3	135	6	7	213	7	371
07:30 AM	3	182	5	5	218	4	417
07:45 AM	4	121	3	6	186	5	325
Total	16	551	18	24	873	16	1498
08:00 AM	6	121	0	5	122	2	256
08:15 AM	11	104	0	6	107	1	229
Grand Total	315	4609	121	296	5807	129	11277
Apprch %	6.4	93.6	29.0	71.0	97.8	2.2	
Total %	2.8	40.9	1.1	2.6	51.5	1.1	

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File Name : montgomery08
Site Code : 00000000
Start Date : 03/01/2023

	US 31 Southbound			WINDY WOOD DR Westbound			US 31 Northbound				
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	App. Total	Int. Total
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1											
Intersection	11:15 AM										
Volume	35	460	495	9	26	35	509	5	514	0	1044
Percent	7.1	92.9		25.7	74.3		99.0	1.0			
11:15 Volume	10	124	134	4	11	15	130	3	133	0	282
Peak Factor											0.926
High Int.	11:15 AM			11:15 AM			11:30 AM			10:45:00 AM	
Volume	10	124	134	4	11	15	139	0	139		
Peak Factor			0.924			0.583			0.924		
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1											
By Approach	11:45 AM			12:00 PM			11:15 AM			11:00 AM	
Volume	31	477	508	9	33	42	509	5	514	0	
Percent	6.1	93.9		21.4	78.6		99.0	1.0			
High Int.	12:30 PM			12:30 PM			11:30 AM			-	
Volume	5	135	140	8	6	14	139	0	139	-	
Peak Factor			0.907			0.750			0.924	-	
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1											
Intersection	02:45 PM										
Volume	39	669	708	19	37	56	1317	26	1343	0	2107
Percent	5.5	94.5		33.9	66.1		98.1	1.9			
03:00 Volume	7	163	170	3	6	9	484	14	498	0	677
Peak Factor											0.778
High Int.	02:45 PM			02:45 PM			03:00 PM				
Volume	6	188	194	9	8	17	484	14	498		
Peak Factor			0.912			0.824			0.674		
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1											
By Approach	04:15 PM			05:00 PM			02:45 PM			02:00 PM	
Volume	63	773	836	27	64	91	1317	26	1343	0	
Percent	7.5	92.5		29.7	70.3		98.1	1.9			
High Int.	04:30 PM			05:45 PM			03:00 PM			-	
Volume	15	210	225	7	19	26	484	14	498	-	
Peak Factor			0.929			0.875			0.674	-	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1											
Intersection	06:45 AM										
Volume	14	534	548	15	30	45	893	15	908	0	1501
Percent	2.6	97.4		33.3	66.7		98.3	1.7			
07:30 Volume	3	182	185	5	5	10	218	4	222	0	417
Peak Factor											0.900
High Int.	07:30 AM			07:15 AM			07:00 AM				
Volume	3	182	185	6	7	13	256	0	256		
Peak Factor			0.741			0.865			0.887		
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1											
By Approach	07:15 AM			06:30 AM			06:45 AM			06:30 AM	
Volume	16	559	575	10	35	45	893	15	908	0	
Percent	2.8	97.2		22.2	77.8		98.3	1.7			
High Int.	07:30 AM			07:15 AM			07:00 AM			-	
Volume	3	182	185	6	7	13	256	0	256	-	
Peak Factor			0.777			0.865			0.887	-	

Montgomery, AL

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205-824-0125

File Name : montgomery11
Site Code : 00000000
Start Date : 02/22/2023

Groups Printed- 1 - Unshifted

	US 31 Southbound		SOUTHLAWN DR Westbound		US 31 Northbound		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
11:00 AM	20	77	1	25	99	0	222
11:15 AM	21	77	0	19	63	1	181
11:30 AM	22	81	0	21	112	1	237
11:45 AM	19	88	0	20	111	2	240
Total	82	323	1	85	385	4	880
12:00 PM	31	94	1	24	81	1	232
12:15 PM	20	82	0	33	86	0	221
12:30 PM	23	83	1	21	79	0	207
12:45 PM	15	102	1	28	103	1	250
Total	89	361	3	106	349	2	910
02:00 PM	28	140	3	34	104	4	313
02:15 PM	23	112	4	21	113	2	275
02:30 PM	22	151	3	20	141	8	345
02:45 PM	22	141	1	24	272	6	466
Total	95	544	11	99	630	20	1399
03:00 PM	29	122	1	68	301	6	527
03:15 PM	41	118	4	50	195	1	409
03:30 PM	35	120	1	32	156	5	349
03:45 PM	26	134	2	31	131	4	328
Total	131	494	8	181	783	16	1613
04:00 PM	30	108	2	29	120	1	290
04:15 PM	38	122	0	32	130	1	323
04:30 PM	29	134	2	44	167	7	383
04:45 PM	33	137	5	32	174	2	383
Total	130	501	9	137	591	11	1379
05:00 PM	24	137	0	22	205	2	390
05:15 PM	50	140	3	38	119	4	354
05:30 PM	44	117	1	33	137	1	333
05:45 PM	42	92	4	30	87	1	256
Total	160	486	8	123	548	8	1333
06:30 AM	13	70	2	28	122	3	238
06:45 AM	9	104	0	28	205	1	347
Total	22	174	2	56	327	4	585
07:00 AM	11	94	0	25	222	2	354
07:15 AM	13	147	0	50	171	3	384
07:30 AM	20	140	0	72	159	4	395
07:45 AM	20	115	5	56	129	1	326
Total	64	496	5	203	681	10	1459
08:00 AM	13	77	0	28	87	1	206
08:15 AM	18	88	3	31	83	1	224
Grand Total	804	3544	50	1049	4464	77	9988
Apprch %	18.5	81.5	4.5	95.5	98.3	1.7	
Total %	8.0	35.5	0.5	10.5	44.7	0.8	

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File Name : montgomery11
Site Code : 00000000
Start Date : 02/22/2023

	US 31 Southbound			SOUTHLAWN DR Westbound			US 31 Northbound				
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	App. Total	Int. Total
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1											
Intersection	11:30 AM										
Volume	92	345	437	1	98	99	390	4	394	0	930
Percent	21.1	78.9		1.0	99.0		99.0	1.0			
11:45 Volume	19	88	107	0	20	20	111	2	113	0	240
Peak Factor											0.969
High Int.	12:00 PM			12:15 PM			11:30 AM			10:45:00 AM	
Volume	31	94	125	0	33	33	112	1	113		
Peak Factor			0.874			0.750			0.872		
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1											
By Approach	12:00 PM			12:00 PM			11:30 AM			11:00 AM	
Volume	89	361	450	3	106	109	390	4	394	0	
Percent	19.8	80.2		2.8	97.2		99.0	1.0			
High Int.	12:00 PM			12:15 PM			11:30 AM			-	
Volume	31	94	125	0	33	33	112	1	113	-	
Peak Factor			0.900			0.826			0.872	-	
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1											
Intersection	02:45 PM										
Volume	127	501	628	7	174	181	924	18	942	0	1751
Percent	20.2	79.8		3.9	96.1		98.1	1.9			
03:00 Volume	29	122	151	1	68	69	301	6	307	0	527
Peak Factor											0.831
High Int.	02:45 PM			03:00 PM			03:00 PM				
Volume	22	141	163	1	68	69	301	6	307		
Peak Factor			0.963			0.656			0.767		
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1											
By Approach	04:30 PM			03:00 PM			02:45 PM			02:00 PM	
Volume	136	548	684	8	181	189	924	18	942	0	
Percent	19.9	80.1		4.2	95.8		98.1	1.9			
High Int.	05:15 PM			03:00 PM			03:00 PM			-	
Volume	50	140	190	1	68	69	301	6	307	-	
Peak Factor			0.900			0.685			0.767	-	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1											
Intersection	06:45 AM										
Volume	53	485	538	0	175	175	757	10	767	0	1480
Percent	9.9	90.1		0.0	100.0		98.7	1.3			
07:30 Volume	20	140	160	0	72	72	159	4	163	0	395
Peak Factor											0.937
High Int.	07:15 AM			07:30 AM			07:00 AM				
Volume	13	147	160	0	72	72	222	2	224		
Peak Factor			0.841			0.608			0.856		
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1											
By Approach	07:00 AM			07:15 AM			06:45 AM			06:30 AM	
Volume	64	496	560	5	206	211	757	10	767	0	
Percent	11.4	88.6		2.4	97.6		98.7	1.3			
High Int.	07:15 AM			07:30 AM			07:00 AM			-	
Volume	13	147	160	0	72	72	222	2	224	-	
Peak Factor			0.875			0.733			0.856	-	

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Montgomery, AL

File Name : montgomery09
Site Code : 00000000
Start Date : 03/01/2023
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Groups Printed- 1 - Unshifted

	US 31 Southbound		SOUTHLAWN MS ACCESS Westbound		US 31 Northbound		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
11:00 AM	3	65	0	2	98	0	168
11:15 AM	0	97	0	1	71	0	169
11:30 AM	0	88	0	2	99	0	189
11:45 AM	0	89	0	2	88	0	179
Total	3	339	0	7	356	0	705
12:00 PM	0	92	1	2	65	1	161
12:15 PM	1	91	0	4	92	1	189
12:30 PM	0	108	0	3	74	0	185
12:45 PM	0	117	0	3	87	0	207
Total	1	408	1	12	318	2	742
02:00 PM	0	143	0	1	118	0	262
02:15 PM	2	107	1	5	136	0	251
02:30 PM	5	125	0	6	147	0	283
02:45 PM	2	130	1	48	218	0	399
Total	9	505	2	60	619	0	1195
03:00 PM	0	98	2	13	309	0	422
03:15 PM	4	116	0	9	179	0	308
03:30 PM	0	121	0	8	188	0	317
03:45 PM	2	131	2	7	146	0	288
Total	6	466	4	37	822	0	1335
04:00 PM	3	110	0	10	123	0	246
04:15 PM	2	113	1	2	102	0	220
04:30 PM	8	136	0	27	154	0	325
04:45 PM	6	156	0	14	205	2	383
Total	19	515	1	53	584	2	1174
05:00 PM	4	123	0	5	167	0	299
05:15 PM	0	111	0	4	149	0	264
05:30 PM	0	121	0	2	95	0	218
05:45 PM	1	114	0	4	91	0	210
Total	5	469	0	15	502	0	991
06:30 AM	1	89	0	3	115	0	208
06:45 AM	5	86	1	9	169	0	270
Total	6	175	1	12	284	0	478
07:00 AM	7	102	2	19	206	0	336
07:15 AM	9	121	2	35	141	0	308
07:30 AM	18	119	3	37	99	0	276
07:45 AM	23	110	4	27	102	0	266
Total	57	452	11	118	548	0	1186
08:00 AM	7	76	1	12	96	0	192
08:15 AM	5	83	0	8	78	0	174
Grand Total	118	3488	21	334	4207	4	8172
Apprch %	3.3	96.7	5.9	94.1	99.9	0.1	
Total %	1.4	42.7	0.3	4.1	51.5	0.0	

TRAFFIC DATA, LLC
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File Name : montgomery09
Site Code : 00000000
Start Date : 03/01/2023

	US 31 Southbound			SOUTHLAWN MS ACCESS Westbound			US 31 Northbound				
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	App. Total	Int. Total
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1											
Intersection	12:00 PM										
Volume	1	408	409	1	12	13	318	2	320	0	742
Percent	0.2	99.8		7.7	92.3		99.4	0.6			
12:45 Volume	0	117	117	0	3	3	87	0	87	0	207
Peak Factor											0.896
High Int.	12:45 PM			12:15 PM			12:15 PM			10:45:00 AM	
Volume	0	117	117	0	4	4	92	1	93		
Peak Factor			0.874			0.813			0.860		
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1											
By Approach	12:00 PM			12:00 PM			11:00 AM			11:00 AM	
Volume	1	408	409	1	12	13	356	0	356	0	
Percent	0.2	99.8		7.7	92.3		100.0	0.0			
High Int.	12:45 PM			12:15 PM			11:30 AM			-	
Volume	0	117	117	0	4	4	99	0	99	-	
Peak Factor			0.874			0.813			0.899	-	
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1											
Intersection	02:45 PM										
Volume	6	465	471	3	78	81	894	0	894	0	1446
Percent	1.3	98.7		3.7	96.3		100.0	0.0			
03:00 Volume	0	98	98	2	13	15	309	0	309	0	422
Peak Factor											0.857
High Int.	02:45 PM			02:45 PM			03:00 PM				
Volume	2	130	132	1	48	49	309	0	309		
Peak Factor			0.892			0.413			0.723		
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1											
By Approach	04:15 PM			02:45 PM			02:45 PM			02:00 PM	
Volume	20	528	548	3	78	81	894	0	894	0	
Percent	3.6	96.4		3.7	96.3		100.0	0.0			
High Int.	04:45 PM			02:45 PM			03:00 PM			-	
Volume	6	156	162	1	48	49	309	0	309	-	
Peak Factor			0.846			0.413			0.723	-	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1											
Intersection	06:45 AM										
Volume	39	428	467	8	100	108	615	0	615	0	1190
Percent	8.4	91.6		7.4	92.6		100.0	0.0			
07:00 Volume	7	102	109	2	19	21	206	0	206	0	336
Peak Factor											0.885
High Int.	07:30 AM			07:30 AM			07:00 AM				
Volume	18	119	137	3	37	40	206	0	206		
Peak Factor			0.852			0.675			0.746		
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1											
By Approach	07:00 AM			07:00 AM			06:30 AM			06:30 AM	
Volume	57	452	509	11	118	129	631	0	631	0	
Percent	11.2	88.8		8.5	91.5		100.0	0.0			
High Int.	07:30 AM			07:30 AM			07:00 AM			-	
Volume	18	119	137	3	37	40	206	0	206	-	
Peak Factor			0.929			0.806			0.766	-	

TRAFFIC DATA, LLC

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Montgomery, AL

File Name : montgomery13
Site Code : 00000000
Start Date : 02/22/2023
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Groups Printed- 1 - Unshifted

	US 31 Southbound		GREEN LEAF DR Westbound		US 31 Northbound		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
11:00 AM	21	54	2	19	76	8	180
11:15 AM	22	57	2	15	49	2	147
11:30 AM	24	54	4	26	74	1	183
11:45 AM	23	69	5	18	78	7	200
Total	90	234	13	78	277	18	710
12:00 PM	31	63	1	22	58	3	178
12:15 PM	29	50	2	15	70	2	168
12:30 PM	13	65	2	19	57	2	158
12:45 PM	24	71	0	21	77	1	194
Total	97	249	5	77	262	8	698
02:00 PM	25	107	7	29	71	4	243
02:15 PM	30	84	6	28	83	9	240
02:30 PM	67	75	1	17	110	7	277
02:45 PM	81	68	6	31	170	5	361
Total	203	334	20	105	434	25	1121
03:00 PM	56	63	5	39	224	13	400
03:15 PM	45	75	10	28	152	11	321
03:30 PM	42	82	7	31	121	8	291
03:45 PM	31	101	4	36	92	3	267
Total	174	321	26	134	589	35	1279
04:00 PM	50	64	3	21	87	5	230
04:15 PM	47	73	3	17	99	7	246
04:30 PM	39	92	8	35	110	2	286
04:45 PM	45	95	6	29	142	7	324
Total	181	324	20	102	438	21	1086
05:00 PM	41	105	2	41	151	7	347
05:15 PM	41	100	3	24	89	9	266
05:30 PM	39	74	2	31	104	4	254
05:45 PM	31	57	5	28	53	6	180
Total	152	336	12	124	397	26	1047
06:30 AM	10	61	5	30	85	5	196
06:45 AM	36	67	2	34	165	5	309
Total	46	128	7	64	250	10	505
07:00 AM	36	48	4	30	170	10	298
07:15 AM	88	58	2	34	99	5	286
07:30 AM	70	42	3	29	81	5	230
07:45 AM	52	71	3	45	62	10	243
Total	246	219	12	138	412	30	1057
08:00 AM	25	53	1	18	55	7	159
08:15 AM	29	53	2	30	51	4	169
Grand Total	1243	2251	118	870	3165	184	7831
Apprch %	35.6	64.4	11.9	88.1	94.5	5.5	
Total %	15.9	28.7	1.5	11.1	40.4	2.3	

TRAFFIC DATA, LLC
PO Box 187
Cullman, AL 35056
205-824-0125

File Name : montgomery13
Site Code : 00000000
Start Date : 02/22/2023

	US 31 Southbound			GREEN LEAF DR Westbound			US 31 Northbound				
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	App. Total	Int. Total
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1											
Intersection	11:30 AM										
Volume	107	236	343	12	81	93	280	13	293	0	729
Percent	31.2	68.8		12.9	87.1		95.6	4.4			
11:45 Volume	23	69	92	5	18	23	78	7	85	0	200
Peak Factor											0.911
High Int.	12:00 PM			11:30 AM			11:45 AM			10:45:00 AM	
Volume	31	63	94	4	26	30	78	7	85		
Peak Factor			0.912			0.775			0.862		
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1											
By Approach	12:00 PM			11:15 AM			11:00 AM			11:00 AM	
Volume	97	249	346	12	81	93	277	18	295	0	
Percent	28.0	72.0		12.9	87.1		93.9	6.1			
High Int.	12:45 PM			11:30 AM			11:45 AM			-	
Volume	24	71	95	4	26	30	78	7	85	-	
Peak Factor			0.911			0.775			0.868	-	
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1											
Intersection	02:45 PM										
Volume	224	288	512	28	129	157	667	37	704	0	1373
Percent	43.8	56.3		17.8	82.2		94.7	5.3			
03:00 Volume	56	63	119	5	39	44	224	13	237	0	400
Peak Factor											0.858
High Int.	02:45 PM			03:00 PM			03:00 PM				
Volume	81	68	149	5	39	44	224	13	237		
Peak Factor			0.859			0.892			0.743		
Peak Hour From 02:00 PM to 05:45 PM - Peak 1 of 1											
By Approach	04:30 PM			03:00 PM			02:45 PM			02:00 PM	
Volume	166	392	558	26	134	160	667	37	704	0	
Percent	29.7	70.3		16.3	83.8		94.7	5.3			
High Int.	05:00 PM			03:00 PM			03:00 PM			-	
Volume	41	105	146	5	39	44	224	13	237	-	
Peak Factor			0.955			0.909			0.743	-	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1											
Intersection	06:45 AM										
Volume	230	215	445	11	127	138	515	25	540	0	1123
Percent	51.7	48.3		8.0	92.0		95.4	4.6			
06:45 Volume	36	67	103	2	34	36	165	5	170	0	309
Peak Factor											0.909
High Int.	07:15 AM			06:45 AM			07:00 AM				
Volume	88	58	146	2	34	36	170	10	180		
Peak Factor			0.762			0.958			0.750		
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1											
By Approach	07:00 AM			07:00 AM			06:30 AM			06:30 AM	
Volume	246	219	465	12	138	150	519	25	544	0	
Percent	52.9	47.1		8.0	92.0		95.4	4.6			
High Int.	07:15 AM			07:45 AM			07:00 AM			-	
Volume	88	58	146	3	45	48	170	10	180	-	
Peak Factor			0.796			0.781			0.756	-	

TRAFFIC DATA, LLC
PO Box 187
Cullman, AL 35056
205-824-0125

Hope Hull, AL

File Name : hopehull02
Site Code : 00000000
Start Date : 02/15/2023
Page No : 1

Groups Printed- Unshifted

	US 31 Southbound			HYUNDAI BLVD Westbound			US 31 Northbound			PYRAMID AVE Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	17	42	4	48	1	29	0	40	31	0	2	1	215
11:15 AM	19	41	3	27	4	23	1	38	35	0	1	1	193
11:30 AM	20	40	0	38	3	30	0	34	34	4	2	0	205
11:45 AM	12	39	4	33	1	20	0	28	49	3	1	0	190
Total	68	162	11	146	9	102	1	140	149	7	6	2	803
12:00 PM	24	33	2	24	3	33	1	40	49	1	1	1	212
12:15 PM	22	36	1	34	2	31	1	31	49	0	1	3	211
12:30 PM	23	41	6	34	3	29	0	29	64	1	2	1	233
12:45 PM	19	46	4	29	4	13	0	45	48	3	1	2	214
Total	88	156	13	121	12	106	2	145	210	5	5	7	870
04:00 PM	23	45	1	57	1	45	1	48	43	3	1	1	269
04:15 PM	29	51	2	47	4	28	1	34	39	1	1	2	239
04:30 PM	28	62	3	51	1	56	0	44	39	1	0	0	285
04:45 PM	32	50	5	89	0	141	0	49	51	1	1	0	419
Total	112	208	11	244	6	270	2	175	172	6	3	3	1212
05:00 PM	34	67	7	68	0	93	1	41	62	2	2	0	377
05:15 PM	34	37	8	59	5	89	4	35	57	5	1	1	335
05:30 PM	42	47	3	32	0	69	0	48	94	4	3	1	343
05:45 PM	22	45	3	49	2	27	3	22	52	3	1	1	230
Total	132	196	21	208	7	278	8	146	265	14	7	3	1285
06:30 AM	18	35	4	59	3	30	2	33	57	2	0	1	244
06:45 AM	24	39	2	137	5	134	3	26	70	2	1	1	444
Total	42	74	6	196	8	164	5	59	127	4	1	2	688
07:00 AM	23	29	1	114	2	135	1	37	51	1	4	0	398
07:15 AM	14	32	1	52	2	48	1	39	55	1	1	0	246
07:30 AM	24	39	2	34	3	34	1	19	96	2	1	0	255
07:45 AM	18	31	1	40	0	29	1	44	79	1	1	1	246
Total	79	131	5	240	7	246	4	139	281	5	7	1	1145
08:00 AM	21	29	1	37	1	16	1	39	42	2	1	1	191
08:15 AM	12	31	2	33	3	16	3	54	44	2	2	2	204
Grand Total	554	987	70	1225	53	1198	26	897	1290	45	32	21	6398
Apprch %	34.4	61.3	4.3	49.5	2.1	48.4	1.2	40.5	58.3	45.9	32.7	21.4	
Total %	8.7	15.4	1.1	19.1	0.8	18.7	0.4	14.0	20.2	0.7	0.5	0.3	

	US 31 Southbound				HYUNDAI BLVD Westbound				US 31 Northbound				PYRAMID AVE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Intersection	12:00 PM																
Volume	88	156	13	257	121	12	106	239	2	145	210	357	5	5	7	17	870
Percent	34.2	60.7	5.1		50.6	5.0	44.4		0.6	40.6	58.8		29.4	29.4	41.2		
12:30 Volume	23	41	6	70	34	3	29	66	0	29	64	93	1	2	1	4	233
Peak Factor																	0.933
High Int.	12:30 PM				12:15 PM				12:30 PM				12:45 PM				
Volume	23	41	6	70	34	2	31	67	0	29	64	93	3	1	2	6	
Peak Factor				0.918				0.892				0.960				0.708	

TRAFFIC DATA, LLC
PO Box 187
Cullman, AL 35056
205-824-0125

File Name : hopehull02
Site Code : 00000000
Start Date : 02/15/2023

	US 31 Southbound				HYUNDAI BLVD Westbound				US 31 Northbound				PYRAMID AVE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1																	
By Approach	12:00 PM				11:00 AM				12:00 PM				11:30 AM				
Volume	88	156	13	257	146	9	102	257	2	145	210	357	8	5	4	17	
Percent	34.2	60.7	5.1		56.8	3.5	39.7		0.6	40.6	58.8		47.1	29.4	23.5		
High Int.	12:30 PM				11:00 AM				12:30 PM				11:30 AM				
Volume	23	41	6	70	48	1	29	78	0	29	64	93	4	2	0	6	
Peak Factor				0.918				0.824				0.960				0.708	
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection	04:45 PM																
Volume	142	201	23	366	248	5	392	645	5	173	264	442	12	7	2	21	1474
Percent	38.8	54.9	6.3		38.4	0.8	60.8		1.1	39.1	59.7		57.1	33.3	9.5		
04:45 Volume	32	50	5	87	89	0	141	230	0	49	51	100	1	1	0	2	419
Peak Factor																	0.879
High Int.	05:00 PM				04:45 PM				05:30 PM				05:30 PM				
Volume	34	67	7	108	89	0	141	230	0	48	94	142	4	3	1	8	
Peak Factor				0.847				0.701				0.778				0.656	
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																	
By Approach	04:15 PM				04:30 PM				04:45 PM				05:00 PM				
Volume	123	230	17	370	267	6	379	652	5	173	264	442	14	7	3	24	
Percent	33.2	62.2	4.6		41.0	0.9	58.1		1.1	39.1	59.7		58.3	29.2	12.5		
High Int.	05:00 PM				04:45 PM				05:30 PM				05:30 PM				
Volume	34	67	7	108	89	0	141	230	0	48	94	142	4	3	1	8	
Peak Factor				0.856				0.709				0.778				0.750	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Intersection	06:45 AM																
Volume	85	139	6	230	337	12	351	700	6	121	272	399	6	7	1	14	1343
Percent	37.0	60.4	2.6		48.1	1.7	50.1		1.5	30.3	68.2		42.9	50.0	7.1		
06:45 Volume	24	39	2	65	137	5	134	276	3	26	70	99	2	1	1	4	444
Peak Factor																	0.756
High Int.	06:45 AM				06:45 AM				07:30 AM				07:00 AM				
Volume	24	39	2	65	137	5	134	276	1	19	96	116	1	4	0	5	
Peak Factor				0.885				0.634				0.860				0.700	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																	
By Approach	06:45 AM				06:30 AM				07:00 AM				07:30 AM				
Volume	85	139	6	230	362	12	347	721	4	139	281	424	7	5	4	16	
Percent	37.0	60.4	2.6		50.2	1.7	48.1		0.9	32.8	66.3		43.8	31.3	25.0		
High Int.	06:45 AM				06:45 AM				07:45 AM				08:15 AM				
Volume	24	39	2	65	137	5	134	276	1	44	79	124	2	2	2	6	
Peak Factor				0.885				0.653				0.855				0.667	

TRAFFIC DATA, LLC
PO Box 187, Cullman, AL 35056
205-824-0125

Location:: US 31 south of SOUTH LAWN DR
City, State:: HOPE HULL, AL
Speed Limit:: 55 mph

Date: 2/21/2023 Tuesday

24 Hour Volume, per Channel
Channel: NB

Interval Begin				Interval Begin		
10:00 AM	77	318		10:00 PM	36	198
10:15 AM	71			10:15 PM	39	
10:30 AM	82			10:30 PM	43	
10:45 AM	88			10:45 PM	80	
11:00 AM	88	367		11:00 PM	148	278
11:15 AM	89			11:15 PM	62	
11:30 AM	89			11:30 PM	39	
11:45 AM	101			11:45 PM	29	
12:00 PM	92	332	2/22/2023	12:00 AM	27	97
12:15 PM	92			12:15 AM	18	
12:30 PM	74			12:30 AM	25	
12:45 PM	74			12:45 AM	27	
1:00 PM	94	366		1:00 AM	28	85
1:15 PM	102			1:15 AM	27	
1:30 PM	79			1:30 AM	10	
1:45 PM	91			1:45 AM	20	
2:00 PM	91	625		2:00 AM	23	93
2:15 PM	124			2:15 AM	23	
2:30 PM	148			2:30 AM	30	
2:45 PM	262			2:45 AM	17	
3:00 PM	309	952		3:00 AM	16	50
3:15 PM	217			3:15 AM	10	
3:30 PM	216			3:30 AM	9	
3:45 PM	210			3:45 AM	15	
4:00 PM	210	896		4:00 AM	25	148
4:15 PM	206			4:15 AM	38	
4:30 PM	255			4:30 AM	29	
4:45 PM	225			4:45 AM	56	
5:00 PM	250	754		5:00 AM	78	228
5:15 PM	212			5:15 AM	50	
5:30 PM	185			5:30 AM	45	
5:45 PM	107			5:45 AM	55	
6:00 PM	106	369		6:00 AM	62	413
6:15 PM	98			6:15 AM	93	
6:30 PM	97			6:30 AM	104	
6:45 PM	68			6:45 AM	154	
7:00 PM	66	192		7:00 AM	215	630
7:15 PM	48			7:15 AM	158	
7:30 PM	44			7:30 AM	139	
7:45 PM	34			7:45 AM	118	
8:00 PM	48	171		8:00 AM	99	337
8:15 PM	40			8:15 AM	73	
8:30 PM	31			8:30 AM	77	
8:45 PM	52			8:45 AM	88	
9:00 PM	38	122		9:00 AM	91	331
9:15 PM	22			9:15 AM	86	
9:30 PM	27			9:30 AM	72	
9:45 PM	35			9:45 AM	82	

	NB
24 Hour Volume	8352

	12:00 AM - 12:00 PM NB	12:00 PM - 12:00 AM NB
Count	3097	5255
Peak Hour	6:45 AM	2:45 PM
Volume	666	1004
Factor	0.77	0.81

TRAFFIC DATA, LLC
PO Box 187, Cullman, AL 35056
205-824-0125

Location:: US 31 south of SOUTH LAWN DR
City, State:: HOPE HULL, AL
Speed Limit:: 55 mph

Date: 2/21/2023 Tuesday

24 Hour Speed
Channel: NB

mph	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
10:00 AM	318	0	0	4	10	32	27	63	103	35	38	5	1	0
11:00 AM	367	2	1	7	15	26	43	65	126	47	28	4	3	0
12:00 PM	332	4	2	4	8	21	42	61	95	45	37	10	3	0
1:00 PM	366	0	0	2	9	21	33	63	124	53	48	9	2	2
2:00 PM	625	14	17	40	42	62	83	110	144	69	41	2	1	0
3:00 PM	952	89	72	115	118	155	118	98	115	39	25	6	1	1
4:00 PM	896	59	40	52	87	99	123	128	178	66	49	14	0	1
5:00 PM	754	21	25	42	52	65	63	111	215	79	64	10	3	4
6:00 PM	369	1	3	3	19	31	62	75	97	49	27	2	0	0
7:00 PM	192	1	0	1	8	16	27	43	55	18	18	4	0	1
8:00 PM	171	0	0	1	1	12	25	39	56	20	14	0	1	2
9:00 PM	122	1	0	0	1	14	20	24	38	12	9	1	1	1
10:00 PM	198	4	3	9	10	27	32	40	43	18	10	1	0	1
11:00 PM	278	12	11	22	29	42	45	51	42	11	9	1	1	2
2/22/2023														
12:00 AM	97	2	1	1	8	17	17	20	23	5	3	0	0	0
1:00 AM	85	0	0	1	5	9	21	21	16	9	3	0	0	0
2:00 AM	93	0	0	1	5	13	25	20	15	7	5	1	0	1
3:00 AM	50	0	0	0	0	12	8	18	5	4	2	1	0	0
4:00 AM	148	1	0	3	13	30	34	26	26	6	8	1	0	0
5:00 AM	228	0	0	2	10	33	47	55	54	20	6	1	0	0
6:00 AM	413	6	6	6	10	29	50	72	104	50	59	14	3	4
7:00 AM	630	2	2	10	23	45	95	135	179	77	53	9	0	0
8:00 AM	337	1	1	2	12	16	50	62	103	49	33	6	2	0
9:00 AM	331	3	2	2	6	23	47	74	98	38	34	4	0	0
Total	8352	223	186	330	501	850	1137	1474	2054	826	623	106	22	20
%		2.7	2.2	4.0	6.0	10.2	13.6	17.6	24.6	9.9	7.5	1.3	0.3	0.2

Percentile Speeds (mph)	10 %	15 %	50 %	85 %	90 %
	26.1	30.4	42.6	51.4	53.2

10 mph Pace Speed 41.4 - 51.4
Number in Pace 3667 (43.9 %)

Average 41.3 mph
Minimum 5.1 mph
Maximum 93.1 mph

Speeds Exceeded	45 mph	55 mph	65 mph
	43.7 %	9.2 %	0.5 %
Count	3651	771	42

TRAFFIC DATA, LLC
PO Box 187, Cullman, AL 35056
205-824-0125

Location:: US 31 south of SOUTH LAWN DR
City, State:: HOPE HULL, AL
Speed Limit:: 55 mph

Date: 2/21/2023
Tuesday

24 Hour Vehicle Classification
Channel: NB

Time	Total	Bike	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
10:00 AM	318	0	175	64	4	15	11	0	15	33	0	1	0	0
11:00 AM	367	0	212	65	9	23	11	1	9	35	0	2	0	0
12:00 PM	332	0	193	52	5	16	7	1	10	39	0	7	0	2
1:00 PM	366	3	213	67	1	14	12	1	8	40	1	5	1	0
2:00 PM	625	1	395	118	14	13	11	0	25	38	0	3	1	6
3:00 PM	952	10	605	158	33	24	7	1	40	24	2	15	0	33
4:00 PM	896	7	606	142	14	32	8	4	30	33	4	7	0	9
5:00 PM	754	3	528	130	8	20	4	0	23	31	1	3	0	3
6:00 PM	369	4	275	53	2	11	2	0	7	15	0	0	0	0
7:00 PM	192	2	126	32	0	7	3	0	5	16	1	0	0	0
8:00 PM	171	1	115	24	0	3	0	0	7	20	0	1	0	0
9:00 PM	122	1	82	13	0	1	0	0	5	20	0	0	0	0
10:00 PM	198	0	156	22	2	1	2	0	2	13	0	0	0	0
11:00 PM	278	0	210	30	6	2	2	0	10	14	1	1	0	2
2/22/2023														
12:00 AM	97	1	55	15	2	1	0	0	4	19	0	0	0	0
1:00 AM	85	0	46	12	0	4	3	0	1	19	0	0	0	0
2:00 AM	93	0	64	8	0	0	2	0	1	18	0	0	0	0
3:00 AM	50	0	26	9	0	2	0	0	2	10	0	0	1	0
4:00 AM	148	1	83	23	1	3	5	0	4	28	0	0	0	0
5:00 AM	228	2	153	29	0	6	11	0	6	21	0	0	0	0
6:00 AM	413	4	281	59	10	14	6	0	10	26	1	2	0	0
7:00 AM	630	2	470	83	12	18	4	1	10	26	0	2	0	2
8:00 AM	337	1	192	55	4	22	10	2	21	27	2	0	1	0
9:00 AM	331	0	197	48	5	15	9	2	16	36	0	3	0	0
Total	8352	43	5458	1311	132	267	130	13	271	601	13	52	4	57
%		0.5	65.3	15.7	1.6	3.2	1.6	0.2	3.2	7.2	0.2	0.6	0.0	0.7

TRAFFIC DATA, LLC
PO Box 187, Cullman, AL 35056
205-824-0125

Location:: US 31 south of SOUTH LAWN DR
City, State:: MONTGOMERY, AL
Speed Limit:: 55 mph

Date: 2/21/2023 Tuesday

24 Hour Volume, per Channel
Channel: SB

Interval Begin				Interval Begin		
10:00 AM	68	250		10:00 PM	87	187
10:15 AM	57			10:15 PM	49	
10:30 AM	51			10:30 PM	27	
10:45 AM	74			10:45 PM	24	
11:00 AM	82	313		11:00 PM	31	94
11:15 AM	83			11:15 PM	19	
11:30 AM	69			11:30 PM	22	
11:45 AM	79			11:45 PM	22	
12:00 PM	77	335	2/22/2023	12:00 AM	18	52
12:15 PM	82			12:15 AM	7	
12:30 PM	97			12:30 AM	16	
12:45 PM	79			12:45 AM	11	
1:00 PM	76	408		1:00 AM	3	40
1:15 PM	104			1:15 AM	13	
1:30 PM	120			1:30 AM	13	
1:45 PM	108			1:45 AM	11	
2:00 PM	128	504		2:00 AM	9	66
2:15 PM	120			2:15 AM	14	
2:30 PM	146			2:30 AM	26	
2:45 PM	110			2:45 AM	17	
3:00 PM	103	417		3:00 AM	9	61
3:15 PM	103			3:15 AM	4	
3:30 PM	100			3:30 AM	22	
3:45 PM	111			3:45 AM	26	
4:00 PM	113	504		4:00 AM	31	189
4:15 PM	126			4:15 AM	31	
4:30 PM	128			4:30 AM	59	
4:45 PM	137			4:45 AM	68	
5:00 PM	126	478		5:00 AM	40	401
5:15 PM	133			5:15 AM	73	
5:30 PM	123			5:30 AM	123	
5:45 PM	96			5:45 AM	165	
6:00 PM	83	303		6:00 AM	136	409
6:15 PM	75			6:15 AM	102	
6:30 PM	72			6:30 AM	92	
6:45 PM	73			6:45 AM	79	
7:00 PM	61	212		7:00 AM	82	484
7:15 PM	51			7:15 AM	143	
7:30 PM	46			7:30 AM	156	
7:45 PM	54			7:45 AM	103	
8:00 PM	50	192		8:00 AM	84	286
8:15 PM	46			8:15 AM	58	
8:30 PM	51			8:30 AM	72	
8:45 PM	45			8:45 AM	72	
9:00 PM	35	208		9:00 AM	37	151
9:15 PM	40			9:15 AM	39	
9:30 PM	59			9:30 AM	37	
9:45 PM	74			9:45 AM	38	

	SB
24 Hour Volume	6544

	12:00 AM - 12:00 PM SB	12:00 PM - 12:00 AM SB
Count	2702	3842
Peak Hour	5:30 AM	4:30 PM
Volume	526	524
Factor	0.80	0.96

TRAFFIC DATA, LLC
PO Box 187, Cullman, AL 35056
205-824-0125

Location:: US 31 south of SOUTH LAWN DR
City, State:: MONTGOMERY, AL
Speed Limit:: 55 mph

Date: 2/21/2023
Tuesday

24 Hour Speed
Channel: SB

mph	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
10:00 AM	250	0	0	1	5	3	11	29	61	73	49	13	2	3
11:00 AM	313	5	2	0	3	3	11	28	92	90	54	16	6	3
12:00 PM	335	2	0	2	1	5	17	37	87	103	52	23	3	3
1:00 PM	408	0	0	1	2	9	8	41	96	117	92	33	8	1
2:00 PM	504	2	0	1	2	7	26	77	116	133	89	38	5	8
3:00 PM	417	2	0	2	0	6	22	43	131	130	61	12	5	3
4:00 PM	504	3	1	0	1	5	21	52	121	156	103	27	7	7
5:00 PM	478	4	1	3	2	6	25	55	141	130	78	21	7	5
6:00 PM	303	0	0	2	1	4	19	34	79	85	59	12	3	5
7:00 PM	212	0	0	0	3	3	11	36	61	53	28	12	3	2
8:00 PM	192	0	0	0	3	5	7	26	53	57	22	8	8	3
9:00 PM	208	1	0	0	1	3	13	28	47	54	37	19	3	2
10:00 PM	187	2	1	2	2	6	22	55	46	20	19	7	2	3
11:00 PM	94	1	0	1	1	10	20	24	18	13	4	1	1	0
2/22/2023														
12:00 AM	52	0	0	0	6	6	9	16	8	4	2	1	0	0
1:00 AM	40	0	0	2	5	2	4	11	9	6	0	1	0	0
2:00 AM	66	0	0	2	3	8	11	15	16	8	0	0	0	3
3:00 AM	61	0	0	0	2	6	11	12	14	6	6	3	1	0
4:00 AM	189	1	2	0	3	14	23	48	46	29	13	5	4	1
5:00 AM	401	3	1	2	2	8	48	117	82	81	23	21	8	5
6:00 AM	409	0	1	0	1	6	25	27	45	116	122	41	20	5
7:00 AM	484	5	2	3	1	4	16	71	130	133	84	21	8	6
8:00 AM	286	4	0	0	5	9	21	44	75	69	40	15	2	2
9:00 AM	151	2	0	0	1	5	7	17	40	34	30	7	6	2
Total	6544	37	11	24	56	143	408	943	1614	1700	1067	357	112	72
%		0.6	0.2	0.4	0.9	2.2	6.2	14.4	24.7	26.0	16.3	5.5	1.7	1.1

Percentile Speeds
(mph)

10 %	15 %	50 %	85 %	90 %
39.8	42.1	50.1	57.4	59.1

10 mph Pace Speed 45.9 - 55.9
Number in Pace 3365 (51.4 %)

Average 49.7 mph
Minimum 5.2 mph
Maximum 96.9 mph

Speeds Exceeded

	45 mph	55 mph	65 mph
	75.2 %	24.6 %	2.8 %
Count	4922	1608	184

TRAFFIC DATA, LLC
PO Box 187, Cullman, AL 35056
205-824-0125

Location:: US 31 south of SOUTH LAWN DR
City, State:: MONTGOMERY, AL
Speed Limit:: 55 mph

Date: 2/21/2023 Tuesday

24 Hour Vehicle Classification
Channel: SB

Time	Total	Bike	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
10:00 AM	250	5	122	49	9	29	5	0	11	20	0	0	0	0
11:00 AM	313	7	165	54	14	40	3	3	11	14	1	1	0	0
12:00 PM	335	3	193	56	13	33	5	0	14	16	0	2	0	0
1:00 PM	408	5	246	78	7	28	10	1	13	17	0	3	0	0
2:00 PM	504	4	296	99	9	43	12	3	20	18	0	0	0	0
3:00 PM	417	8	247	73	16	42	3	0	14	12	0	2	0	0
4:00 PM	504	9	313	83	10	48	10	0	12	17	0	2	0	0
5:00 PM	478	4	290	94	13	40	7	0	14	13	0	3	0	0
6:00 PM	303	3	193	50	5	26	7	0	9	10	0	0	0	0
7:00 PM	212	2	124	46	0	14	5	0	7	14	0	0	0	0
8:00 PM	192	4	125	25	4	12	5	0	5	12	0	0	0	0
9:00 PM	208	4	137	29	1	12	3	0	4	16	0	1	0	1
10:00 PM	187	4	129	21	7	10	4	0	5	7	0	0	0	0
11:00 PM	94	2	50	17	2	2	2	0	8	11	0	0	0	0
2/22/2023														
12:00 AM	52	4	20	4	2	2	4	0	3	13	0	0	0	0
1:00 AM	40	1	12	7	1	3	2	0	5	9	0	0	0	0
2:00 AM	66	2	29	9	5	6	3	0	4	8	0	0	0	0
3:00 AM	61	4	26	15	1	5	0	0	0	10	0	0	0	0
4:00 AM	189	2	93	37	5	20	8	0	4	18	1	1	0	0
5:00 AM	401	4	266	64	8	32	6	0	10	9	0	2	0	0
6:00 AM	409	2	255	69	5	37	10	0	19	9	0	2	0	1
7:00 AM	484	5	298	67	19	54	9	2	14	13	2	0	0	1
8:00 AM	286	6	134	52	10	21	9	1	27	24	1	1	0	0
9:00 AM	151	4	37	32	8	28	11	4	10	17	0	0	0	0
Total	6544	98	3800	1130	174	587	143	14	243	327	5	20	0	3
%		1.5	58.1	17.3	2.7	9.0	2.2	0.2	3.7	5.0	0.1	0.3	0.0	0.0

Appendix C – Capacity Analysis

Intersection Level Of Service Report

Intersection 7: US 31 at US 80 WB Ramp

Control Type:	Signalized	Delay (sec / veh):	14.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.280

Intersection Setup

Name	US 31			US 31			US 80			US 80 WB Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	250.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			US 80			US 80 WB Ramp		
Base Volume Input [veh/h]	135	472	0	0	342	171	0	0	0	162	0	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	2.00	2.00	8.00	8.00	2.00	2.00	2.00	5.00	5.00	5.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	472	0	0	342	171	0	0	0	162	0	40
Peak Hour Factor	0.9090	0.9090	1.0000	1.0000	0.9360	0.9360	1.0000	1.0000	1.0000	0.7770	0.7770	0.7770
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	130	0	0	91	46	0	0	0	52	0	13
Total Analysis Volume [veh/h]	149	519	0	0	365	183	0	0	0	208	0	51
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	7	6	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups		6,7										
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	4	20	0	0	20	0	0	0	0	0	20	0
Maximum Green [s]	20	45	0	0	45	0	0	0	0	0	25	0
Amber [s]	4.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.5	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.5	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes			Yes						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	63	63	63	63		63	63	63
L, Total Lost Time per Cycle [s]	5.00	5.50	5.50	5.50		4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	3.50	3.50		2.50	2.50	2.50
g_i, Effective Green Time [s]	8	33	20	20		20	20	20
g / C, Green / Cycle	0.13	0.53	0.32	0.32		0.31	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.09	0.15	0.08	0.12		0.06	0.06	0.03
s, saturation flow rate [veh/h]	1695	3389	4849	1513		1738	1738	1551
c, Capacity [veh/h]	224	1792	1539	480		544	544	486
d1, Uniform Delay [s]	26.12	8.30	15.94	16.77		15.88	15.88	15.44
k, delay calibration	0.08	0.08	0.15	0.15		0.23	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.50	0.07	0.11	0.71		0.36	0.36	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.29	0.24	0.38		0.19	0.19	0.10
d, Delay for Lane Group [s/veh]	28.63	8.36	16.06	17.48		16.24	16.24	15.64
Lane Group LOS	C	A	B	B		B	B	B
Critical Lane Group	No	Yes	No	Yes		Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.06	1.46	1.12	1.85		0.99	0.99	0.47
50th-Percentile Queue Length [ft/ln]	51.57	36.53	28.08	46.17		24.83	24.83	11.86
95th-Percentile Queue Length [veh/ln]	3.71	2.63	2.02	3.32		1.79	1.79	0.85
95th-Percentile Queue Length [ft/ln]	92.82	65.75	50.55	83.10		44.69	44.69	21.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.63	8.36	0.00	0.00	16.06	17.48	0.00	0.00	0.00	16.24	16.24	15.64
Movement LOS	C	A			B	B				B	B	B
d_A, Approach Delay [s/veh]	12.88			16.53			0.00			16.12		
Approach LOS	B			B			A			B		
d_I, Intersection Delay [s/veh]	14.81											
Intersection LOS	B											
Intersection V/C	0.280											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2216	1424	0	791
d_b, Bicycle Delay [s]	0.37	2.62	31.59	11.54
I_b,int, Bicycle LOS Score for Intersection	2.111	1.861	4.132	1.987
Bicycle LOS	B	A	D	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: US 31 at US 80 EB Ramp

Control Type:	Signalized	Delay (sec / veh):	16.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.544

Intersection Setup

Name	US 31			US 31			US 80 EB Ramp					
Approach	Northbound			Southbound			Eastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			US 80 EB Ramp					
Base Volume Input [veh/h]	0	487	435	8	494	0	119	0	130	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	8.00	8.00	8.00	8.00	2.00	17.00	17.00	17.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	487	435	8	494	0	119	0	130	0	0	0
Peak Hour Factor	1.0000	0.8970	0.8970	0.8100	0.8100	1.0000	0.7780	0.7780	0.7780	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	136	121	2	152	0	38	0	42	0	0	0
Total Analysis Volume [veh/h]	0	543	485	10	610	0	153	0	167	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	ProtPer	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	1	2	0	0	4	0	0	0	0
Auxiliary Signal Groups					1,2							
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	20	0	4	20	0	0	20	0	0	0	0
Maximum Green [s]	0	45	0	15	45	0	0	25	0	0	0	0
Amber [s]	0.0	4.0	0.0	3.5	4.0	0.0	0.0	3.5	0.0	0.0	0.0	0.0
All red [s]	0.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	4.0	0.0	2.5	4.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.5	0.0	2.5	3.5	0.0	0.0	2.5	0.0	0.0	0.0	0.0
Minimum Recall		Yes		No	Yes			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	R	
C, Cycle Length [s]	73	73	73	73	73	73	
L, Total Lost Time per Cycle [s]	5.50	5.50	4.50	5.50	4.50	4.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.50	3.50	2.50	0.00	2.50	2.50	
g_i, Effective Green Time [s]	29	29	9	43	20	20	
g / C, Green / Cycle	0.40	0.40	0.13	0.59	0.28	0.28	
(v / s)_i Volume / Saturation Flow Rate	0.16	0.32	0.01	0.18	0.10	0.12	
s, saturation flow rate [veh/h]	3389	1513	1695	3389	1567	1398	
c, Capacity [veh/h]	1347	602	216	1990	431	385	
d1, Uniform Delay [s]	15.69	19.39	27.80	7.55	21.14	21.66	
k, delay calibration	0.15	0.15	0.08	0.08	0.23	0.23	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.28	3.68	0.06	0.06	1.06	1.65	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.40	0.81	0.05	0.31	0.35	0.43	
d, Delay for Lane Group [s/veh]	15.97	23.07	27.86	7.61	22.20	23.31	
Lane Group LOS	B	C	C	A	C	C	
Critical Lane Group	No	Yes	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	2.83	6.74	0.14	1.79	2.00	2.27	
50th-Percentile Queue Length [ft/ln]	70.64	168.47	3.62	44.72	49.92	56.69	
95th-Percentile Queue Length [veh/ln]	5.09	11.00	0.26	3.22	3.59	4.08	
95th-Percentile Queue Length [ft/ln]	127.15	274.90	6.52	80.49	89.85	102.05	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	15.97	23.07	27.86	7.61	0.00	22.20	22.20	23.31	0.00	0.00	0.00
Movement LOS		B	C	C	A		C	C	C			
d_A, Approach Delay [s/veh]	19.32			7.94			22.78			0.00		
Approach LOS	B			A			C			A		
d_I, Intersection Delay [s/veh]	16.30											
Intersection LOS	B											
Intersection V/C	0.544											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1241	1779	690	0
d_b, Bicycle Delay [s]	5.22	0.44	15.57	36.26
I_b,int, Bicycle LOS Score for Intersection	2.408	2.071	2.088	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: US 31 at Kingswood Rd

Control Type:	Signalized	Delay (sec / veh):	13.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.407

Intersection Setup

Name	US 31			US 31			Winn Dixie Access			Kingswood Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	125.00	100.00	100.00	50.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			Winn Dixie Access			Kingswood Rd		
Base Volume Input [veh/h]	4	894	1	19	581	48	32	2	12	2	2	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	8.00	8.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	894	1	19	581	48	32	2	12	2	2	56
Peak Hour Factor	0.8080	0.8080	0.8080	0.9050	0.9050	0.9050	0.6390	0.6390	0.6390	0.8330	0.8330	0.8330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	277	0	5	160	13	13	1	5	1	1	17
Total Analysis Volume [veh/h]	5	1106	1	21	642	53	50	3	19	2	2	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	8	0	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	15	0	4	15	0	0	8	8	0	5	0
Maximum Green [s]	25	45	0	20	45	0	0	30	30	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	0.0
All red [s]	1.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.5	3.5	0.0	3.5	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	3.0	3.5	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	R	C
C, Cycle Length [s]	51	51	51	51	51	51	51	51	51
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	3.50	3.50	0.00	3.50	3.50	3.00	0.00	3.00
g_i, Effective Green Time [s]	27	21	21	27	22	22	5	19	3
g / C, Green / Cycle	0.53	0.41	0.41	0.53	0.43	0.43	0.10	0.37	0.07
(v / s)_i Volume / Saturation Flow Rate	0.01	0.31	0.31	0.06	0.19	0.04	0.03	0.01	0.06
s, saturation flow rate [veh/h]	831	1780	1779	377	3389	1513	1786	1589	1182
c, Capacity [veh/h]	555	736	736	493	1453	648	180	583	150
d1, Uniform Delay [s]	6.09	12.81	12.81	7.57	10.34	8.69	21.40	10.42	23.89
k, delay calibration	0.11	0.15	0.15	0.15	0.15	0.15	0.13	0.11	0.13
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	2.24	2.24	0.05	0.30	0.08	1.09	0.02	2.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.75	0.75	0.04	0.44	0.08	0.29	0.03	0.47
d, Delay for Lane Group [s/veh]	6.10	15.05	15.05	7.62	10.64	8.76	22.49	10.44	26.66
Lane Group LOS	A	B	B	A	B	A	C	B	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.02	4.31	4.31	0.07	1.88	0.27	0.61	0.13	0.92
50th-Percentile Queue Length [ft/ln]	0.42	107.74	107.71	1.83	46.89	6.63	15.22	3.15	23.12
95th-Percentile Queue Length [veh/ln]	0.03	7.71	7.71	0.13	3.38	0.48	1.10	0.23	1.66
95th-Percentile Queue Length [ft/ln]	0.75	192.85	192.81	3.29	84.40	11.94	27.40	5.66	41.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.10	15.05	15.05	7.62	10.64	8.76	22.49	22.49	10.44	26.66	26.66	26.66
Movement LOS	A	B	B	A	B	A	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	15.01			10.42			19.31			26.66		
Approach LOS	B			B			B			C		
d_I, Intersection Delay [s/veh]	13.92											
Intersection LOS	B											
Intersection V/C	0.407											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1755	1755	1170	1170
d_b, Bicycle Delay [s]	0.38	0.38	4.42	4.42
I_b,int, Bicycle LOS Score for Intersection	2.477	2.150	1.678	1.677
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	8	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 10: US 31 at Burnsdale Dr

Control Type:	Signalized	Delay (sec / veh):	5.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.327

Intersection Setup

Name	US 31		US 31		Burnsdale Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	40.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	US 31		US 31		Burnsdale Dr	
Base Volume Input [veh/h]	6	891	563	14	4	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	891	563	14	4	4
Peak Hour Factor	0.8560	0.8560	0.7710	0.7710	0.5000	0.5000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	260	183	5	2	2
Total Analysis Volume [veh/h]	7	1041	730	18	8	8
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Overlap	Overlap	Permissive	Permissive	Permissive
Signal Group	4	2	2	0	3	0
Auxiliary Signal Groups		2,4	2			
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	20	20	0	4	0
Maximum Green [s]	20	70	70	0	20	0
Amber [s]	3.0	4.0	4.0	0.0	3.0	0.0
All red [s]	1.5	2.0	2.0	0.0	1.5	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	4.0	8.0	8.0	0.0	4.0	0.0
Walk [s]	0	4	4	0	0	0
Pedestrian Clearance [s]	0	16	16	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	98	98	98	98	98
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	0.00	4.00	4.00	2.50
g_i, Effective Green Time [s]	18	86	64	64	1
g / C, Green / Cycle	0.18	0.88	0.65	0.65	0.02
(v / s)_i Volume / Saturation Flow Rate	0.00	0.31	0.22	0.01	0.01
s, saturation flow rate [veh/h]	1695	3389	3389	1513	1680
c, Capacity [veh/h]	313	2973	2192	979	27
d1, Uniform Delay [s]	32.85	1.07	7.82	6.21	48.10
k, delay calibration	0.15	1.18	1.18	1.18	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.77	0.97	0.08	26.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.35	0.33	0.02	0.59
d, Delay for Lane Group [s/veh]	32.89	1.84	8.79	6.29	74.29
Lane Group LOS	C	A	A	A	E
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.13	0.32	3.11	0.13	0.58
50th-Percentile Queue Length [ft/ln]	3.37	7.96	77.74	3.31	14.59
95th-Percentile Queue Length [veh/ln]	0.24	0.57	5.60	0.24	1.05
95th-Percentile Queue Length [ft/ln]	6.07	14.32	139.94	5.96	26.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.89	1.84	8.79	6.29	74.29	74.29
Movement LOS	C	A	A	A	E	E
d_A, Approach Delay [s/veh]	2.05		8.73		74.29	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	5.44					
Intersection LOS	A					
Intersection V/C	0.327					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1212	1425	407
d_b, Bicycle Delay [s]	7.63	4.05	31.15
I_b,int, Bicycle LOS Score for Intersection	2.424	2.177	1.586
Bicycle LOS	B	B	A

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: US 31 at Southlawn Dr

Control Type:	Signalized	Delay (sec / veh):	11.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.454

Intersection Setup

Name	US 31		US 31		Southlawn Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	225.00	100.00	350.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	1	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	350.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	US 31		US 31		Southlawn Dr	
Base Volume Input [veh/h]	681	10	64	496	5	203
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	681	10	64	496	5	203
Peak Hour Factor	0.7710	0.7710	0.8750	0.8750	0.7220	0.7220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	221	3	18	142	2	70
Total Analysis Volume [veh/h]	883	13	73	567	7	281
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	15	0	5	15	8	0
Maximum Green [s]	45	0	25	45	30	0
Amber [s]	4.0	0.0	4.0	4.0	4.0	0.0
All red [s]	1.5	0.0	1.0	1.5	1.0	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	5.0	0.0	2.0	5.0	1.5	0.0
Walk [s]	15	0	0	15	5	0
Pedestrian Clearance [s]	18	0	0	18	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	0.0	3.0	3.5	3.0	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	47	47	47	47	47	47
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	0.00	3.50	3.00	3.00
g_i, Effective Green Time [s]	19	19	27	27	10	10
g / C, Green / Cycle	0.39	0.39	0.57	0.57	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.25	0.25	0.09	0.17	0.00	0.18
s, saturation flow rate [veh/h]	1780	1771	843	3389	1781	1589
c, Capacity [veh/h]	702	699	579	1917	379	338
d1, Uniform Delay [s]	11.62	11.64	5.80	5.37	14.76	17.85
k, delay calibration	0.23	0.23	0.04	0.23	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.06	2.10	0.04	0.18	0.01	2.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.64	0.13	0.30	0.02	0.83
d, Delay for Lane Group [s/veh]	13.68	13.74	5.84	5.55	14.76	19.88
Lane Group LOS	B	B	A	A	B	B
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.03	3.04	0.17	0.78	0.05	2.74
50th-Percentile Queue Length [ft/ln]	75.81	76.06	4.23	19.44	1.33	68.49
95th-Percentile Queue Length [veh/ln]	5.46	5.48	0.30	1.40	0.10	4.93
95th-Percentile Queue Length [ft/ln]	136.45	136.91	7.61	35.00	2.40	123.28

Movement, Approach, & Intersection Results

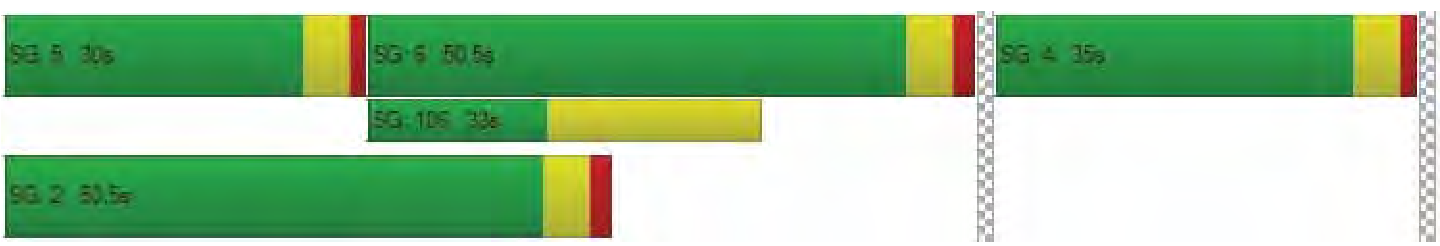
d_M, Delay for Movement [s/veh]	13.71	13.74	5.84	5.55	14.76	19.88
Movement LOS	B	B	A	A	B	B
d_A, Approach Delay [s/veh]	13.71		5.59		19.76	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	11.81					
Intersection LOS	B					
Intersection V/C	0.454					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	19.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	8.47
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.211
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1902	1902	1268
d_b, Bicycle Delay [s]	0.06	0.06	3.17
I_b,int, Bicycle LOS Score for Intersection	2.299	2.088	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: US 31 at Hyundai Blvd

Control Type:	Signalized	Delay (sec / veh):	22.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.589

Intersection Setup

Name	Hyundai Blvd			US 31			US 31			Pyramid Ave		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Hyundai Blvd			US 31			US 31			Pyramid Ave		
Base Volume Input [veh/h]	240	7	246	4	139	281	79	131	5	5	7	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	4.00	4.00	8.00	8.00	8.00	8.00	8.00	8.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	240	7	246	4	139	281	79	131	5	5	7	1
Peak Hour Factor	0.4910	0.4910	0.4910	0.8550	0.8550	0.8550	0.8270	0.8270	0.8270	0.6500	0.6500	0.6500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	122	4	125	1	41	82	24	40	2	2	3	0
Total Analysis Volume [veh/h]	489	14	501	5	163	329	96	158	6	8	11	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split
Signal Group	0	4	0	5	2	0	1	6	0	0	3	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	4	18	0	4	18	0	0	6	0
Maximum Green [s]	0	50	0	35	60	0	35	60	0	0	25	0
Amber [s]	0.0	3.5	0.0	3.5	4.0	0.0	3.5	4.0	0.0	0.0	3.5	0.0
All red [s]	0.0	1.0	0.0	0.5	1.5	0.0	0.5	1.5	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0	0.0	4.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	2.0	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0
Minimum Recall		No		No	Yes		No	Yes			No	
Maximum Recall		No		No	No		No	No			No	
Pedestrian Recall		No		No	No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	C
C, Cycle Length [s]	72	72	72	72	72	72	72	72	72	72
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	5.50	5.50	5.50	5.50	5.50	5.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	0.00	3.50	3.50	0.00	3.50	3.50	2.50
g_i, Effective Green Time [s]	28	28	28	27	19	19	27	23	23	2
g / C, Green / Cycle	0.39	0.39	0.39	0.38	0.27	0.27	0.38	0.32	0.32	0.03
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.32	0.00	0.09	0.22	0.09	0.05	0.05	0.01
s, saturation flow rate [veh/h]	1752	1757	1564	1209	1780	1513	1051	1780	1757	1805
c, Capacity [veh/h]	683	685	610	571	474	403	371	569	562	52
d1, Uniform Delay [s]	15.69	15.68	19.77	13.93	21.39	24.84	16.37	17.51	17.51	34.44
k, delay calibration	0.15	0.15	0.15	0.15	0.15	0.15	0.13	0.15	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.47	0.47	3.99	0.01	0.61	5.75	0.44	0.16	0.17	7.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.37	0.82	0.01	0.34	0.82	0.26	0.14	0.15	0.40
d, Delay for Lane Group [s/veh]	16.16	16.15	23.77	13.93	22.01	30.58	16.81	17.67	17.68	41.48
Lane Group LOS	B	B	C	B	C	C	B	B	B	D
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.83	2.83	7.55	0.05	2.08	5.32	0.94	0.89	0.89	0.45
50th-Percentile Queue Length [ft/ln]	70.69	70.65	188.75	1.14	51.88	132.92	23.60	22.31	22.19	11.33
95th-Percentile Queue Length [veh/ln]	5.09	5.09	12.06	0.08	3.74	9.10	1.70	1.61	1.60	0.82
95th-Percentile Queue Length [ft/ln]	127.25	127.18	301.41	2.05	93.39	227.45	42.48	40.15	39.94	20.39

Movement, Approach, & Intersection Results

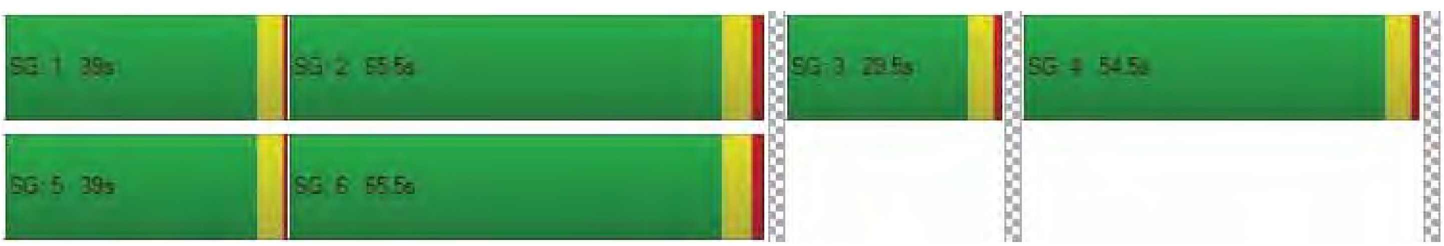
d_M, Delay for Movement [s/veh]	16.16	16.15	23.77	13.93	22.01	30.58	16.81	17.68	17.68	41.48	41.48	41.48
Movement LOS	B	B	C	B	C	C	B	B	B	D	D	D
d_A, Approach Delay [s/veh]	19.95			27.60			17.36			41.48		
Approach LOS	B			C			B			D		
d_I, Intersection Delay [s/veh]	21.96											
Intersection LOS	C											
Intersection V/C	0.589											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1389	1667	1667	694
d_b, Bicycle Delay [s]	3.36	1.00	1.00	15.34
I_b,int, Bicycle LOS Score for Intersection	3.216	1.970	1.774	1.594
Bicycle LOS	C	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 24: US 31 at Windy Wood Dr

Control Type:	Signalized	Delay (sec / veh):	9.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.358

Intersection Setup

Name	US 31		US 31		Windy Wood Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	40.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	US 31		US 31		Windy Wood Dr	
Base Volume Input [veh/h]	873	16	16	554	18	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	873	16	16	554	18	24
Peak Hour Factor	0.8680	0.8680	0.7660	0.7660	0.8080	0.8080
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	251	5	5	181	6	7
Total Analysis Volume [veh/h]	1006	18	21	723	22	30
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Overlap	Overlap	ProtPerm	Overlap	Permissive	Permissive
Signal Group	2	2	3	2	4	0
Auxiliary Signal Groups	2	2		2,3		
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	20	20	4	20	4	0
Maximum Green [s]	70	70	20	70	20	0
Amber [s]	4.0	4.0	3.0	4.0	3.0	0.0
All red [s]	2.0	2.0	1.5	2.0	1.5	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	8.0	8.0	4.0	8.0	4.0	0.0
Walk [s]	4	4	0	4	0	0
Pedestrian Clearance [s]	16	16	0	16	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	2.5	4.0	2.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	93	93	93	93	93
L, Total Lost Time per Cycle [s]	6.00	6.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	2.50	0.00	2.50
g_i, Effective Green Time [s]	60	60	14	80	4
g / C, Green / Cycle	0.64	0.64	0.15	0.86	0.04
(v / s)_i Volume / Saturation Flow Rate	0.29	0.29	0.01	0.21	0.03
s, saturation flow rate [veh/h]	1780	1769	1695	3389	1665
c, Capacity [veh/h]	1147	1140	261	2924	68
d1, Uniform Delay [s]	8.29	8.31	33.78	1.12	44.28
k, delay calibration	1.18	1.18	0.15	1.18	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.97	3.02	0.19	0.48	21.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.45	0.08	0.25	0.77
d, Delay for Lane Group [s/veh]	11.25	11.32	33.96	1.60	66.26
Lane Group LOS	B	B	C	A	E
Critical Lane Group	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	4.99	5.01	0.40	0.19	1.60
50th-Percentile Queue Length [ft/ln]	124.63	125.14	10.07	4.86	40.10
95th-Percentile Queue Length [veh/ln]	8.65	8.67	0.72	0.35	2.89
95th-Percentile Queue Length [ft/ln]	216.17	216.87	18.12	8.75	72.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.29	11.32	33.96	1.60	66.26	66.26
Movement LOS	B	B	C	A	E	E
d_A, Approach Delay [s/veh]	11.29		2.51		66.26	
Approach LOS	B		A		E	
d_I, Intersection Delay [s/veh]	9.27					
Intersection LOS	A					
Intersection V/C	0.358					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	38.87
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.756
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1504	129	430
d_b, Bicycle Delay [s]	2.86	40.72	28.68
I_b,int, Bicycle LOS Score for Intersection	2.404	2.173	1.645
Bicycle LOS	B	B	A

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 27: US 31 @ Green Leaf Dr

Control Type:	Signalized	Delay (sec / veh):	9.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.434

Intersection Setup

Name	US 31		US 31		Green Leaf Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	US 31		US 31		Green Leaf Dr	
Base Volume Input [veh/h]	412	30	246	219	12	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	412	30	246	219	12	138
Peak Hour Factor	0.6140	0.6140	0.7960	0.7960	0.7810	0.7810
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	168	12	77	69	4	44
Total Analysis Volume [veh/h]	671	49	309	275	15	177
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	50	0	30	50	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	32	32	32	32	32	32
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	19	19	5	5
g / C, Green / Cycle	0.30	0.30	0.59	0.59	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.20	0.21	0.29	0.08	0.01	0.11
s, saturation flow rate [veh/h]	1780	1738	1083	3389	1781	1589
c, Capacity [veh/h]	537	524	851	2014	273	243
d1, Uniform Delay [s]	9.68	9.74	4.12	2.84	11.45	12.78
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.46	1.61	0.26	0.03	0.08	4.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.69	0.36	0.14	0.05	0.73
d, Delay for Lane Group [s/veh]	11.14	11.35	4.38	2.87	11.54	16.90
Lane Group LOS	B	B	A	A	B	B
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.37	1.40	0.06	0.01	0.08	1.23
50th-Percentile Queue Length [ft/ln]	34.31	34.89	1.54	0.21	1.96	30.70
95th-Percentile Queue Length [veh/ln]	2.47	2.51	0.11	0.02	0.14	2.21
95th-Percentile Queue Length [ft/ln]	61.75	62.81	2.77	0.38	3.53	55.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.24	11.35	4.38	2.87	11.54	16.90
Movement LOS	B	B	A	A	B	B
d_A, Approach Delay [s/veh]	11.25		3.67		16.48	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	8.96					
Intersection LOS	A					
Intersection V/C	0.434					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3170	3170	1902
d_b, Bicycle Delay [s]	5.40	5.40	0.04
I_b,int, Bicycle LOS Score for Intersection	2.154	2.041	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 46: US 31 @ Southlawn School Exit

Control Type:	Two-way stop	Delay (sec / veh):	22.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.064

Intersection Setup

Name	US 31		US 31		Southlawn School Exit	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	US 31		US 31		Southlawn School Exit	
Base Volume Input [veh/h]	548	0	0	452	11	118
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	2.00	2.00	8.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	548	0	0	452	11	118
Peak Hour Factor	0.6650	1.0000	1.0000	0.9340	0.8060	0.8060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	206	0	0	121	3	37
Total Analysis Volume [veh/h]	824	0	0	484	14	146
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.06	0.25
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	22.71	13.11
Movement LOS	A			A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.20	0.97
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	5.12	24.29
d_A, Approach Delay [s/veh]	0.00		0.00		13.95	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.52					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 7: US 31 at US 80 WB Ramp

Control Type:	Signalized	Delay (sec / veh):	16.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.398

Intersection Setup

Name	US 31			US 31			US 80			US 80 WB Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	250.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			US 80			US 80 WB Ramp		
Base Volume Input [veh/h]	203	702	0	0	377	196	0	0	0	239	0	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	2.00	2.00	8.00	8.00	2.00	2.00	2.00	5.00	5.00	5.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	203	702	0	0	377	196	0	0	0	239	0	28
Peak Hour Factor	0.8410	0.8410	1.0000	1.0000	0.9420	0.9420	1.0000	1.0000	1.0000	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	209	0	0	100	52	0	0	0	81	0	10
Total Analysis Volume [veh/h]	241	835	0	0	400	208	0	0	0	326	0	38
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	7	6	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups		6,7										
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	4	20	0	0	20	0	0	0	0	0	20	0
Maximum Green [s]	20	45	0	0	45	0	0	0	0	0	25	0
Amber [s]	4.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.5	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.5	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes			Yes						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	68	68	68	68		68	68	68
L, Total Lost Time per Cycle [s]	5.00	5.50	5.50	5.50		4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	3.50	3.50		2.50	2.50	2.50
g_i, Effective Green Time [s]	13	38	20	20		20	20	20
g / C, Green / Cycle	0.20	0.56	0.29	0.29		0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.14	0.25	0.08	0.14		0.09	0.09	0.02
s, saturation flow rate [veh/h]	1695	3389	4849	1513		1738	1738	1551
c, Capacity [veh/h]	332	1907	1426	445		507	507	452
d1, Uniform Delay [s]	25.89	8.71	18.64	19.83		19.01	19.01	17.66
k, delay calibration	0.08	0.08	0.15	0.15		0.23	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.27	0.12	0.15	1.09		0.78	0.78	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.44	0.28	0.47		0.32	0.32	0.08
d, Delay for Lane Group [s/veh]	28.15	8.83	18.79	20.92		19.78	19.78	17.83
Lane Group LOS	C	A	B	C		B	B	B
Critical Lane Group	No	Yes	No	Yes		Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.51	2.67	1.45	2.51		1.89	1.89	0.41
50th-Percentile Queue Length [ft/ln]	87.68	66.83	36.35	62.85		47.22	47.22	10.17
95th-Percentile Queue Length [veh/ln]	6.31	4.81	2.62	4.53		3.40	3.40	0.73
95th-Percentile Queue Length [ft/ln]	157.83	120.29	65.43	113.13		85.00	85.00	18.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.15	8.83	0.00	0.00	18.79	20.92	0.00	0.00	0.00	19.78	19.78	17.83
Movement LOS	C	A			B	C				B	B	B
d_A, Approach Delay [s/veh]	13.16			19.52			0.00			19.58		
Approach LOS	B			B			A			B		
d_I, Intersection Delay [s/veh]	16.19											
Intersection LOS	B											
Intersection V/C	0.398											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2045	1315	0	730
d_b, Bicycle Delay [s]	0.02	4.02	34.23	13.79
I_b,int, Bicycle LOS Score for Intersection	2.447	1.894	4.132	2.160
Bicycle LOS	B	A	D	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: US 31 at US 80 EB Ramp

Control Type:	Signalized	Delay (sec / veh):	16.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.521

Intersection Setup

Name	US 31			US 31			US 80 EB Ramp					
Approach	Northbound			Southbound			Eastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			US 80 EB Ramp					
Base Volume Input [veh/h]	0	729	905	22	609	0	154	2	151	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	8.00	8.00	8.00	8.00	2.00	17.00	17.00	17.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	729	905	22	609	0	154	2	151	0	0	0
Peak Hour Factor	1.0000	0.8440	0.8440	0.9170	0.9170	1.0000	0.7450	0.7450	0.7450	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	0.2000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	216	54	6	166	0	52	1	51	0	0	0
Total Analysis Volume [veh/h]	0	864	214	24	664	0	207	3	203	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	ProtPer	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	1	2	0	0	4	0	0	0	0
Auxiliary Signal Groups					1,2							
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	20	0	4	20	0	0	20	0	0	0	0
Maximum Green [s]	0	45	0	15	45	0	0	25	0	0	0	0
Amber [s]	0.0	4.0	0.0	3.5	4.0	0.0	0.0	3.5	0.0	0.0	0.0	0.0
All red [s]	0.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	4.0	0.0	2.5	4.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.5	0.0	2.5	3.5	0.0	0.0	2.5	0.0	0.0	0.0	0.0
Minimum Recall		Yes		No	Yes			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	R	
C, Cycle Length [s]	69	69	69	69	69	69	
L, Total Lost Time per Cycle [s]	5.50	5.50	4.50	5.50	4.50	4.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.50	3.50	2.50	0.00	2.50	2.50	
g_i, Effective Green Time [s]	25	25	10	39	20	20	
g / C, Green / Cycle	0.36	0.36	0.14	0.57	0.29	0.29	
(v / s)_i Volume / Saturation Flow Rate	0.25	0.14	0.01	0.20	0.13	0.15	
s, saturation flow rate [veh/h]	3389	1513	1695	3389	1568	1398	
c, Capacity [veh/h]	1209	540	246	1921	453	404	
d1, Uniform Delay [s]	19.23	16.69	25.68	8.08	20.22	20.49	
k, delay calibration	0.15	0.15	0.08	0.08	0.23	0.23	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.14	0.67	0.13	0.08	1.58	2.06	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.71	0.40	0.10	0.35	0.46	0.50	
d, Delay for Lane Group [s/veh]	20.37	17.36	25.80	8.16	21.80	22.55	
Lane Group LOS	C	B	C	A	C	C	
Critical Lane Group	Yes	No	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	5.30	2.30	0.32	1.99	2.65	2.63	
50th-Percentile Queue Length [ft/ln]	132.38	57.38	8.05	49.74	66.16	65.72	
95th-Percentile Queue Length [veh/ln]	9.07	4.13	0.58	3.58	4.76	4.73	
95th-Percentile Queue Length [ft/ln]	226.73	103.28	14.48	89.54	119.08	118.29	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	20.37	17.36	25.80	8.16	0.00	21.80	21.80	22.55	0.00	0.00	0.00
Movement LOS		C	B	C	A		C	C	C			
d_A, Approach Delay [s/veh]	19.77			8.78			22.17			0.00		
Approach LOS	B			A			C			A		
d_I, Intersection Delay [s/veh]	16.75											
Intersection LOS	B											
Intersection V/C	0.521											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1301	1865	723	0
d_b, Bicycle Delay [s]	4.22	0.16	14.10	34.58
I_b,int, Bicycle LOS Score for Intersection	2.449	2.127	2.241	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: US 31 at Kingswood Rd

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.537

Intersection Setup

Name	US 31			US 31			Winn Dixie Access			Kingswood Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	125.00	100.00	100.00	50.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			Winn Dixie Access			Kingswood Rd		
Base Volume Input [veh/h]	17	1053	7	46	639	123	111	4	34	8	5	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	8.00	8.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	1053	7	46	639	123	111	4	34	8	5	59
Peak Hour Factor	0.7650	0.7650	0.7650	0.8780	0.8780	0.8780	0.8470	0.8470	0.8470	0.8570	0.8570	0.8570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	344	2	13	182	35	33	1	10	2	1	17
Total Analysis Volume [veh/h]	22	1376	9	52	728	140	131	5	40	9	6	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	8	0	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	15	0	4	15	0	0	8	8	0	5	0
Maximum Green [s]	25	45	0	20	45	0	0	30	30	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	0.0
All red [s]	1.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.5	3.5	0.0	3.5	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	3.0	3.5	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	R	C
C, Cycle Length [s]	67	67	67	67	67	67	67	67	67
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	3.50	3.50	0.00	3.50	3.50	3.00	0.00	3.00
g_i, Effective Green Time [s]	39	32	32	39	33	33	8	24	5
g / C, Green / Cycle	0.58	0.47	0.47	0.58	0.49	0.49	0.11	0.35	0.07
(v / s)_i Volume / Saturation Flow Rate	0.03	0.39	0.39	0.18	0.21	0.09	0.08	0.03	0.06
s, saturation flow rate [veh/h]	728	1780	1776	294	3389	1513	1784	1589	1480
c, Capacity [veh/h]	499	841	839	395	1659	741	205	563	164
d1, Uniform Delay [s]	6.56	15.34	15.34	10.42	11.17	9.67	28.57	14.39	30.83
k, delay calibration	0.11	0.18	0.18	0.15	0.15	0.15	0.13	0.11	0.13
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	3.49	3.51	0.21	0.26	0.17	4.42	0.05	2.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.82	0.82	0.13	0.44	0.19	0.66	0.07	0.51
d, Delay for Lane Group [s/veh]	6.59	18.83	18.86	10.63	11.43	9.84	32.99	14.44	33.77
Lane Group LOS	A	B	B	B	B	A	C	B	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.10	7.96	7.96	0.25	2.83	0.96	2.29	0.39	1.45
50th-Percentile Queue Length [ft/ln]	2.47	199.10	198.89	6.23	70.80	23.96	57.37	9.84	36.13
95th-Percentile Queue Length [veh/ln]	0.18	12.59	12.58	0.45	5.10	1.73	4.13	0.71	2.60
95th-Percentile Queue Length [ft/ln]	4.45	314.80	314.53	11.22	127.44	43.13	103.27	17.72	65.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.59	18.84	18.86	10.63	11.43	9.84	32.99	32.99	14.44	33.77	33.77	33.77
Movement LOS	A	B	B	B	B	A	C	C	B	C	C	C
d_A, Approach Delay [s/veh]		18.65			11.15			28.78			33.77	
Approach LOS		B			B			C			C	
d_I, Intersection Delay [s/veh]						17.16						
Intersection LOS						B						
Intersection V/C						0.537						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1338	1338	892	892
d_b, Bicycle Delay [s]	3.68	3.68	10.32	10.32
I_b,int, Bicycle LOS Score for Intersection	2.720	2.319	1.850	1.698
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	8	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 10: US 31 at Burnsdale Dr

Control Type:	Signalized	Delay (sec / veh):	9.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.413

Intersection Setup

Name	US 31		US 31		Burnsdale Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	40.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	US 31		US 31		Burnsdale Dr	
Base Volume Input [veh/h]	16	1220	659	27	37	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	1220	659	27	37	18
Peak Hour Factor	0.6310	0.6310	0.8580	0.8580	0.7240	0.7240
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	483	192	8	13	6
Total Analysis Volume [veh/h]	25	1933	768	31	51	25
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Overlap	Overlap	Permissive	Permissive	Permissive
Signal Group	4	2	2	0	3	0
Auxiliary Signal Groups		2,4	2			
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	20	20	0	4	0
Maximum Green [s]	20	70	70	0	20	0
Amber [s]	3.0	4.0	4.0	0.0	3.0	0.0
All red [s]	1.5	2.0	2.0	0.0	1.5	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	4.0	8.0	8.0	0.0	4.0	0.0
Walk [s]	0	4	4	0	0	0
Pedestrian Clearance [s]	0	16	16	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	111	111	111	111	111
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	0.00	4.00	4.00	2.50
g_i, Effective Green Time [s]	20	94	70	70	6
g / C, Green / Cycle	0.18	0.85	0.63	0.63	0.06
(v / s)_i Volume / Saturation Flow Rate	0.01	0.57	0.23	0.02	0.04
s, saturation flow rate [veh/h]	1695	3389	3389	1513	1713
c, Capacity [veh/h]	304	2873	2128	950	100
d1, Uniform Delay [s]	38.10	3.01	9.98	7.88	51.74
k, delay calibration	0.15	1.18	1.18	1.18	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.16	2.99	1.13	0.15	15.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.67	0.36	0.03	0.76
d, Delay for Lane Group [s/veh]	38.26	6.01	11.11	8.03	67.32
Lane Group LOS	D	A	B	A	E
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.57	3.75	4.28	0.29	2.52
50th-Percentile Queue Length [ft/ln]	14.19	93.83	106.93	7.28	63.04
95th-Percentile Queue Length [veh/ln]	1.02	6.76	7.67	0.52	4.54
95th-Percentile Queue Length [ft/ln]	25.55	168.89	191.72	13.11	113.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.26	6.01	11.11	8.03	67.32	67.32
Movement LOS	D	A	B	A	E	E
d_A, Approach Delay [s/veh]	6.42		10.99		67.32	
Approach LOS	A		B		E	
d_I, Intersection Delay [s/veh]	9.34					
Intersection LOS	A					
Intersection V/C	0.413					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1068	1256	359
d_b, Bicycle Delay [s]	12.10	7.70	37.51
I_b,int, Bicycle LOS Score for Intersection	3.175	2.219	1.685
Bicycle LOS	C	B	A

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 11: US 31 at Southlawn Dr

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.552

Intersection Setup

Name	US 31		US 31		Southlawn Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	225.00	100.00	350.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	1	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	350.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	US 31		US 31		Southlawn Dr	
Base Volume Input [veh/h]	783	16	131	494	8	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	783	16	131	494	8	181
Peak Hour Factor	0.6510	0.6510	0.9770	0.9770	0.6850	0.6850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	301	6	34	126	3	66
Total Analysis Volume [veh/h]	1203	25	134	506	12	264
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	15	0	5	15	8	0
Maximum Green [s]	45	0	25	45	30	0
Amber [s]	4.0	0.0	4.0	4.0	4.0	0.0
All red [s]	1.5	0.0	1.0	1.5	1.0	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	5.0	0.0	2.0	5.0	1.5	0.0
Walk [s]	15	0	0	15	5	0
Pedestrian Clearance [s]	18	0	0	18	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	0.0	3.0	3.5	3.0	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	0.00	3.50	3.00	3.00
g_i, Effective Green Time [s]	29	29	38	38	12	12
g / C, Green / Cycle	0.48	0.48	0.63	0.63	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.34	0.35	0.20	0.15	0.01	0.17
s, saturation flow rate [veh/h]	1780	1767	678	3389	1781	1589
c, Capacity [veh/h]	848	842	482	2142	349	311
d1, Uniform Delay [s]	12.77	12.82	7.91	4.85	19.86	23.65
k, delay calibration	0.23	0.23	0.04	0.23	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.53	2.61	0.12	0.12	0.01	2.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.73	0.28	0.24	0.03	0.85
d, Delay for Lane Group [s/veh]	15.29	15.42	8.03	4.97	19.87	26.15
Lane Group LOS	B	B	A	A	B	C
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.56	5.59	0.40	0.83	0.13	3.61
50th-Percentile Queue Length [ft/ln]	138.88	139.73	10.04	20.63	3.27	90.24
95th-Percentile Queue Length [veh/ln]	9.42	9.47	0.72	1.49	0.24	6.50
95th-Percentile Queue Length [ft/ln]	235.51	236.66	18.08	37.14	5.89	162.43

Movement, Approach, & Intersection Results

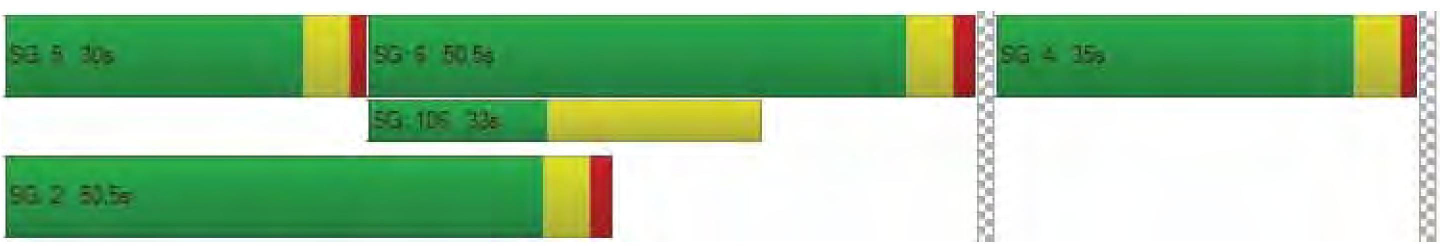
d_M, Delay for Movement [s/veh]	15.36	15.42	8.03	4.97	19.87	26.15
Movement LOS	B	B	A	A	B	C
d_A, Approach Delay [s/veh]	15.36		5.61		25.88	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	13.80					
Intersection LOS	B					
Intersection V/C	0.552					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	19.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	14.40
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.298
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1479	1479	986
d_b, Bicycle Delay [s]	2.07	2.07	7.83
I_b,int, Bicycle LOS Score for Intersection	2.573	2.088	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: US 31 at Hyundai Blvd

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.500

Intersection Setup

Name	Hyundai Blvd			US 31			US 31			Pyramid Ave		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Hyundai Blvd			US 31			US 31			Pyramid Ave		
Base Volume Input [veh/h]	244	6	270	2	175	172	112	208	11	6	3	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	4.00	4.00	8.00	8.00	8.00	8.00	8.00	8.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	244	6	270	2	175	172	112	208	11	6	3	3
Peak Hour Factor	0.5650	0.5650	0.5650	0.8730	0.8730	0.8730	0.8900	0.8900	0.8900	0.6000	0.6000	0.6000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	108	3	119	1	50	49	31	58	3	3	1	1
Total Analysis Volume [veh/h]	432	11	478	2	200	197	126	234	12	10	5	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split
Signal Group	0	4	0	5	2	0	1	6	0	0	3	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	4	18	0	4	18	0	0	6	0
Maximum Green [s]	0	50	0	35	60	0	35	60	0	0	25	0
Amber [s]	0.0	3.5	0.0	3.5	4.0	0.0	3.5	4.0	0.0	0.0	3.5	0.0
All red [s]	0.0	1.0	0.0	0.5	1.5	0.0	0.5	1.5	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0	0.0	4.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	2.0	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0
Minimum Recall		No		No	Yes		No	Yes			No	
Maximum Recall		No		No	No		No	No			No	
Pedestrian Recall		No		No	No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	5.50	5.50	5.50	5.50	5.50	5.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	0.00	3.50	3.50	0.00	3.50	3.50	2.50
g_i, Effective Green Time [s]	26	26	26	27	18	18	27	23	23	2
g / C, Green / Cycle	0.37	0.37	0.37	0.39	0.26	0.26	0.39	0.33	0.33	0.03
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.31	0.00	0.11	0.13	0.11	0.07	0.07	0.01
s, saturation flow rate [veh/h]	1752	1756	1564	1128	1780	1513	1143	1780	1750	1749
c, Capacity [veh/h]	655	657	585	539	458	389	492	590	580	49
d1, Uniform Delay [s]	15.69	15.69	19.74	13.08	21.74	22.19	14.54	16.81	16.82	33.44
k, delay calibration	0.15	0.15	0.15	0.15	0.15	0.15	0.13	0.15	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.43	0.43	4.04	0.00	0.94	1.45	0.33	0.25	0.26	7.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.34	0.82	0.00	0.44	0.51	0.26	0.21	0.21	0.41
d, Delay for Lane Group [s/veh]	16.12	16.11	23.78	13.09	22.68	23.64	14.86	17.06	17.07	41.07
Lane Group LOS	B	B	C	B	C	C	B	B	B	D
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.43	2.43	7.04	0.02	2.56	2.61	1.17	1.29	1.28	0.43
50th-Percentile Queue Length [ft/ln]	60.69	60.70	175.90	0.43	64.00	65.27	29.19	32.26	31.95	10.67
95th-Percentile Queue Length [veh/ln]	4.37	4.37	11.39	0.03	4.61	4.70	2.10	2.32	2.30	0.77
95th-Percentile Queue Length [ft/ln]	109.25	109.26	284.65	0.77	115.21	117.48	52.54	58.07	57.51	19.21

Movement, Approach, & Intersection Results

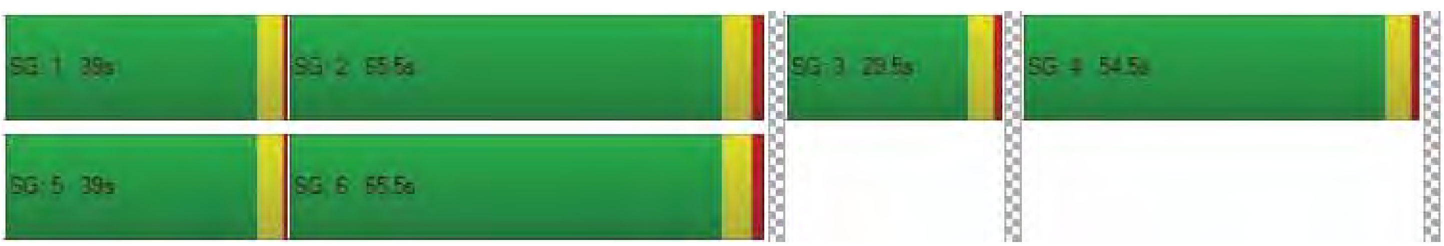
d_M, Delay for Movement [s/veh]	16.12	16.11	23.78	13.09	22.68	23.64	14.86	17.06	17.07	41.07	41.07	41.07
Movement LOS	B	B	C	B	C	C	B	B	B	D	D	D
d_A, Approach Delay [s/veh]		20.09			23.10			16.32			41.07	
Approach LOS		C			C			B			D	
d_I, Intersection Delay [s/veh]	20.22											
Intersection LOS	C											
Intersection V/C	0.500											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1432	1718	1718	716
d_b, Bicycle Delay [s]	2.82	0.69	0.69	14.39
I_b,int, Bicycle LOS Score for Intersection	3.079	1.889	1.867	1.593
Bicycle LOS	C	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: US 31 at Windy Wood Dr

Control Type:	Signalized	Delay (sec / veh):	23.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.640

Intersection Setup

Name	US 31		US 31		Windy Wood Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	40.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	US 31		US 31		Windy Wood Dr	
Base Volume Input [veh/h]	1210	24	43	634	12	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1210	24	43	634	12	36
Peak Hour Factor	0.6190	0.6190	0.8720	0.8720	0.7060	0.7060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	489	10	12	182	4	13
Total Analysis Volume [veh/h]	1955	39	49	727	17	51
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Overlap	Overlap	ProtPerm	Overlap	Permissive	Permissive
Signal Group	2	2	3	2	4	0
Auxiliary Signal Groups	2	2		2,3		
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	20	20	4	20	4	0
Maximum Green [s]	70	70	20	70	20	0
Amber [s]	4.0	4.0	3.0	4.0	3.0	0.0
All red [s]	2.0	2.0	1.5	2.0	1.5	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	8.0	8.0	4.0	8.0	4.0	0.0
Walk [s]	4	4	0	4	0	0
Pedestrian Clearance [s]	16	16	0	16	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	2.5	4.0	2.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	105	105	105	105	105
L, Total Lost Time per Cycle [s]	6.00	6.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	2.50	0.00	2.50
g_i, Effective Green Time [s]	70	70	15	91	6
g / C, Green / Cycle	0.66	0.66	0.14	0.86	0.05
(v / s)_i Volume / Saturation Flow Rate	0.56	0.56	0.03	0.21	0.04
s, saturation flow rate [veh/h]	1780	1768	1695	3389	1633
c, Capacity [veh/h]	1180	1172	238	2915	89
d1, Uniform Delay [s]	13.63	13.75	40.16	1.31	49.23
k, delay calibration	1.18	1.18	0.15	1.18	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.01	16.62	0.60	0.49	17.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.85	0.21	0.25	0.76
d, Delay for Lane Group [s/veh]	29.64	30.37	40.77	1.80	66.52
Lane Group LOS	C	C	D	A	E
Critical Lane Group	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	19.47	19.76	1.13	0.43	2.20
50th-Percentile Queue Length [ft/ln]	486.87	494.10	28.27	10.85	55.12
95th-Percentile Queue Length [veh/ln]	26.71	27.06	2.04	0.78	3.97
95th-Percentile Queue Length [ft/ln]	667.81	676.38	50.89	19.52	99.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.00	30.37	40.77	1.80	66.52	66.52
Movement LOS	C	C	D	A	E	E
d_A, Approach Delay [s/veh]	30.01		4.26		66.52	
Approach LOS	C		A		E	
d_I, Intersection Delay [s/veh]	23.84					
Intersection LOS	C					
Intersection V/C	0.640					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	45.01
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.788
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1328	114	379
d_b, Bicycle Delay [s]	5.95	46.88	34.61
I_b,int, Bicycle LOS Score for Intersection	3.205	2.200	1.672
Bicycle LOS	C	B	A

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 27: US 31 @ Green Leaf Dr

Control Type:	Signalized	Delay (sec / veh):	8.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.426

Intersection Setup

Name	US 31		US 31		Green Leaf Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	US 31		US 31		Green Leaf Dr	
Base Volume Input [veh/h]	589	35	174	321	26	134
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	589	35	174	321	26	134
Peak Hour Factor	0.6580	0.6580	0.9380	0.9380	0.9090	0.9090
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	224	13	46	86	7	37
Total Analysis Volume [veh/h]	895	53	186	342	29	147
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	50	0	30	50	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	32	32	32	32	32	32
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	20	20	4	4
g / C, Green / Cycle	0.37	0.37	0.62	0.62	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.21	0.10	0.02	0.09
s, saturation flow rate [veh/h]	1780	1745	905	3389	1781	1589
c, Capacity [veh/h]	662	650	758	2106	236	211
d1, Uniform Delay [s]	8.74	8.80	3.92	2.59	12.44	13.48
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.46	1.60	0.17	0.04	0.23	4.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.73	0.25	0.16	0.12	0.70
d, Delay for Lane Group [s/veh]	10.20	10.40	4.09	2.63	12.67	17.61
Lane Group LOS	B	B	A	A	B	B
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.62	1.65	0.04	0.01	0.17	1.08
50th-Percentile Queue Length [ft/ln]	40.47	41.19	0.88	0.26	4.18	26.91
95th-Percentile Queue Length [veh/ln]	2.91	2.97	0.06	0.02	0.30	1.94
95th-Percentile Queue Length [ft/ln]	72.84	74.14	1.58	0.47	7.52	48.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.29	10.40	4.09	2.63	12.67	17.61
Movement LOS	B	B	A	A	B	B
d_A, Approach Delay [s/veh]	10.30		3.14		16.80	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	8.70					
Intersection LOS	A					
Intersection V/C	0.426					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3088	3088	1853
d_b, Bicycle Delay [s]	4.79	4.79	0.09
I_b,int, Bicycle LOS Score for Intersection	2.342	1.995	1.560
Bicycle LOS	B	A	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 46: US 31 @ Southlawn School Exit

Control Type:	Two-way stop	Delay (sec / veh):	38.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.053

Intersection Setup

Name	US 31		US 31		Southlawn School Exit	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	US 31		US 31		Southlawn School Exit	
Base Volume Input [veh/h]	822	0	0	466	4	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	2.00	2.00	8.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	822	0	0	466	4	37
Peak Hour Factor	0.6650	1.0000	1.0000	0.8890	0.6830	0.6830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	309	0	0	131	1	14
Total Analysis Volume [veh/h]	1236	0	0	524	6	54
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.05	0.12
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	38.60	14.52
Movement LOS	A			A	E	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.17	0.42
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	4.15	10.61
d_A, Approach Delay [s/veh]	0.00		0.00		16.92	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.56					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 7: US 31 at US 80 WB Ramp

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.290

Intersection Setup

Name	US 31			US 31			US 80			US 80 WB Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	250.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			US 80			US 80 WB Ramp		
Base Volume Input [veh/h]	135	472	0	0	342	171	0	0	0	162	0	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	2.00	2.00	8.00	8.00	2.00	2.00	2.00	5.00	5.00	5.00
Growth Factor	1.0200	1.0200	1.0000	1.0000	1.0200	1.0200	1.0000	1.0000	1.0000	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	5	0	0	3	0	0	0	0	8	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	144	486	0	0	352	174	0	0	0	173	0	41
Peak Hour Factor	0.9090	0.9090	1.0000	1.0000	0.9360	0.9360	1.0000	1.0000	1.0000	0.7770	0.7770	0.7770
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	134	0	0	94	46	0	0	0	56	0	13
Total Analysis Volume [veh/h]	158	535	0	0	376	186	0	0	0	223	0	53
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	7	6	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups		6,7										
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	4	20	0	0	20	0	0	0	0	0	20	0
Maximum Green [s]	20	45	0	0	45	0	0	0	0	0	25	0
Amber [s]	4.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.5	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.5	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes			Yes						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	64	64	64	64		64	64	64
L, Total Lost Time per Cycle [s]	5.00	5.50	5.50	5.50		4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	3.50	3.50		2.50	2.50	2.50
g_i, Effective Green Time [s]	9	34	20	20		20	20	20
g / C, Green / Cycle	0.14	0.53	0.32	0.32		0.31	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.09	0.16	0.08	0.12		0.06	0.06	0.03
s, saturation flow rate [veh/h]	1695	3389	4849	1513		1738	1738	1551
c, Capacity [veh/h]	232	1799	1530	477		543	543	484
d1, Uniform Delay [s]	26.17	8.32	16.17	17.00		16.10	16.10	15.60
k, delay calibration	0.08	0.08	0.15	0.15		0.23	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.62	0.07	0.12	0.74		0.40	0.40	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.30	0.25	0.39		0.21	0.21	0.11
d, Delay for Lane Group [s/veh]	28.80	8.39	16.29	17.74		16.49	16.49	15.81
Lane Group LOS	C	A	B	B		B	B	B
Critical Lane Group	No	Yes	No	Yes		Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.21	1.52	1.17	1.90		1.08	1.08	0.50
50th-Percentile Queue Length [ft/ln]	55.14	37.99	29.35	47.61		27.02	27.02	12.47
95th-Percentile Queue Length [veh/ln]	3.97	2.74	2.11	3.43		1.95	1.95	0.90
95th-Percentile Queue Length [ft/ln]	99.25	68.38	52.84	85.70		48.63	48.63	22.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.80	8.39	0.00	0.00	16.29	17.74	0.00	0.00	0.00	16.49	16.49	15.81
Movement LOS	C	A			B	B				B	B	B
d_A, Approach Delay [s/veh]	13.04			16.77			0.00			16.36		
Approach LOS	B			B			A			B		
d_I, Intersection Delay [s/veh]	15.01											
Intersection LOS	B											
Intersection V/C	0.290											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2203	1416	0	787
d_b, Bicycle Delay [s]	0.33	2.71	31.78	11.69
I_b,int, Bicycle LOS Score for Intersection	2.131	1.869	4.132	2.015
Bicycle LOS	B	A	D	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: US 31 at US 80 EB Ramp

Control Type:	Signalized	Delay (sec / veh):	16.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.567

Intersection Setup

Name	US 31			US 31			US 80 EB Ramp					
Approach	Northbound			Southbound			Eastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			US 80 EB Ramp					
Base Volume Input [veh/h]	0	487	435	8	494	0	119	0	130	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	8.00	8.00	8.00	8.00	2.00	17.00	17.00	17.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0200	1.0200	1.0200	1.0200	1.0000	1.0200	1.0200	1.0200	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	12	0	11	0	0	0	4	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	508	456	8	515	0	121	0	137	0	0	0
Peak Hour Factor	1.0000	0.8970	0.8970	0.8100	0.8100	1.0000	0.7780	0.7780	0.7780	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	142	127	2	159	0	39	0	44	0	0	0
Total Analysis Volume [veh/h]	0	566	508	10	636	0	156	0	176	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	ProtPer	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	1	2	0	0	4	0	0	0	0
Auxiliary Signal Groups					1,2							
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	20	0	4	20	0	0	20	0	0	0	0
Maximum Green [s]	0	45	0	15	45	0	0	25	0	0	0	0
Amber [s]	0.0	4.0	0.0	3.5	4.0	0.0	0.0	3.5	0.0	0.0	0.0	0.0
All red [s]	0.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	4.0	0.0	2.5	4.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.5	0.0	2.5	3.5	0.0	0.0	2.5	0.0	0.0	0.0	0.0
Minimum Recall		Yes		No	Yes			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	R	
C, Cycle Length [s]	75	75	75	75	75	75	
L, Total Lost Time per Cycle [s]	5.50	5.50	4.50	5.50	4.50	4.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.50	3.50	2.50	0.00	2.50	2.50	
g_i, Effective Green Time [s]	31	31	10	45	20	20	
g / C, Green / Cycle	0.41	0.41	0.13	0.60	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.17	0.34	0.01	0.19	0.10	0.13	
s, saturation flow rate [veh/h]	3389	1513	1695	3389	1567	1398	
c, Capacity [veh/h]	1393	622	218	2032	418	373	
d1, Uniform Delay [s]	15.60	19.56	28.62	7.39	22.36	23.03	
k, delay calibration	0.15	0.17	0.08	0.08	0.23	0.23	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.27	4.10	0.06	0.06	1.18	1.98	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.41	0.82	0.05	0.31	0.37	0.47	
d, Delay for Lane Group [s/veh]	15.87	23.66	28.68	7.46	23.54	25.01	
Lane Group LOS	B	C	C	A	C	C	
Critical Lane Group	No	Yes	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	3.00	7.35	0.15	1.88	2.16	2.55	
50th-Percentile Queue Length [ft/ln]	75.07	183.76	3.75	47.08	53.95	63.84	
95th-Percentile Queue Length [veh/ln]	5.41	11.80	0.27	3.39	3.88	4.60	
95th-Percentile Queue Length [ft/ln]	135.13	294.91	6.76	84.75	97.12	114.91	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	15.87	23.66	28.68	7.46	0.00	23.54	23.54	25.01	0.00	0.00	0.00
Movement LOS		B	C	C	A		C	C	C			
d_A, Approach Delay [s/veh]		19.55			7.78			24.32			0.00	
Approach LOS		B			A			C			A	
d_I, Intersection Delay [s/veh]	16.62											
Intersection LOS	B											
Intersection V/C	0.567											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1203	1724	668	0
d_b, Bicycle Delay [s]	5.94	0.71	16.58	37.41
I_b,int, Bicycle LOS Score for Intersection	2.446	2.093	2.107	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: US 31 at Kingswood Rd

Control Type:	Signalized	Delay (sec / veh):	14.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.420

Intersection Setup

Name	US 31			US 31			Winn Dixie Access			Kingswood Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	125.00	100.00	100.00	50.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			Winn Dixie Access			Kingswood Rd		
Base Volume Input [veh/h]	4	894	1	19	581	48	32	2	12	2	2	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	8.00	8.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0200	1.0000	1.0000	1.0200	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	23	0	0	15	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	935	1	19	608	48	32	2	12	2	2	56
Peak Hour Factor	0.8080	0.8080	0.8080	0.9050	0.9050	0.9050	0.6390	0.6390	0.6390	0.8330	0.8330	0.8330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	289	0	5	168	13	13	1	5	1	1	17
Total Analysis Volume [veh/h]	5	1157	1	21	672	53	50	3	19	2	2	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	8	0	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	15	0	4	15	0	0	8	8	0	5	0
Maximum Green [s]	25	45	0	20	45	0	0	30	30	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	0.0
All red [s]	1.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.5	3.5	0.0	3.5	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	3.0	3.5	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	R	C
C, Cycle Length [s]	53	53	53	53	53	53	53	53	53
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	3.50	3.50	0.00	3.50	3.50	3.00	0.00	3.00
g_i, Effective Green Time [s]	29	23	23	29	23	23	5	19	3
g / C, Green / Cycle	0.54	0.43	0.43	0.54	0.44	0.44	0.10	0.36	0.07
(v / s)_i Volume / Saturation Flow Rate	0.01	0.33	0.33	0.06	0.20	0.04	0.03	0.01	0.06
s, saturation flow rate [veh/h]	809	1780	1779	357	3389	1513	1786	1589	1216
c, Capacity [veh/h]	545	761	760	478	1499	669	178	571	149
d1, Uniform Delay [s]	6.04	12.86	12.86	7.71	10.26	8.53	22.11	10.99	24.59
k, delay calibration	0.11	0.15	0.15	0.15	0.15	0.15	0.13	0.11	0.13
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	2.27	2.28	0.05	0.30	0.07	1.12	0.02	2.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.76	0.76	0.04	0.45	0.08	0.30	0.03	0.48
d, Delay for Lane Group [s/veh]	6.05	15.13	15.13	7.76	10.56	8.60	23.23	11.01	27.41
Lane Group LOS	A	B	B	A	B	A	C	B	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.02	4.64	4.64	0.07	2.00	0.27	0.63	0.13	0.95
50th-Percentile Queue Length [ft/ln]	0.42	115.96	115.93	1.86	50.04	6.68	15.80	3.33	23.87
95th-Percentile Queue Length [veh/ln]	0.03	8.17	8.17	0.13	3.60	0.48	1.14	0.24	1.72
95th-Percentile Queue Length [ft/ln]	0.76	204.26	204.22	3.34	90.07	12.03	28.44	6.00	42.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.05	15.13	15.13	7.76	10.56	8.60	23.23	23.23	11.01	27.41	27.41	27.41
Movement LOS	A	B	B	A	B	A	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	15.09			10.35			20.00			27.41		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	13.96											
Intersection LOS	B											
Intersection V/C	0.420											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1704	1704	1136	1136
d_b, Bicycle Delay [s]	0.58	0.58	4.93	4.93
I_b,int, Bicycle LOS Score for Intersection	2.519	2.175	1.678	1.677
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	8	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 10: US 31 at Burnsdale Dr

Control Type:	Signalized	Delay (sec / veh):	6.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.356

Intersection Setup

Name	US 31		US 31		Burnsdale Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	40.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	US 31		US 31		Burnsdale Dr	
Base Volume Input [veh/h]	6	891	563	14	4	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0000	1.0200	1.0200	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	13	9	7	11	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	922	583	21	15	6
Peak Hour Factor	0.8560	0.8560	0.7710	0.7710	0.5000	0.5000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	269	189	7	8	3
Total Analysis Volume [veh/h]	9	1077	756	27	30	12
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Overlap	Overlap	Permissive	Permissive	Permissive
Signal Group	4	2	2	0	3	0
Auxiliary Signal Groups		2,4	2			
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	20	20	0	4	0
Maximum Green [s]	20	70	70	0	20	0
Amber [s]	3.0	4.0	4.0	0.0	3.0	0.0
All red [s]	1.5	2.0	2.0	0.0	1.5	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	4.0	8.0	8.0	0.0	4.0	0.0
Walk [s]	0	4	4	0	0	0
Pedestrian Clearance [s]	0	16	16	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	0.00	4.00	4.00	2.50
g_i, Effective Green Time [s]	19	88	65	65	3
g / C, Green / Cycle	0.18	0.87	0.64	0.64	0.03
(v / s)_i Volume / Saturation Flow Rate	0.01	0.32	0.22	0.02	0.02
s, saturation flow rate [veh/h]	1695	3389	3389	1513	1722
c, Capacity [veh/h]	309	2930	2162	965	56
d1, Uniform Delay [s]	34.27	1.37	8.61	6.81	48.92
k, delay calibration	0.15	1.18	1.18	1.18	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.84	1.06	0.13	24.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.37	0.35	0.03	0.75
d, Delay for Lane Group [s/veh]	34.32	2.22	9.66	6.94	73.11
Lane Group LOS	C	A	A	A	E
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.18	0.54	3.56	0.22	1.43
50th-Percentile Queue Length [ft/ln]	4.54	13.57	88.94	5.43	35.80
95th-Percentile Queue Length [veh/ln]	0.33	0.98	6.40	0.39	2.58
95th-Percentile Queue Length [ft/ln]	8.17	24.42	160.09	9.77	64.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.32	2.22	9.66	6.94	73.11	73.11
Movement LOS	C	A	A	A	E	E
d_A, Approach Delay [s/veh]	2.48		9.57		73.11	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	6.94					
Intersection LOS	A					
Intersection V/C	0.356					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1169	1375	393
d_b, Bicycle Delay [s]	8.80	4.97	32.88
I_b,int, Bicycle LOS Score for Intersection	2.456	2.206	1.629
Bicycle LOS	B	B	A

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: US 31 at Southlawn Dr

Control Type:	Signalized	Delay (sec / veh):	11.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.464

Intersection Setup

Name	US 31		US 31		Southlawn Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	225.00	100.00	350.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	1	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	350.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	US 31		US 31		Southlawn Dr	
Base Volume Input [veh/h]	681	10	64	496	5	203
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0200	1.0000	1.0000	1.0200	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	14	0	0	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	709	10	64	516	5	203
Peak Hour Factor	0.7710	0.7710	0.8750	0.8750	0.7220	0.7220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	230	3	18	147	2	70
Total Analysis Volume [veh/h]	920	13	73	590	7	281
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	15	0	5	15	8	0
Maximum Green [s]	45	0	25	45	30	0
Amber [s]	4.0	0.0	4.0	4.0	4.0	0.0
All red [s]	1.5	0.0	1.0	1.5	1.0	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	5.0	0.0	2.0	5.0	1.5	0.0
Walk [s]	15	0	0	15	5	0
Pedestrian Clearance [s]	18	0	0	18	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	0.0	3.0	3.5	3.0	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	49	49	49	49	49	49
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	0.00	3.50	3.00	3.00
g_i, Effective Green Time [s]	20	20	28	28	10	10
g / C, Green / Cycle	0.40	0.40	0.57	0.57	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.09	0.17	0.00	0.18
s, saturation flow rate [veh/h]	1780	1771	820	3389	1781	1589
c, Capacity [veh/h]	721	717	565	1940	378	337
d1, Uniform Delay [s]	11.70	11.72	5.91	5.40	15.19	18.38
k, delay calibration	0.23	0.23	0.04	0.23	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.09	2.13	0.04	0.19	0.01	2.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.65	0.13	0.30	0.02	0.83
d, Delay for Lane Group [s/veh]	13.80	13.86	5.95	5.58	15.20	20.45
Lane Group LOS	B	B	A	A	B	C
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.25	3.26	0.17	0.84	0.06	2.84
50th-Percentile Queue Length [ft/ln]	81.22	81.48	4.36	21.00	1.38	71.09
95th-Percentile Queue Length [veh/ln]	5.85	5.87	0.31	1.51	0.10	5.12
95th-Percentile Queue Length [ft/ln]	146.19	146.67	7.86	37.80	2.49	127.96

Movement, Approach, & Intersection Results

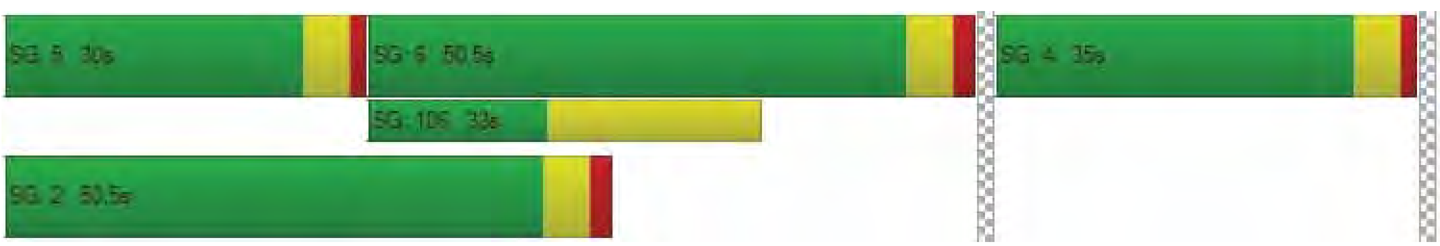
d_M, Delay for Movement [s/veh]	13.83	13.86	5.95	5.58	15.20	20.45
Movement LOS	B	B	A	A	B	C
d_A, Approach Delay [s/veh]	13.83		5.62		20.32	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	11.93					
Intersection LOS	B					
Intersection V/C	0.464					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	19.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	9.02
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.214
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1851	1851	1234
d_b, Bicycle Delay [s]	0.13	0.13	3.57
I_b,int, Bicycle LOS Score for Intersection	2.329	2.107	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: US 31 at Hyundai Blvd

Control Type:	Signalized	Delay (sec / veh):	23.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.610

Intersection Setup

Name	Hyundai Blvd			US 31			US 31			Pyramid Ave		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Hyundai Blvd			US 31			US 31			Pyramid Ave		
Base Volume Input [veh/h]	240	7	246	4	139	281	79	131	5	5	7	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	4.00	4.00	8.00	8.00	8.00	8.00	8.00	8.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	0	3	0	5	3	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	245	7	256	4	145	287	86	137	5	5	7	1
Peak Hour Factor	0.4910	0.4910	0.4910	0.8550	0.8550	0.8550	0.8270	0.8270	0.8270	0.6500	0.6500	0.6500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	125	4	130	1	42	84	26	41	2	2	3	0
Total Analysis Volume [veh/h]	499	14	521	5	170	336	104	166	6	8	11	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split
Signal Group	0	4	0	5	2	0	1	6	0	0	3	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	4	18	0	4	18	0	0	6	0
Maximum Green [s]	0	50	0	35	60	0	35	60	0	0	25	0
Amber [s]	0.0	3.5	0.0	3.5	4.0	0.0	3.5	4.0	0.0	0.0	3.5	0.0
All red [s]	0.0	1.0	0.0	0.5	1.5	0.0	0.5	1.5	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0	0.0	4.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	2.0	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0
Minimum Recall		No		No	Yes		No	Yes			No	
Maximum Recall		No		No	No		No	No			No	
Pedestrian Recall		No		No	No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	C
C, Cycle Length [s]	76	76	76	76	76	76	76	76	76	76
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	5.50	5.50	5.50	5.50	5.50	5.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	0.00	3.50	3.50	0.00	3.50	3.50	2.50
g_i, Effective Green Time [s]	30	30	30	29	20	20	29	25	25	2
g / C, Green / Cycle	0.40	0.40	0.40	0.38	0.27	0.27	0.38	0.33	0.33	0.03
(v / s)_i Volume / Saturation Flow Rate	0.15	0.15	0.33	0.00	0.10	0.22	0.10	0.05	0.05	0.01
s, saturation flow rate [veh/h]	1752	1757	1564	1199	1780	1513	1046	1780	1758	1805
c, Capacity [veh/h]	698	700	623	561	478	406	362	580	573	51
d1, Uniform Delay [s]	16.23	16.22	20.77	14.63	22.65	26.33	17.40	18.27	18.28	36.57
k, delay calibration	0.15	0.15	0.15	0.15	0.15	0.15	0.13	0.15	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.46	0.46	4.28	0.01	0.64	6.05	0.52	0.17	0.17	7.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.37	0.84	0.01	0.36	0.83	0.29	0.15	0.15	0.41
d, Delay for Lane Group [s/veh]	16.69	16.68	25.05	14.64	23.29	32.39	17.92	18.44	18.45	43.83
Lane Group LOS	B	B	C	B	C	C	B	B	B	D
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.06	3.06	8.46	0.05	2.33	5.85	1.11	1.00	1.00	0.48
50th-Percentile Queue Length [ft/ln]	76.47	76.43	211.56	1.23	58.32	146.23	27.67	25.01	24.88	12.01
95th-Percentile Queue Length [veh/ln]	5.51	5.50	13.23	0.09	4.20	9.82	1.99	1.80	1.79	0.86
95th-Percentile Queue Length [ft/ln]	137.65	137.57	330.82	2.21	104.98	245.39	49.81	45.02	44.78	21.62

Movement, Approach, & Intersection Results

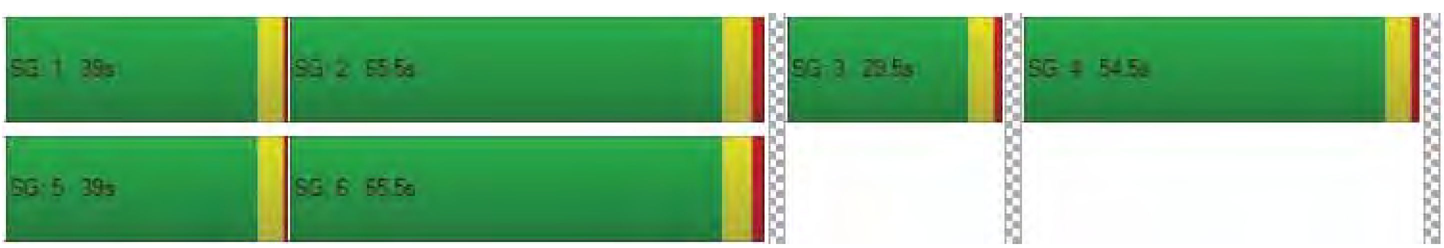
d_M, Delay for Movement [s/veh]	16.68	16.68	25.05	14.64	23.29	32.39	17.92	18.45	18.45	43.83	43.83	43.83
Movement LOS	B	B	C	B	C	C	B	B	B	D	D	D
d_A, Approach Delay [s/veh]	20.90			29.19			18.25			43.83		
Approach LOS	C			C			B			D		
d_I, Intersection Delay [s/veh]	23.06											
Intersection LOS	C											
Intersection V/C	0.610											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1309	1571	1571	655
d_b, Bicycle Delay [s]	4.56	1.76	1.76	17.28
I_b,int, Bicycle LOS Score for Intersection	3.266	1.981	1.787	1.594
Bicycle LOS	C	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: US 31 at Windy Wood Dr

Control Type:	Signalized	Delay (sec / veh):	9.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.368

Intersection Setup

Name	US 31		US 31		Windy Wood Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	40.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	US 31		US 31		Windy Wood Dr	
Base Volume Input [veh/h]	873	16	16	554	18	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0200	1.0000	1.0000	1.0200	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	14	0	0	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	904	16	16	575	18	24
Peak Hour Factor	0.8680	0.8680	0.7660	0.7660	0.8080	0.8080
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	260	5	5	188	6	7
Total Analysis Volume [veh/h]	1041	18	21	751	22	30
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Overlap	Overlap	ProtPerm	Overlap	Permissive	Permissive
Signal Group	2	2	3	2	4	0
Auxiliary Signal Groups	2	2		2,3		
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	20	20	4	20	4	0
Maximum Green [s]	70	70	20	70	20	0
Amber [s]	4.0	4.0	3.0	4.0	3.0	0.0
All red [s]	2.0	2.0	1.5	2.0	1.5	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	8.0	8.0	4.0	8.0	4.0	0.0
Walk [s]	4	4	0	4	0	0
Pedestrian Clearance [s]	16	16	0	16	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	2.5	4.0	2.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	101	101	101	101	101
L, Total Lost Time per Cycle [s]	6.00	6.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	2.50	0.00	2.50
g_i, Effective Green Time [s]	67	67	15	88	4
g / C, Green / Cycle	0.66	0.66	0.15	0.87	0.04
(v / s)_i Volume / Saturation Flow Rate	0.30	0.30	0.01	0.22	0.03
s, saturation flow rate [veh/h]	1780	1769	1695	3389	1665
c, Capacity [veh/h]	1179	1172	250	2946	69
d1, Uniform Delay [s]	8.20	8.22	37.11	1.11	47.86
k, delay calibration	1.18	1.18	0.15	1.18	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.92	2.97	0.20	0.49	20.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.45	0.08	0.25	0.75
d, Delay for Lane Group [s/veh]	11.12	11.19	37.31	1.60	68.56
Lane Group LOS	B	B	D	A	E
Critical Lane Group	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	5.37	5.39	0.45	0.24	1.69
50th-Percentile Queue Length [ft/ln]	134.30	134.83	11.14	5.94	42.37
95th-Percentile Queue Length [veh/ln]	9.17	9.20	0.80	0.43	3.05
95th-Percentile Queue Length [ft/ln]	229.32	230.05	20.05	10.68	76.26

Movement, Approach, & Intersection Results

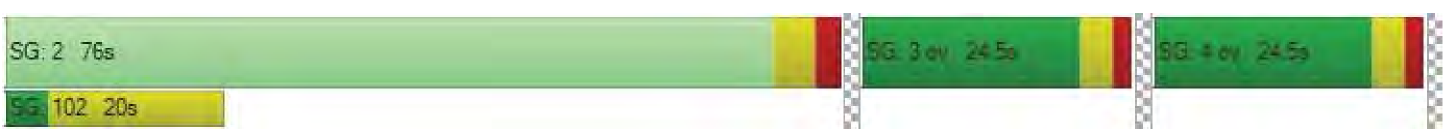
d_M, Delay for Movement [s/veh]	11.15	11.19	37.31	1.60	68.56	68.56
Movement LOS	B	B	D	A	E	E
d_A, Approach Delay [s/veh]	11.15		2.57		68.56	
Approach LOS	B		A		E	
d_I, Intersection Delay [s/veh]	9.22					
Intersection LOS	A					
Intersection V/C	0.368					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	42.68
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.760
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1390	119	397
d_b, Bicycle Delay [s]	4.68	44.54	32.34
I_b,int, Bicycle LOS Score for Intersection	2.433	2.197	1.645
Bicycle LOS	B	B	A

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: US 31 @ Green Leaf Dr/Site Access

Control Type:	Signalized	Delay (sec / veh):	9.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.436

Intersection Setup

Name	US 31			US 31			Site Access			Green Leaf Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	250.00	100.00	100.00	250.00	100.00	325.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			Site Access			Green Leaf Dr		
Base Volume Input [veh/h]	0	412	30	246	219	0	0	0	0	12	0	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	60.00	8.00	8.00	8.00	8.00	60.00	60.00	60.00	60.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0200	1.0000	1.0000	1.0200	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	2	0	0	2	9	13	0	7	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	422	30	246	225	9	13	0	7	12	0	138
Peak Hour Factor	0.8000	0.6140	0.6140	0.7960	0.7960	0.8000	0.9000	0.9000	0.9000	0.7810	0.8000	0.7810
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	172	12	77	71	3	4	0	2	4	0	44
Total Analysis Volume [veh/h]	9	687	49	309	283	11	14	0	8	15	0	177
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	4	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	5	5	0
Maximum Green [s]	30	50	0	30	50	0	0	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	5	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	R
C, Cycle Length [s]	32	32	32	32	32	32	32	32	32
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	10	10	19	15	15	5	5	5
g / C, Green / Cycle	0.60	0.30	0.30	0.60	0.46	0.46	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.01	0.21	0.21	0.29	0.08	0.01	0.04	0.01	0.11
s, saturation flow rate [veh/h]	627	1780	1739	1073	3389	849	600	1707	1589
c, Capacity [veh/h]	634	542	530	847	1552	389	277	487	243
d1, Uniform Delay [s]	2.65	9.73	9.73	4.15	5.10	4.74	11.72	11.52	12.86
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	1.55	1.59	0.26	0.06	0.03	0.12	0.03	4.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.69	0.69	0.36	0.18	0.03	0.08	0.03	0.73
d, Delay for Lane Group [s/veh]	2.66	11.28	11.33	4.41	5.16	4.77	11.84	11.55	17.02
Lane Group LOS	A	B	B	A	A	A	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.00	1.44	1.41	0.06	0.20	0.02	0.11	0.08	1.24
50th-Percentile Queue Length [ft/ln]	0.04	35.99	35.36	1.55	4.99	0.42	2.82	1.91	30.98
95th-Percentile Queue Length [veh/ln]	0.00	2.59	2.55	0.11	0.36	0.03	0.20	0.14	2.23
95th-Percentile Queue Length [ft/ln]	0.07	64.78	63.65	2.79	8.98	0.75	5.07	3.43	55.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	2.66	11.30	11.33	4.41	5.16	4.77	11.84	11.84	11.84	11.55	11.55	17.02
Movement LOS	A	B	B	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]		11.20			4.77			11.84			16.60	
Approach LOS		B			A			B			B	
d_I, Intersection Delay [s/veh]	9.39											
Intersection LOS	A											
Intersection V/C	0.436											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3154	3154	1892	1892
d_b, Bicycle Delay [s]	5.28	5.28	0.05	0.05
I_b,int, Bicycle LOS Score for Intersection	2.174	2.057	1.596	1.876
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 46: US 31 @ Southlawn School Exit

Control Type:	Two-way stop	Delay (sec / veh):	24.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.069

Intersection Setup

Name	US 31		US 31		Southlawn School Exit	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	US 31		US 31		Southlawn School Exit	
Base Volume Input [veh/h]	548	0	0	452	11	118
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	2.00	2.00	8.00	2.00	2.00
Growth Factor	1.0200	1.0000	1.0000	1.0200	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	14	0	0	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	573	0	0	471	11	118
Peak Hour Factor	0.6650	1.0000	1.0000	0.9340	0.8060	0.8060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	215	0	0	126	3	37
Total Analysis Volume [veh/h]	862	0	0	504	14	146
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.07	0.26
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	24.12	13.43
Movement LOS	A			A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.22	1.01
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	5.53	25.20
d_A, Approach Delay [s/veh]	0.00		0.00		14.36	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.51					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 7: US 31 at US 80 WB Ramp

Control Type:	Signalized	Delay (sec / veh):	16.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.410

Intersection Setup

Name	US 31			US 31			US 80			US 80 WB Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	250.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			US 80			US 80 WB Ramp		
Base Volume Input [veh/h]	203	702	0	0	377	196	0	0	0	239	0	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	2.00	2.00	8.00	8.00	2.00	2.00	2.00	5.00	5.00	5.00
Growth Factor	1.0200	1.0200	1.0000	1.0000	1.0200	1.0200	1.0000	1.0000	1.0000	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	3	0	0	3	0	0	0	0	7	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	211	719	0	0	388	200	0	0	0	251	0	29
Peak Hour Factor	0.8410	0.8410	1.0000	1.0000	0.9420	0.9420	1.0000	1.0000	1.0000	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	214	0	0	103	53	0	0	0	85	0	10
Total Analysis Volume [veh/h]	251	855	0	0	412	212	0	0	0	342	0	40
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	7	6	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups		6,7										
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	4	20	0	0	20	0	0	0	0	0	20	0
Maximum Green [s]	20	45	0	0	45	0	0	0	0	0	25	0
Amber [s]	4.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.5	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.5	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes			Yes						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	69	69	69	69		69	69	69
L, Total Lost Time per Cycle [s]	5.00	5.50	5.50	5.50		4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	3.50	3.50		2.50	2.50	2.50
g_i, Effective Green Time [s]	14	39	20	20		20	20	20
g / C, Green / Cycle	0.20	0.56	0.29	0.29		0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.15	0.25	0.08	0.14		0.10	0.10	0.03
s, saturation flow rate [veh/h]	1695	3389	4849	1513		1738	1738	1551
c, Capacity [veh/h]	338	1911	1416	442		505	505	451
d1, Uniform Delay [s]	25.90	8.75	18.84	20.05		19.20	19.20	17.77
k, delay calibration	0.08	0.08	0.15	0.15		0.23	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.42	0.12	0.16	1.15		0.84	0.84	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.45	0.29	0.48		0.34	0.34	0.09
d, Delay for Lane Group [s/veh]	28.32	8.87	19.01	21.20		20.04	20.04	17.95
Lane Group LOS	C	A	B	C		C	C	B
Critical Lane Group	No	Yes	No	Yes		Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.68	2.76	1.51	2.59		2.01	2.01	0.43
50th-Percentile Queue Length [ft/ln]	92.05	68.95	37.87	64.87		50.20	50.20	10.79
95th-Percentile Queue Length [veh/ln]	6.63	4.96	2.73	4.67		3.61	3.61	0.78
95th-Percentile Queue Length [ft/ln]	165.69	124.12	68.16	116.76		90.36	90.36	19.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.32	8.87	0.00	0.00	19.01	21.20	0.00	0.00	0.00	20.04	20.04	17.95
Movement LOS	C	A			B	C				C	C	B
d_A, Approach Delay [s/veh]	13.29			19.75			0.00			19.82		
Approach LOS	B			B			A			B		
d_I, Intersection Delay [s/veh]	16.38											
Intersection LOS	B											
Intersection V/C	0.410											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft^2/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft^2/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2038	1310	0	728
d_b, Bicycle Delay [s]	0.01	4.09	34.35	13.90
I_b,int, Bicycle LOS Score for Intersection	2.472	1.903	4.132	2.190
Bicycle LOS	B	A	D	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: US 31 at US 80 EB Ramp

Control Type:	Signalized	Delay (sec / veh):	17.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.537

Intersection Setup

Name	US 31			US 31			US 80 EB Ramp					
Approach	Northbound			Southbound			Eastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			US 80 EB Ramp					
Base Volume Input [veh/h]	0	729	905	22	609	0	154	2	151	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	8.00	8.00	8.00	8.00	2.00	17.00	17.00	17.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0200	1.0200	1.0200	1.0200	1.0000	1.0200	1.0200	1.0200	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	7	7	0	10	0	0	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	751	930	22	631	0	157	2	157	0	0	0
Peak Hour Factor	1.0000	0.8440	0.8440	0.9170	0.9170	1.0000	0.7450	0.7450	0.7450	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	0.2000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	222	55	6	172	0	53	1	53	0	0	0
Total Analysis Volume [veh/h]	0	890	220	24	688	0	211	3	211	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	ProtPer	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	1	2	0	0	4	0	0	0	0
Auxiliary Signal Groups					1,2							
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	20	0	4	20	0	0	20	0	0	0	0
Maximum Green [s]	0	45	0	15	45	0	0	25	0	0	0	0
Amber [s]	0.0	4.0	0.0	3.5	4.0	0.0	0.0	3.5	0.0	0.0	0.0	0.0
All red [s]	0.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	4.0	0.0	2.5	4.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.5	0.0	2.5	3.5	0.0	0.0	2.5	0.0	0.0	0.0	0.0
Minimum Recall		Yes		No	Yes			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	R	
C, Cycle Length [s]	71	71	71	71	71	71	
L, Total Lost Time per Cycle [s]	5.50	5.50	4.50	5.50	4.50	4.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.50	3.50	2.50	0.00	2.50	2.50	
g_i, Effective Green Time [s]	26	26	10	41	20	20	
g / C, Green / Cycle	0.36	0.36	0.15	0.58	0.28	0.28	
(v / s)_i Volume / Saturation Flow Rate	0.26	0.15	0.01	0.20	0.14	0.15	
s, saturation flow rate [veh/h]	3389	1513	1695	3389	1568	1398	
c, Capacity [veh/h]	1237	552	249	1951	444	396	
d1, Uniform Delay [s]	19.32	16.67	26.10	7.99	21.05	21.41	
k, delay calibration	0.15	0.15	0.08	0.08	0.23	0.23	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.14	0.66	0.12	0.08	1.74	2.38	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.72	0.40	0.10	0.35	0.48	0.53	
d, Delay for Lane Group [s/veh]	20.46	17.34	26.22	8.07	22.79	23.79	
Lane Group LOS	C	B	C	A	C	C	
Critical Lane Group	Yes	No	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	5.57	2.39	0.33	2.08	2.82	2.87	
50th-Percentile Queue Length [ft/ln]	139.15	59.81	8.23	52.00	70.39	71.75	
95th-Percentile Queue Length [veh/ln]	9.43	4.31	0.59	3.74	5.07	5.17	
95th-Percentile Queue Length [ft/ln]	235.87	107.66	14.81	93.60	126.70	129.15	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	20.46	17.34	26.22	8.07	0.00	22.79	22.79	23.79	0.00	0.00	0.00
Movement LOS		C	B	C	A		C	C	C			
d_A, Approach Delay [s/veh]	19.84			8.68			23.29			0.00		
Approach LOS	B			A			C			A		
d_I, Intersection Delay [s/veh]	16.96											
Intersection LOS	B											
Intersection V/C	0.537											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1274	1827	708	0
d_b, Bicycle Delay [s]	4.65	0.27	14.74	35.31
I_b,int, Bicycle LOS Score for Intersection	2.475	2.147	2.261	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: US 31 at Kingswood Rd

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.549

Intersection Setup

Name	US 31			US 31			Winn Dixie Access			Kingswood Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	125.00	100.00	100.00	50.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			Winn Dixie Access			Kingswood Rd		
Base Volume Input [veh/h]	17	1053	7	46	639	123	111	4	34	8	5	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	8.00	8.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0200	1.0000	1.0000	1.0200	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	14	0	0	13	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	1088	7	46	665	123	111	4	34	8	5	59
Peak Hour Factor	0.7650	0.7650	0.7650	0.8780	0.8780	0.8780	0.8470	0.8470	0.8470	0.8570	0.8570	0.8570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	356	2	13	189	35	33	1	10	2	1	17
Total Analysis Volume [veh/h]	22	1422	9	52	757	140	131	5	40	9	6	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	8	0	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	15	0	4	15	0	0	8	8	0	5	0
Maximum Green [s]	25	45	0	20	45	0	0	30	30	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	0.0
All red [s]	1.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.5	3.5	0.0	3.5	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	3.0	3.5	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	R	C
C, Cycle Length [s]	69	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	3.50	3.50	0.00	3.50	3.50	3.00	0.00	3.00
g_i, Effective Green Time [s]	41	33	33	41	34	34	8	24	5
g / C, Green / Cycle	0.59	0.48	0.48	0.59	0.50	0.50	0.11	0.35	0.07
(v / s)_i Volume / Saturation Flow Rate	0.03	0.40	0.40	0.18	0.22	0.09	0.08	0.03	0.06
s, saturation flow rate [veh/h]	709	1780	1776	281	3389	1513	1784	1589	1497
c, Capacity [veh/h]	490	860	858	385	1694	756	200	553	163
d1, Uniform Delay [s]	6.52	15.42	15.42	10.79	11.11	9.51	29.42	15.04	31.58
k, delay calibration	0.11	0.20	0.20	0.15	0.15	0.15	0.13	0.11	0.13
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	4.04	4.06	0.22	0.26	0.17	4.80	0.05	3.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.83	0.83	0.14	0.45	0.19	0.68	0.07	0.51
d, Delay for Lane Group [s/veh]	6.56	19.45	19.48	11.01	11.37	9.68	34.21	15.09	34.58
Lane Group LOS	A	B	B	B	B	A	C	B	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.10	8.55	8.55	0.25	2.99	0.96	2.38	0.41	1.48
50th-Percentile Queue Length [ft/ln]	2.49	213.81	213.65	6.29	74.84	24.07	59.40	10.27	37.10
95th-Percentile Queue Length [veh/ln]	0.18	13.35	13.34	0.45	5.39	1.73	4.28	0.74	2.67
95th-Percentile Queue Length [ft/ln]	4.48	333.71	333.51	11.32	134.70	43.33	106.92	18.49	66.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.56	19.47	19.48	11.01	11.37	9.68	34.21	34.21	15.09	34.58	34.58	34.58
Movement LOS	A	B	B	B	B	A	C	C	B	C	C	C
d_A, Approach Delay [s/veh]		19.27			11.10			29.87			34.58	
Approach LOS		B			B			C			C	
d_I, Intersection Delay [s/veh]						17.54						
Intersection LOS						B						
Intersection V/C						0.549						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1307	1307	871	871
d_b, Bicycle Delay [s]	4.14	4.14	10.97	10.97
I_b,int, Bicycle LOS Score for Intersection	2.758	2.343	1.850	1.698
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	8	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 10: US 31 at Burnsdale Dr

Control Type:	Signalized	Delay (sec / veh):	10.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.426

Intersection Setup

Name	US 31		US 31		Burnsdale Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	40.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	US 31		US 31		Burnsdale Dr	
Base Volume Input [veh/h]	16	1220	659	27	37	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0000	1.0200	1.0200	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	8	8	6	6	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	1252	680	33	43	20
Peak Hour Factor	0.6310	0.6310	0.8580	0.8580	0.7240	0.7240
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	496	198	10	15	7
Total Analysis Volume [veh/h]	27	1984	793	38	59	28
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Overlap	Overlap	Permissive	Permissive	Permissive
Signal Group	4	2	2	0	3	0
Auxiliary Signal Groups		2,4	2			
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	20	20	0	4	0
Maximum Green [s]	20	70	70	0	20	0
Amber [s]	3.0	4.0	4.0	0.0	3.0	0.0
All red [s]	1.5	2.0	2.0	0.0	1.5	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	4.0	8.0	8.0	0.0	4.0	0.0
Walk [s]	0	4	4	0	0	0
Pedestrian Clearance [s]	0	16	16	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	112	112	112	112	112
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	0.00	4.00	4.00	2.50
g_i, Effective Green Time [s]	20	94	70	70	7
g / C, Green / Cycle	0.18	0.84	0.62	0.62	0.07
(v / s)_i Volume / Saturation Flow Rate	0.02	0.59	0.23	0.03	0.05
s, saturation flow rate [veh/h]	1695	3389	3389	1513	1714
c, Capacity [veh/h]	302	2849	2111	942	113
d1, Uniform Delay [s]	38.59	3.44	10.44	8.20	51.67
k, delay calibration	0.15	1.18	1.18	1.18	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.18	3.35	1.21	0.19	14.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.70	0.38	0.04	0.77
d, Delay for Lane Group [s/veh]	38.77	6.79	11.65	8.39	66.17
Lane Group LOS	D	A	B	A	E
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.62	4.66	4.60	0.37	2.86
50th-Percentile Queue Length [ft/ln]	15.53	116.38	114.95	9.23	71.59
95th-Percentile Queue Length [veh/ln]	1.12	8.19	8.11	0.66	5.15
95th-Percentile Queue Length [ft/ln]	27.95	204.83	202.86	16.62	128.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.77	6.79	11.65	8.39	66.17	66.17
Movement LOS	D	A	B	A	E	E
d_A, Approach Delay [s/veh]	7.22		11.50		66.17	
Approach LOS	A		B		E	
d_I, Intersection Delay [s/veh]	10.18					
Intersection LOS	B					
Intersection V/C	0.426					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1059	1246	356
d_b, Bicycle Delay [s]	12.43	7.98	37.95
I_b,int, Bicycle LOS Score for Intersection	3.219	2.245	1.703
Bicycle LOS	C	B	A

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: US 31 at Southlawn Dr

Control Type:	Signalized	Delay (sec / veh):	14.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.562

Intersection Setup

Name	US 31		US 31		Southlawn Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	225.00	100.00	350.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	1	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	350.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	US 31		US 31		Southlawn Dr	
Base Volume Input [veh/h]	783	16	131	494	8	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0200	1.0000	1.0000	1.0200	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	9	0	0	9	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	808	16	131	513	8	181
Peak Hour Factor	0.6510	0.6510	0.9770	0.9770	0.6850	0.6850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	310	6	34	131	3	66
Total Analysis Volume [veh/h]	1241	25	134	525	12	264
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	15	0	5	15	8	0
Maximum Green [s]	45	0	25	45	30	0
Amber [s]	4.0	0.0	4.0	4.0	4.0	0.0
All red [s]	1.5	0.0	1.0	1.5	1.0	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	5.0	0.0	2.0	5.0	1.5	0.0
Walk [s]	15	0	0	15	5	0
Pedestrian Clearance [s]	18	0	0	18	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	0.0	3.0	3.5	3.0	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	62	62	62	62	62	62
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	0.00	3.50	3.00	3.00
g_i, Effective Green Time [s]	30	30	40	40	12	12
g / C, Green / Cycle	0.48	0.48	0.64	0.64	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.36	0.36	0.20	0.15	0.01	0.17
s, saturation flow rate [veh/h]	1780	1768	658	3389	1781	1589
c, Capacity [veh/h]	862	856	469	2158	348	310
d1, Uniform Delay [s]	12.89	12.94	8.28	4.88	20.38	24.28
k, delay calibration	0.23	0.23	0.04	0.23	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.61	2.69	0.12	0.12	0.01	2.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.74	0.29	0.24	0.03	0.85
d, Delay for Lane Group [s/veh]	15.50	15.63	8.40	5.00	20.40	26.84
Lane Group LOS	B	B	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.90	5.94	0.41	0.88	0.14	3.72
50th-Percentile Queue Length [ft/ln]	147.54	148.44	10.32	22.11	3.38	93.12
95th-Percentile Queue Length [veh/ln]	9.89	9.93	0.74	1.59	0.24	6.70
95th-Percentile Queue Length [ft/ln]	247.14	248.35	18.58	39.79	6.08	167.61

Movement, Approach, & Intersection Results

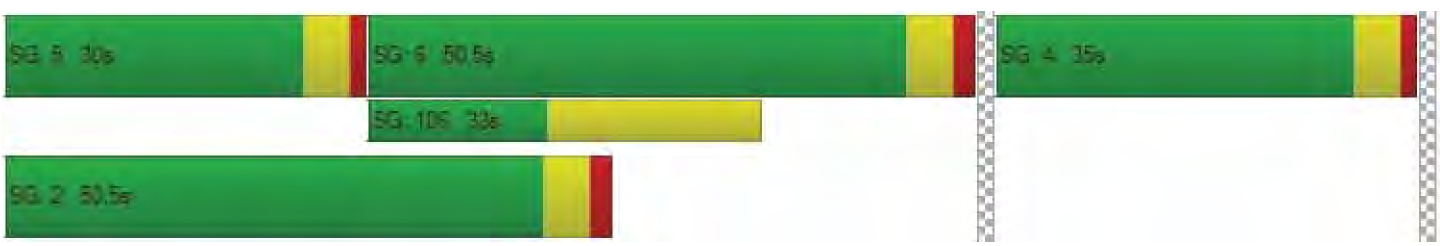
d_M, Delay for Movement [s/veh]	15.56	15.63	8.40	5.00	20.40	26.84
Movement LOS	B	B	A	A	C	C
d_A, Approach Delay [s/veh]	15.57		5.69		26.56	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	13.99					
Intersection LOS	B					
Intersection V/C	0.562					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	19.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	15.09
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.302
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1443	1443	962
d_b, Bicycle Delay [s]	2.42	2.42	8.41
I_b,int, Bicycle LOS Score for Intersection	2.604	2.103	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: US 31 at Hyundai Blvd

Control Type:	Signalized	Delay (sec / veh):	20.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.515

Intersection Setup

Name	Hyundai Blvd			US 31			US 31			Pyramid Ave		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Hyundai Blvd			US 31			US 31			Pyramid Ave		
Base Volume Input [veh/h]	244	6	270	2	175	172	112	208	11	6	3	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	4.00	4.00	8.00	8.00	8.00	8.00	8.00	8.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	4	0	2	0	3	3	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	249	6	279	2	181	175	117	215	11	6	3	3
Peak Hour Factor	0.5650	0.5650	0.5650	0.8730	0.8730	0.8730	0.8900	0.8900	0.8900	0.6000	0.6000	0.6000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	3	123	1	52	50	33	60	3	3	1	1
Total Analysis Volume [veh/h]	441	11	494	2	207	200	131	242	12	10	5	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split
Signal Group	0	4	0	5	2	0	1	6	0	0	3	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	4	18	0	4	18	0	0	6	0
Maximum Green [s]	0	50	0	35	60	0	35	60	0	0	25	0
Amber [s]	0.0	3.5	0.0	3.5	4.0	0.0	3.5	4.0	0.0	0.0	3.5	0.0
All red [s]	0.0	1.0	0.0	0.5	1.5	0.0	0.5	1.5	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0	0.0	4.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	2.0	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0
Minimum Recall		No		No	Yes		No	Yes			No	
Maximum Recall		No		No	No		No	No			No	
Pedestrian Recall		No		No	No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	C
C, Cycle Length [s]	71	71	71	71	71	71	71	71	71	71
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	5.50	5.50	5.50	5.50	5.50	5.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	0.00	3.50	3.50	0.00	3.50	3.50	2.50
g_i, Effective Green Time [s]	27	27	27	28	18	18	28	23	23	2
g / C, Green / Cycle	0.38	0.38	0.38	0.39	0.25	0.25	0.39	0.33	0.33	0.03
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.32	0.00	0.12	0.13	0.11	0.07	0.07	0.01
s, saturation flow rate [veh/h]	1752	1756	1564	1120	1780	1513	1143	1780	1751	1749
c, Capacity [veh/h]	671	673	599	526	448	380	482	584	575	49
d1, Uniform Delay [s]	15.64	15.63	19.91	13.58	22.70	23.11	15.16	17.40	17.40	34.22
k, delay calibration	0.15	0.15	0.15	0.15	0.15	0.15	0.13	0.15	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.42	0.42	4.13	0.00	1.06	1.60	0.36	0.26	0.27	7.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.34	0.82	0.00	0.46	0.53	0.27	0.22	0.22	0.41
d, Delay for Lane Group [s/veh]	16.06	16.05	24.04	13.59	23.76	24.72	15.52	17.66	17.68	41.94
Lane Group LOS	B	B	C	B	C	C	B	B	B	D
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.51	2.51	7.45	0.02	2.78	2.77	1.27	1.39	1.37	0.44
50th-Percentile Queue Length [ft/ln]	62.72	62.71	186.31	0.45	69.38	69.26	31.77	34.65	34.32	10.91
95th-Percentile Queue Length [veh/ln]	4.52	4.51	11.93	0.03	5.00	4.99	2.29	2.49	2.47	0.79
95th-Percentile Queue Length [ft/ln]	112.89	112.87	298.24	0.80	124.89	124.66	57.19	62.37	61.77	19.64

Movement, Approach, & Intersection Results

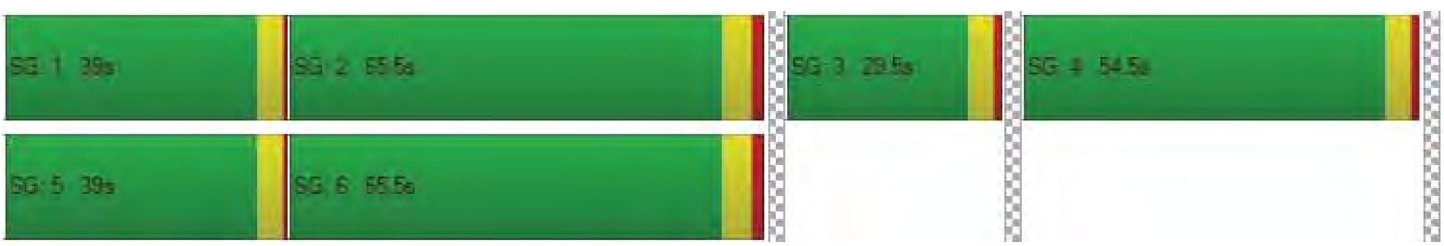
d_M, Delay for Movement [s/veh]	16.05	16.05	24.04	13.59	23.76	24.72	15.52	17.67	17.68	41.94	41.94	41.94
Movement LOS	B	B	C	B	C	C	B	B	B	D	D	D
d_A, Approach Delay [s/veh]	20.22			24.18			16.94			41.94		
Approach LOS	C			C			B			D		
d_I, Intersection Delay [s/veh]	20.67											
Intersection LOS	C											
Intersection V/C	0.515											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1399	1679	1679	700
d_b, Bicycle Delay [s]	3.22	0.92	0.92	15.10
I_b,int, Bicycle LOS Score for Intersection	3.121	1.897	1.877	1.593
Bicycle LOS	C	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: US 31 at Windy Wood Dr

Control Type:	Signalized	Delay (sec / veh):	26.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.656

Intersection Setup

Name	US 31		US 31		Windy Wood Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	40.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	US 31		US 31		Windy Wood Dr	
Base Volume Input [veh/h]	1210	24	43	634	12	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0200	1.0000	1.0000	1.0200	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	9	0	0	9	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1243	24	43	656	12	36
Peak Hour Factor	0.6190	0.6190	0.8720	0.8720	0.7060	0.7060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	502	10	12	188	4	13
Total Analysis Volume [veh/h]	2008	39	49	752	17	51
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Overlap	Overlap	ProtPerm	Overlap	Permissive	Permissive
Signal Group	2	2	3	2	4	0
Auxiliary Signal Groups	2	2		2,3		
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	20	20	4	20	4	0
Maximum Green [s]	70	70	20	70	20	0
Amber [s]	4.0	4.0	3.0	4.0	3.0	0.0
All red [s]	2.0	2.0	1.5	2.0	1.5	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	8.0	8.0	4.0	8.0	4.0	0.0
Walk [s]	4	4	0	4	0	0
Pedestrian Clearance [s]	16	16	0	16	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	2.5	4.0	2.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	106	106	106	106	106
L, Total Lost Time per Cycle [s]	6.00	6.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	2.50	0.00	2.50
g_i, Effective Green Time [s]	70	70	15	91	6
g / C, Green / Cycle	0.66	0.66	0.14	0.86	0.05
(v / s)_i Volume / Saturation Flow Rate	0.58	0.58	0.03	0.22	0.04
s, saturation flow rate [veh/h]	1780	1768	1695	3389	1633
c, Capacity [veh/h]	1176	1168	243	2916	89
d1, Uniform Delay [s]	14.37	14.50	40.03	1.32	49.42
k, delay calibration	1.18	1.18	0.15	1.18	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.51	19.24	0.57	0.51	17.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.88	0.20	0.26	0.76
d, Delay for Lane Group [s/veh]	32.88	33.74	40.61	1.83	66.74
Lane Group LOS	C	C	D	A	E
Critical Lane Group	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	21.43	21.76	1.13	0.46	2.21
50th-Percentile Queue Length [ft/ln]	535.69	544.11	28.25	11.40	55.32
95th-Percentile Queue Length [veh/ln]	29.02	29.42	2.03	0.82	3.98
95th-Percentile Queue Length [ft/ln]	725.47	735.38	50.86	20.52	99.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.30	33.74	40.61	1.83	66.74	66.74
Movement LOS	C	C	D	A	E	E
d_A, Approach Delay [s/veh]	33.31		4.20		66.74	
Approach LOS	C		A		E	
d_I, Intersection Delay [s/veh]	26.09					
Intersection LOS	C					
Intersection V/C	0.656					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	45.21
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.788
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1323	113	378
d_b, Bicycle Delay [s]	6.06	47.08	34.80
I_b,int, Bicycle LOS Score for Intersection	3.248	2.220	1.672
Bicycle LOS	C	B	A

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 27: US 31 @ Green Leaf Dr/Site Access

Control Type:	Signalized	Delay (sec / veh):	9.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.429

Intersection Setup

Name	US 31			US 31			Site Access			Green Leaf Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	250.00	100.00	100.00	250.00	100.00	325.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			Site Access			Green Leaf Dr		
Base Volume Input [veh/h]	0	589	35	174	321	0	0	0	0	26	0	134
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	60.00	8.00	8.00	8.00	8.00	60.00	60.00	60.00	60.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0200	1.0000	1.0000	1.0200	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	1	0	0	2	8	8	0	5	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	602	35	174	329	8	8	0	5	26	0	134
Peak Hour Factor	0.8000	0.6580	0.6580	0.9380	0.9380	0.8000	0.9000	0.9000	0.9000	0.9090	0.8000	0.9090
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	229	13	46	88	3	2	0	1	7	0	37
Total Analysis Volume [veh/h]	6	915	53	186	351	10	9	0	6	29	0	147
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	4	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	5	5	0
Maximum Green [s]	30	50	0	30	50	0	0	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	5	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	R
C, Cycle Length [s]	33	33	33	33	33	33	33	33	33
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	12	12	20	16	16	4	4	4
g / C, Green / Cycle	0.62	0.38	0.38	0.62	0.49	0.49	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.01	0.27	0.27	0.21	0.10	0.01	0.03	0.02	0.09
s, saturation flow rate [veh/h]	591	1780	1746	895	3389	849	580	1719	1589
c, Capacity [veh/h]	618	669	656	752	1671	419	252	447	210
d1, Uniform Delay [s]	2.38	8.79	8.79	3.95	4.69	4.26	12.56	12.54	13.59
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	1.56	1.59	0.17	0.06	0.02	0.10	0.06	4.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.73	0.73	0.25	0.21	0.02	0.06	0.06	0.70
d, Delay for Lane Group [s/veh]	2.38	10.35	10.38	4.12	4.75	4.28	12.66	12.60	17.80
Lane Group LOS	A	B	B	A	A	A	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.00	1.70	1.67	0.04	0.22	0.01	0.08	0.16	1.09
50th-Percentile Queue Length [ft/ln]	0.03	42.51	41.83	0.89	5.41	0.33	2.07	4.03	27.23
95th-Percentile Queue Length [veh/ln]	0.00	3.06	3.01	0.06	0.39	0.02	0.15	0.29	1.96
95th-Percentile Queue Length [ft/ln]	0.05	76.52	75.30	1.60	9.74	0.59	3.73	7.25	49.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	2.38	10.36	10.38	4.12	4.75	4.28	12.66	12.66	12.66	12.60	12.60	17.80
Movement LOS	A	B	B	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	10.32			4.53			12.66			16.94		
Approach LOS	B			A			B			B		
d_I, Intersection Delay [s/veh]	9.17											
Intersection LOS	A											
Intersection V/C	0.429											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3067	3067	1840	1840
d_b, Bicycle Delay [s]	4.64	4.64	0.10	0.10
I_b,int, Bicycle LOS Score for Intersection	2.363	2.011	1.584	1.850
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 46: US 31 @ Southlawn School Exit

Control Type:	Two-way stop	Delay (sec / veh):	41.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.057

Intersection Setup

Name	US 31		US 31		Southlawn School Exit	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	US 31		US 31		Southlawn School Exit	
Base Volume Input [veh/h]	822	0	0	466	4	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	2.00	2.00	8.00	2.00	2.00
Growth Factor	1.0200	1.0000	1.0000	1.0200	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	9	0	0	9	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	847	0	0	484	4	37
Peak Hour Factor	0.6650	1.0000	1.0000	0.8890	0.6830	0.6830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	318	0	0	136	1	14
Total Analysis Volume [veh/h]	1274	0	0	544	6	54
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.06	0.13
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	41.31	14.83
Movement LOS	A			A	E	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.18	0.44
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	4.47	10.96
d_A, Approach Delay [s/veh]	0.00		0.00		17.48	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.56					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 7: US 31 at US 80 WB Ramp

Control Type:	Signalized	Delay (sec / veh):	16.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.359

Intersection Setup

Name	US 31			US 31			US 80			US 80 WB Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	250.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			US 80			US 80 WB Ramp		
Base Volume Input [veh/h]	135	472	0	0	342	171	0	0	0	162	0	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	2.00	2.00	8.00	8.00	2.00	2.00	2.00	5.00	5.00	5.00
Growth Factor	1.2200	1.2200	1.0000	1.0000	1.2200	1.2200	1.0000	1.0000	1.0000	1.2200	1.2200	1.2200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	5	0	0	3	0	0	0	0	41	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	180	581	0	0	420	209	0	0	0	239	0	49
Peak Hour Factor	0.9090	0.9090	1.0000	1.0000	0.9360	0.9360	1.0000	1.0000	1.0000	0.8000	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	160	0	0	112	56	0	0	0	75	0	15
Total Analysis Volume [veh/h]	198	639	0	0	449	223	0	0	0	299	0	61
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	7	6	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups		6,7										
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	4	20	0	0	20	0	0	0	0	0	20	0
Maximum Green [s]	20	45	0	0	45	0	0	0	0	0	25	0
Amber [s]	4.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.5	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.5	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes			Yes						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	66	66	66	66		66	66	66
L, Total Lost Time per Cycle [s]	5.00	5.50	5.50	5.50		4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	3.50	3.50		2.50	2.50	2.50
g_i, Effective Green Time [s]	10	36	20	20		20	20	20
g / C, Green / Cycle	0.16	0.54	0.31	0.31		0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.12	0.19	0.09	0.15		0.09	0.09	0.04
s, saturation flow rate [veh/h]	1695	3389	4849	1513		1738	1738	1551
c, Capacity [veh/h]	273	1841	1484	463		529	529	472
d1, Uniform Delay [s]	26.17	8.44	17.42	18.54		17.37	17.37	16.53
k, delay calibration	0.08	0.08	0.15	0.15		0.23	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.75	0.08	0.16	1.11		0.62	0.62	0.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.35	0.30	0.48		0.28	0.28	0.13
d, Delay for Lane Group [s/veh]	28.92	8.53	17.58	19.64		17.99	17.99	16.79
Lane Group LOS	C	A	B	B		B	B	B
Critical Lane Group	No	Yes	No	Yes		Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.84	1.90	1.52	2.51		1.58	1.58	0.61
50th-Percentile Queue Length [ft/ln]	70.89	47.42	37.94	62.84		39.42	39.42	15.28
95th-Percentile Queue Length [veh/ln]	5.10	3.41	2.73	4.52		2.84	2.84	1.10
95th-Percentile Queue Length [ft/ln]	127.61	85.36	68.29	113.11		70.95	70.95	27.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.92	8.53	0.00	0.00	17.58	19.64	0.00	0.00	0.00	17.99	17.99	16.79
Movement LOS	C	A			B	B				B	B	B
d_A, Approach Delay [s/veh]	13.35			18.26			0.00			17.78		
Approach LOS	B			B			A			B		
d_I, Intersection Delay [s/veh]	15.97											
Intersection LOS	B											
Intersection V/C	0.359											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2137	1374	0	763
d_b, Bicycle Delay [s]	0.15	3.21	32.76	12.53
I_b,int, Bicycle LOS Score for Intersection	2.250	1.929	4.132	2.154
Bicycle LOS	B	A	D	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: US 31 at US 80 EB Ramp

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.697

Intersection Setup

Name	US 31			US 31			US 80 EB Ramp					
Approach	Northbound			Southbound			Eastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			US 80 EB Ramp					
Base Volume Input [veh/h]	0	487	435	8	494	0	119	0	130	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	8.00	8.00	8.00	8.00	2.00	17.00	17.00	17.00	2.00	2.00	2.00
Growth Factor	1.0000	1.2200	1.2200	1.2200	1.2200	1.0000	1.2200	1.2200	1.2200	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	45	0	44	0	0	0	13	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	614	576	10	647	0	145	0	172	0	0	0
Peak Hour Factor	1.0000	0.8970	0.8970	0.8100	0.8100	1.0000	0.8000	0.8000	0.8000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	171	161	3	200	0	45	0	54	0	0	0
Total Analysis Volume [veh/h]	0	685	642	12	799	0	181	0	215	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	ProtPer	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	1	2	0	0	4	0	0	0	0
Auxiliary Signal Groups					1,2							
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	20	0	4	20	0	0	20	0	0	0	0
Maximum Green [s]	0	45	0	15	45	0	0	25	0	0	0	0
Amber [s]	0.0	4.0	0.0	3.5	4.0	0.0	0.0	3.5	0.0	0.0	0.0	0.0
All red [s]	0.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	4.0	0.0	2.5	4.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.5	0.0	2.5	3.5	0.0	0.0	2.5	0.0	0.0	0.0	0.0
Minimum Recall		Yes		No	Yes			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	R	
C, Cycle Length [s]	88	88	88	88	88	88	
L, Total Lost Time per Cycle [s]	5.50	5.50	4.50	5.50	4.50	4.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.50	3.50	2.50	0.00	2.50	2.50	
g_i, Effective Green Time [s]	42	42	12	58	20	20	
g / C, Green / Cycle	0.47	0.47	0.14	0.66	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.20	0.42	0.01	0.24	0.12	0.15	
s, saturation flow rate [veh/h]	3389	1513	1695	3389	1567	1398	
c, Capacity [veh/h]	1603	716	230	2237	355	317	
d1, Uniform Delay [s]	15.36	21.29	33.20	6.68	29.85	31.20	
k, delay calibration	0.15	0.34	0.08	0.16	0.23	0.23	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.26	11.93	0.07	0.14	2.41	5.34	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.43	0.90	0.05	0.36	0.51	0.68	
d, Delay for Lane Group [s/veh]	15.62	33.22	33.26	6.82	32.26	36.54	
Lane Group LOS	B	C	C	A	C	D	
Critical Lane Group	No	Yes	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	4.07	12.80	0.22	2.54	3.38	4.38	
50th-Percentile Queue Length [ft/ln]	101.76	319.93	5.43	63.45	84.58	109.38	
95th-Percentile Queue Length [veh/ln]	7.33	18.66	0.39	4.57	6.09	7.81	
95th-Percentile Queue Length [ft/ln]	183.16	466.60	9.77	114.22	152.24	195.14	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	15.62	33.22	33.26	6.82	0.00	32.26	32.26	36.54	0.00	0.00	0.00
Movement LOS		B	C	C	A		C	C	D			
d_A, Approach Delay [s/veh]	24.13			7.21			34.58			0.00		
Approach LOS	C			A			C			A		
d_I, Intersection Delay [s/veh]	20.35											
Intersection LOS	C											
Intersection V/C	0.697											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1021	1463	567	0
d_b, Bicycle Delay [s]	10.57	3.18	22.63	44.09
I_b,int, Bicycle LOS Score for Intersection	2.654	2.229	2.213	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: US 31 at Kingswood Rd

Control Type:	Signalized	Delay (sec / veh):	14.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.484

Intersection Setup

Name	US 31			US 31			Winn Dixie Access			Kingswood Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	125.00	100.00	100.00	50.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			Winn Dixie Access			Kingswood Rd		
Base Volume Input [veh/h]	4	894	1	19	581	48	32	2	12	2	2	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	8.00	8.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.2200	1.0000	1.0000	1.2200	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	65	0	0	57	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1156	1	19	766	48	32	2	12	2	2	56
Peak Hour Factor	0.8080	0.8080	0.8080	0.9050	0.9050	0.9050	0.8000	0.8000	0.8000	0.8330	0.8330	0.8330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	358	0	5	212	13	10	1	4	1	1	17
Total Analysis Volume [veh/h]	5	1431	1	21	846	53	40	3	15	2	2	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	8	0	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	15	0	4	15	0	0	8	8	0	5	0
Maximum Green [s]	25	45	0	20	45	0	0	30	30	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	0.0
All red [s]	1.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.5	3.5	0.0	3.5	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	3.0	3.5	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	R	C
C, Cycle Length [s]	61	61	61	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	3.50	3.50	0.00	3.50	3.50	3.00	0.00	3.00
g_i, Effective Green Time [s]	36	30	30	36	31	31	5	19	4
g / C, Green / Cycle	0.60	0.50	0.50	0.60	0.51	0.51	0.08	0.32	0.06
(v / s)_i Volume / Saturation Flow Rate	0.01	0.40	0.40	0.08	0.25	0.04	0.02	0.01	0.05
s, saturation flow rate [veh/h]	690	1780	1779	270	3389	1513	1787	1589	1365
c, Capacity [veh/h]	495	887	886	410	1737	776	148	500	146
d1, Uniform Delay [s]	5.65	12.82	12.82	8.60	9.63	7.49	26.22	14.42	28.25
k, delay calibration	0.11	0.16	0.16	0.15	0.15	0.15	0.13	0.11	0.13
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	2.60	2.60	0.07	0.30	0.05	1.29	0.02	3.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.81	0.81	0.05	0.49	0.07	0.29	0.03	0.49
d, Delay for Lane Group [s/veh]	5.66	15.41	15.42	8.67	9.93	7.54	27.51	14.44	31.27
Lane Group LOS	A	B	B	A	A	A	C	B	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.02	6.52	6.52	0.08	2.70	0.27	0.62	0.14	1.11
50th-Percentile Queue Length [ft/ln]	0.43	162.99	162.98	1.90	67.56	6.69	15.44	3.45	27.78
95th-Percentile Queue Length [veh/ln]	0.03	10.71	10.71	0.14	4.86	0.48	1.11	0.25	2.00
95th-Percentile Queue Length [ft/ln]	0.77	267.68	267.66	3.42	121.61	12.04	27.80	6.21	50.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.66	15.42	15.42	8.67	9.93	7.54	27.51	27.51	14.44	31.27	31.27	31.27
Movement LOS	A	B	B	A	A	A	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	15.38			9.76			24.13			31.27		
Approach LOS	B			A			C			C		
d_I, Intersection Delay [s/veh]	13.96											
Intersection LOS	B											
Intersection V/C	0.484											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1482	1482	988	988
d_b, Bicycle Delay [s]	2.03	2.03	7.77	7.77
I_b,int, Bicycle LOS Score for Intersection	2.745	2.319	1.655	1.677
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	8	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 10: US 31 at Burnsdale Dr

Control Type:	Signalized	Delay (sec / veh):	6.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.418

Intersection Setup

Name	US 31		US 31		Burnsdale Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	40.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	US 31		US 31		Burnsdale Dr	
Base Volume Input [veh/h]	6	891	563	14	4	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0000	1.2200	1.2200	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	55	51	7	11	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	1142	738	21	15	6
Peak Hour Factor	0.8560	0.8560	0.8000	0.8000	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	334	231	7	5	2
Total Analysis Volume [veh/h]	9	1334	923	26	19	8
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Overlap	Overlap	Permissive	Permissive	Permissive
Signal Group	4	2	2	0	3	0
Auxiliary Signal Groups		2,4	2			
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	20	20	0	4	0
Maximum Green [s]	20	70	70	0	20	0
Amber [s]	3.0	4.0	4.0	0.0	3.0	0.0
All red [s]	1.5	2.0	2.0	0.0	1.5	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	4.0	8.0	8.0	0.0	4.0	0.0
Walk [s]	0	4	4	0	0	0
Pedestrian Clearance [s]	0	16	16	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	106	106	106	106	106
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	0.00	4.00	4.00	2.50
g_i, Effective Green Time [s]	20	93	69	69	2
g / C, Green / Cycle	0.19	0.88	0.65	0.65	0.02
(v / s)_i Volume / Saturation Flow Rate	0.01	0.39	0.27	0.02	0.02
s, saturation flow rate [veh/h]	1695	3389	3389	1513	1720
c, Capacity [veh/h]	314	2979	2208	986	38
d1, Uniform Delay [s]	35.46	1.28	8.88	6.57	51.63
k, delay calibration	0.15	1.18	1.18	1.18	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	1.16	1.38	0.12	29.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.45	0.42	0.03	0.71
d, Delay for Lane Group [s/veh]	35.51	2.44	10.26	6.69	80.84
Lane Group LOS	D	A	B	A	F
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.19	0.48	4.67	0.21	1.02
50th-Percentile Queue Length [ft/ln]	4.74	11.95	116.87	5.24	25.53
95th-Percentile Queue Length [veh/ln]	0.34	0.86	8.22	0.38	1.84
95th-Percentile Queue Length [ft/ln]	8.54	21.51	205.52	9.42	45.95

Movement, Approach, & Intersection Results

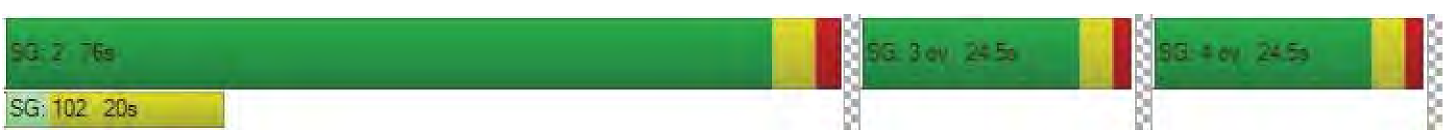
d_M, Delay for Movement [s/veh]	35.51	2.44	10.26	6.69	80.84	80.84
Movement LOS	D	A	B	A	F	F
d_A, Approach Delay [s/veh]	2.66		10.16		80.84	
Approach LOS	A		B		F	
d_I, Intersection Delay [s/veh]	6.64					
Intersection LOS	A					
Intersection V/C	0.418					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1121	1318	377
d_b, Bicycle Delay [s]	10.27	6.17	34.98
I_b,int, Bicycle LOS Score for Intersection	2.668	2.343	1.604
Bicycle LOS	B	B	A

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: US 31 at Southlawn Dr

Control Type:	Signalized	Delay (sec / veh):	11.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.498

Intersection Setup

Name	US 31		US 31		Southlawn Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	225.00	100.00	350.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	1	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	350.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	US 31		US 31		Southlawn Dr	
Base Volume Input [veh/h]	681	10	64	496	5	203
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.2200	1.0000	1.0000	1.2200	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	56	0	0	52	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	887	10	64	657	5	203
Peak Hour Factor	0.8000	0.8000	0.8750	0.8750	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	277	3	18	188	2	63
Total Analysis Volume [veh/h]	1109	13	73	751	6	254
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	15	0	5	15	8	0
Maximum Green [s]	45	0	25	45	30	0
Amber [s]	4.0	0.0	4.0	4.0	4.0	0.0
All red [s]	1.5	0.0	1.0	1.5	1.0	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	5.0	0.0	2.0	5.0	1.5	0.0
Walk [s]	15	0	0	15	5	0
Pedestrian Clearance [s]	18	0	0	18	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	0.0	3.0	3.5	3.0	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	54	54	54	54	54	54
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	0.00	3.50	3.00	3.00
g_i, Effective Green Time [s]	25	25	33	33	10	10
g / C, Green / Cycle	0.46	0.46	0.61	0.61	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.32	0.32	0.10	0.22	0.00	0.16
s, saturation flow rate [veh/h]	1780	1773	711	3389	1781	1589
c, Capacity [veh/h]	817	814	513	2080	342	305
d1, Uniform Delay [s]	11.55	11.57	6.20	5.18	17.70	20.99
k, delay calibration	0.23	0.23	0.04	0.23	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.20	2.24	0.05	0.23	0.01	2.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.69	0.14	0.36	0.02	0.83
d, Delay for Lane Group [s/veh]	13.74	13.80	6.25	5.41	17.70	23.26
Lane Group LOS	B	B	A	A	B	C
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.21	4.23	0.18	1.14	0.06	2.98
50th-Percentile Queue Length [ft/ln]	105.36	105.70	4.40	28.39	1.41	74.48
95th-Percentile Queue Length [veh/ln]	7.58	7.60	0.32	2.04	0.10	5.36
95th-Percentile Queue Length [ft/ln]	189.54	190.00	7.91	51.10	2.53	134.06

Movement, Approach, & Intersection Results

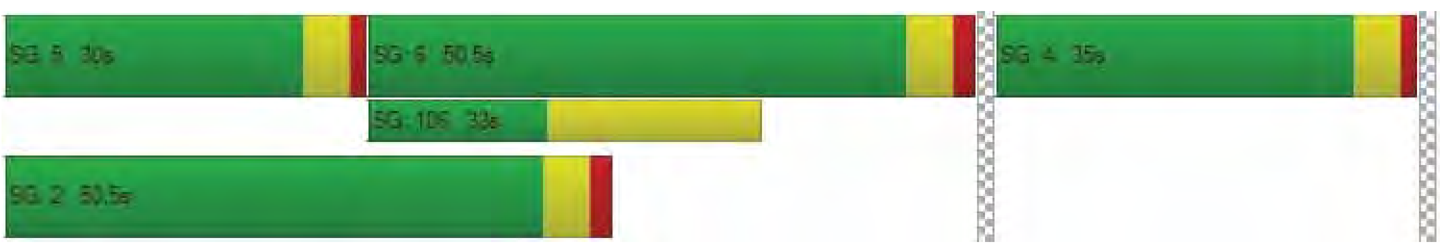
d_M, Delay for Movement [s/veh]	13.77	13.80	6.25	5.41	17.70	23.26
Movement LOS	B	B	A	A	B	C
d_A, Approach Delay [s/veh]	13.77		5.48		23.14	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	11.78					
Intersection LOS	B					
Intersection V/C	0.498					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	19.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	11.29
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.221
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1670	1670	1113
d_b, Bicycle Delay [s]	0.73	0.73	5.29
I_b,int, Bicycle LOS Score for Intersection	2.485	2.239	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: US 31 at Hyundai Blvd

Control Type:	Signalized	Delay (sec / veh):	33.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.726

Intersection Setup

Name	Hyundai Blvd			US 31			US 31			Pyramid Ave		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Hyundai Blvd			US 31			US 31			Pyramid Ave		
Base Volume Input [veh/h]	240	7	246	4	139	281	79	131	5	5	7	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	4.00	4.00	8.00	8.00	8.00	8.00	8.00	8.00	2.00	2.00	2.00
Growth Factor	1.2200	1.2200	1.2200	1.2200	1.2200	1.2200	1.2200	1.2200	1.2200	1.2200	1.2200	1.2200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	7	0	11	0	7	11	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	293	9	307	5	181	343	103	171	6	6	9	1
Peak Hour Factor	0.4910	0.4910	0.4910	0.8550	0.8550	0.8550	0.8270	0.8270	0.8270	0.8000	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	149	5	156	1	53	100	31	52	2	2	3	0
Total Analysis Volume [veh/h]	597	18	625	6	212	401	125	207	7	8	11	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split
Signal Group	0	4	0	5	2	0	1	6	0	0	3	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	4	18	0	4	18	0	0	6	0
Maximum Green [s]	0	50	0	35	60	0	35	60	0	0	25	0
Amber [s]	0.0	3.5	0.0	3.5	4.0	0.0	3.5	4.0	0.0	0.0	3.5	0.0
All red [s]	0.0	1.0	0.0	0.5	1.5	0.0	0.5	1.5	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0	0.0	4.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	2.0	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0
Minimum Recall		No		No	Yes		No	Yes			No	
Maximum Recall		No		No	No		No	No			No	
Pedestrian Recall		No		No	No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	C
C, Cycle Length [s]	107	107	107	107	107	107	107	107	107	107
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	5.50	5.50	5.50	5.50	5.50	5.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	0.00	3.50	3.50	0.00	3.50	3.50	2.50
g_i, Effective Green Time [s]	46	46	46	43	32	32	43	39	39	3
g / C, Green / Cycle	0.43	0.43	0.43	0.41	0.30	0.30	0.41	0.36	0.36	0.03
(v / s)_i Volume / Saturation Flow Rate	0.18	0.17	0.40	0.01	0.12	0.27	0.13	0.06	0.06	0.01
s, saturation flow rate [veh/h]	1752	1757	1564	1147	1780	1513	967	1780	1760	1818
c, Capacity [veh/h]	759	761	677	520	535	455	298	645	637	46
d1, Uniform Delay [s]	20.80	20.79	28.56	19.00	29.65	35.54	24.40	23.11	23.11	51.26
k, delay calibration	0.15	0.15	0.37	0.15	0.15	0.15	0.13	0.15	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.50	0.49	16.06	0.01	0.68	7.95	1.14	0.17	0.17	8.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.40	0.92	0.01	0.40	0.88	0.42	0.17	0.17	0.44
d, Delay for Lane Group [s/veh]	21.30	21.28	44.63	19.01	30.33	43.48	25.54	23.28	23.29	60.25
Lane Group LOS	C	C	D	B	C	D	C	C	C	E
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.29	5.28	17.49	0.09	4.23	10.36	1.99	1.78	1.77	0.64
50th-Percentile Queue Length [ft/ln]	132.17	132.08	437.19	2.16	105.68	258.96	49.68	44.52	44.25	15.99
95th-Percentile Queue Length [veh/ln]	9.06	9.05	24.35	0.16	7.60	15.64	3.58	3.21	3.19	1.15
95th-Percentile Queue Length [ft/ln]	226.44	226.32	608.65	3.88	189.98	390.91	89.42	80.14	79.65	28.79

Movement, Approach, & Intersection Results

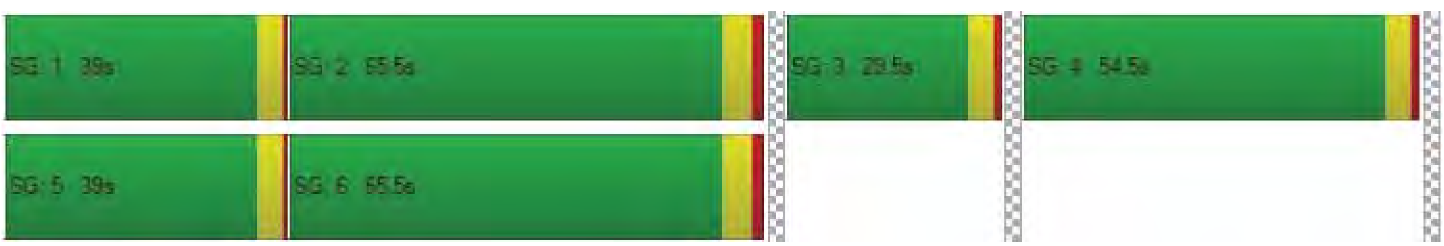
d_M, Delay for Movement [s/veh]	21.29	21.28	44.63	19.01	30.33	43.48	25.54	23.28	23.29	60.25	60.25	60.25
Movement LOS	C	C	D	B	C	D	C	C	C	E	E	E
d_A, Approach Delay [s/veh]	33.05			38.74			24.11			60.25		
Approach LOS	C			D			C			E		
d_I, Intersection Delay [s/veh]	33.52											
Intersection LOS	C											
Intersection V/C	0.726											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	939	1126	1126	469
d_b, Bicycle Delay [s]	15.00	10.17	10.17	31.21
I_b,int, Bicycle LOS Score for Intersection	3.606	2.070	1.839	1.593
Bicycle LOS	D	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: US 31 at Windy Wood Dr

Control Type:	Signalized	Delay (sec / veh):	10.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.449

Intersection Setup

Name	US 31		US 31		Windy Wood Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	40.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	US 31		US 31		Windy Wood Dr	
Base Volume Input [veh/h]	873	16	16	554	18	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.2200	1.0000	1.0000	1.2200	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	56	0	0	52	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1121	16	16	728	18	24
Peak Hour Factor	0.8680	0.8680	0.8000	0.8000	0.8080	0.8080
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	323	5	5	228	6	7
Total Analysis Volume [veh/h]	1291	18	20	910	22	30
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Overlap	Overlap	ProtPerm	Overlap	Permissive	Permissive
Signal Group	2	2	3	2	4	0
Auxiliary Signal Groups	2	2		2,3		
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	20	20	4	20	4	0
Maximum Green [s]	70	70	20	70	20	0
Amber [s]	4.0	4.0	3.0	4.0	3.0	0.0
All red [s]	2.0	2.0	1.5	2.0	1.5	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	8.0	8.0	4.0	8.0	4.0	0.0
Walk [s]	4	4	0	4	0	0
Pedestrian Clearance [s]	16	16	0	16	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	2.5	4.0	2.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	106	106	106	106	106
L, Total Lost Time per Cycle [s]	6.00	6.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	2.50	0.00	2.50
g_i, Effective Green Time [s]	69	69	17	92	4
g / C, Green / Cycle	0.66	0.66	0.16	0.87	0.04
(v / s)_i Volume / Saturation Flow Rate	0.37	0.37	0.01	0.27	0.03
s, saturation flow rate [veh/h]	1780	1771	1695	3389	1665
c, Capacity [veh/h]	1168	1162	273	2961	69
d1, Uniform Delay [s]	9.90	9.93	37.68	1.15	50.19
k, delay calibration	1.18	1.18	0.15	1.18	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.55	4.62	0.16	0.64	21.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.56	0.07	0.31	0.76
d, Delay for Lane Group [s/veh]	14.45	14.55	37.84	1.79	71.24
Lane Group LOS	B	B	D	A	E
Critical Lane Group	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	8.21	8.25	0.44	0.34	1.77
50th-Percentile Queue Length [ft/ln]	205.26	206.13	10.96	8.51	44.26
95th-Percentile Queue Length [veh/ln]	12.91	12.95	0.79	0.61	3.19
95th-Percentile Queue Length [ft/ln]	322.74	323.86	19.73	15.32	79.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.50	14.55	37.84	1.79	71.24	71.24
Movement LOS	B	B	D	A	E	E
d_A, Approach Delay [s/veh]	14.50		2.57		71.24	
Approach LOS	B		A		E	
d_I, Intersection Delay [s/veh]	10.95					
Intersection LOS	B					
Intersection V/C	0.449					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	45.12
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.761
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1325	114	379
d_b, Bicycle Delay [s]	6.01	46.99	34.71
I_b,int, Bicycle LOS Score for Intersection	2.640	2.327	1.645
Bicycle LOS	B	B	A

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 27: US 31 @ Green Leaf Dr/Site Access

Control Type:	Signalized	Delay (sec / veh):	9.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.472

Intersection Setup

Name	US 31			US 31			Site Access			Green Leaf Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	250.00	100.00	100.00	250.00	100.00	325.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			Site Access			Green Leaf Dr		
Base Volume Input [veh/h]	0	412	30	246	219	0	0	0	0	12	0	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	60.00	8.00	8.00	8.00	8.00	60.00	60.00	60.00	60.00	2.00	2.00	2.00
Growth Factor	1.0000	1.2200	1.0000	1.0000	1.2200	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	2	0	0	2	51	55	0	17	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	505	30	246	269	51	55	0	17	12	0	138
Peak Hour Factor	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.9000	0.8000	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	158	9	77	84	16	15	0	5	4	0	43
Total Analysis Volume [veh/h]	21	631	38	308	336	64	61	0	19	15	0	173
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	4	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	5	5	0
Maximum Green [s]	30	50	0	30	50	0	0	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	5	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	R
C, Cycle Length [s]	30	30	30	30	30	30	30	30	30
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	9	9	18	13	13	5	5	5
g / C, Green / Cycle	0.59	0.29	0.29	0.59	0.43	0.43	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.04	0.19	0.19	0.28	0.10	0.08	0.16	0.01	0.11
s, saturation flow rate [veh/h]	593	1780	1745	1116	3389	849	488	1702	1589
c, Capacity [veh/h]	617	511	501	882	1454	364	281	491	238
d1, Uniform Delay [s]	2.70	9.55	9.55	3.89	5.51	5.37	13.42	11.11	12.36
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	1.46	1.50	0.24	0.08	0.23	0.55	0.02	4.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.66	0.66	0.35	0.23	0.18	0.28	0.03	0.73
d, Delay for Lane Group [s/veh]	2.72	11.01	11.05	4.12	5.59	5.60	13.97	11.13	16.58
Lane Group LOS	A	B	B	A	A	A	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.00	1.23	1.21	0.06	0.25	0.11	0.46	0.07	1.15
50th-Percentile Queue Length [ft/ln]	0.10	30.65	30.22	1.45	6.24	2.74	11.60	1.79	28.87
95th-Percentile Queue Length [veh/ln]	0.01	2.21	2.18	0.10	0.45	0.20	0.84	0.13	2.08
95th-Percentile Queue Length [ft/ln]	0.17	55.17	54.40	2.60	11.23	4.93	20.89	3.23	51.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	2.72	11.03	11.05	4.12	5.59	5.60	13.97	13.97	13.97	11.13	11.13	16.58
Movement LOS	A	B	B	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	10.78			4.95			13.97			16.14		
Approach LOS	B			A			B			B		
d_I, Intersection Delay [s/veh]	9.06											
Intersection LOS	A											
Intersection V/C	0.472											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3297	3297	1978	1978
d_b, Bicycle Delay [s]	6.38	6.38	0.00	0.00
I_b,int, Bicycle LOS Score for Intersection	2.129	2.144	1.692	1.870
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 46: US 31 @ Southlawn School Exit

Control Type:	Two-way stop	Delay (sec / veh):	28.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.082

Intersection Setup

Name	US 31		US 31		Southlawn School Exit	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	US 31		US 31		Southlawn School Exit	
Base Volume Input [veh/h]	548	0	0	452	11	118
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	2.00	2.00	8.00	2.00	2.00
Growth Factor	1.2200	1.0000	1.0000	1.2200	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	56	0	0	52	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	725	0	0	603	11	118
Peak Hour Factor	0.8000	1.0000	1.0000	0.9340	0.8060	0.8060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	227	0	0	161	3	37
Total Analysis Volume [veh/h]	906	0	0	646	14	146
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.08	0.26
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	28.05	13.81
Movement LOS	A			A	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.27	1.05
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	6.64	26.30
d_A, Approach Delay [s/veh]	0.00		0.00		15.05	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.41					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 7: US 31 at US 80 WB Ramp

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.491

Intersection Setup

Name	US 31			US 31			US 80			US 80 WB Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	250.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			US 80			US 80 WB Ramp		
Base Volume Input [veh/h]	203	702	0	0	377	196	0	0	0	239	0	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	2.00	2.00	8.00	8.00	2.00	2.00	2.00	5.00	5.00	5.00
Growth Factor	1.2200	1.2200	1.0000	1.0000	1.2200	1.2200	1.0000	1.0000	1.0000	1.2200	1.2200	1.2200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	10	3	0	0	3	0	0	0	0	28	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	258	859	0	0	463	239	0	0	0	320	0	34
Peak Hour Factor	0.8410	0.8410	1.0000	1.0000	0.9420	0.9420	1.0000	1.0000	1.0000	0.8000	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	77	255	0	0	123	63	0	0	0	100	0	11
Total Analysis Volume [veh/h]	307	1021	0	0	492	254	0	0	0	400	0	43
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	7	6	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups		6,7										
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	4	20	0	0	20	0	0	0	0	0	20	0
Maximum Green [s]	20	45	0	0	45	0	0	0	0	0	25	0
Amber [s]	4.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.5	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.5	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes			Yes						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	72	72	72	72		72	72	72
L, Total Lost Time per Cycle [s]	5.00	5.50	5.50	5.50		4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	3.50	3.50		2.50	2.50	2.50
g_i, Effective Green Time [s]	17	42	20	20		20	20	20
g / C, Green / Cycle	0.23	0.58	0.28	0.28		0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.18	0.30	0.10	0.17		0.12	0.12	0.03
s, saturation flow rate [veh/h]	1695	3389	4849	1513		1738	1738	1551
c, Capacity [veh/h]	392	1970	1360	424		485	485	433
d1, Uniform Delay [s]	25.88	8.99	20.65	22.30		21.05	21.05	19.16
k, delay calibration	0.13	0.08	0.15	0.15		0.23	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	4.28	0.16	0.23	1.93		1.20	1.20	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.52	0.36	0.60		0.41	0.41	0.10
d, Delay for Lane Group [s/veh]	30.16	9.15	20.89	24.23		22.25	22.25	19.37
Lane Group LOS	C	A	C	C		C	C	B
Critical Lane Group	No	Yes	No	Yes		Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.86	3.53	1.99	3.51		2.59	2.59	0.50
50th-Percentile Queue Length [ft/ln]	121.59	88.21	49.78	87.71		64.85	64.85	12.54
95th-Percentile Queue Length [veh/ln]	8.48	6.35	3.58	6.32		4.67	4.67	0.90
95th-Percentile Queue Length [ft/ln]	212.01	158.77	89.60	157.88		116.73	116.73	22.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.16	9.15	0.00	0.00	20.89	24.23	0.00	0.00	0.00	22.25	22.25	19.37
Movement LOS	C	A			C	C				C	C	B
d_A, Approach Delay [s/veh]	14.01			22.02			0.00			21.97		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	17.78											
Intersection LOS	B											
Intersection V/C	0.491											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1956	1257	0	698
d_b, Bicycle Delay [s]	0.02	4.94	35.79	15.16
I_b,int, Bicycle LOS Score for Intersection	2.655	1.970	4.132	2.291
Bicycle LOS	B	A	D	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: US 31 at US 80 EB Ramp

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.627

Intersection Setup

Name	US 31			US 31			US 80 EB Ramp					
Approach	Northbound			Southbound			Eastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			US 80 EB Ramp					
Base Volume Input [veh/h]	0	729	905	22	609	0	154	2	151	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	8.00	8.00	8.00	8.00	2.00	17.00	17.00	17.00	2.00	2.00	2.00
Growth Factor	1.0000	1.2200	1.2200	1.2200	1.2200	1.0000	1.2200	1.2200	1.2200	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	13	26	0	31	0	0	0	9	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	902	1130	27	774	0	188	2	193	0	0	0
Peak Hour Factor	1.0000	0.8440	0.8440	0.9170	0.9170	1.0000	0.8000	0.8000	0.8000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	0.2000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	267	67	7	211	0	59	1	60	0	0	0
Total Analysis Volume [veh/h]	0	1069	268	29	844	0	235	3	241	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	ProtPer	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	1	2	0	0	4	0	0	0	0
Auxiliary Signal Groups					1,2							
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	20	0	4	20	0	0	20	0	0	0	0
Maximum Green [s]	0	45	0	15	45	0	0	25	0	0	0	0
Amber [s]	0.0	4.0	0.0	3.5	4.0	0.0	0.0	3.5	0.0	0.0	0.0	0.0
All red [s]	0.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	4.0	0.0	2.5	4.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.5	0.0	2.5	3.5	0.0	0.0	2.5	0.0	0.0	0.0	0.0
Minimum Recall		Yes		No	Yes			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	R	
C, Cycle Length [s]	81	81	81	81	81	81	
L, Total Lost Time per Cycle [s]	5.50	5.50	4.50	5.50	4.50	4.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.50	3.50	2.50	0.00	2.50	2.50	
g_i, Effective Green Time [s]	34	34	13	51	20	20	
g / C, Green / Cycle	0.42	0.42	0.16	0.63	0.25	0.25	
(v / s)_i Volume / Saturation Flow Rate	0.32	0.18	0.02	0.25	0.15	0.17	
s, saturation flow rate [veh/h]	3389	1513	1695	3389	1567	1398	
c, Capacity [veh/h]	1417	632	265	2134	387	345	
d1, Uniform Delay [s]	20.06	16.69	29.36	7.40	27.11	27.78	
k, delay calibration	0.15	0.15	0.08	0.14	0.23	0.24	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.19	0.64	0.13	0.16	3.37	5.47	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.75	0.42	0.11	0.40	0.61	0.70	
d, Delay for Lane Group [s/veh]	21.25	17.33	29.50	7.56	30.48	33.25	
Lane Group LOS	C	B	C	A	C	C	
Critical Lane Group	Yes	No	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	7.68	3.22	0.46	2.73	4.11	4.42	
50th-Percentile Queue Length [ft/ln]	191.94	80.45	11.61	68.21	102.80	110.39	
95th-Percentile Queue Length [veh/ln]	12.22	5.79	0.84	4.91	7.40	7.86	
95th-Percentile Queue Length [ft/ln]	305.55	144.81	20.90	122.78	185.05	196.54	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	21.25	17.33	29.50	7.56	0.00	30.48	30.48	33.25	0.00	0.00	0.00
Movement LOS		C	B	C	A		C	C	C			
d_A, Approach Delay [s/veh]	20.46			8.29			31.87			0.00		
Approach LOS	C			A			C			A		
d_I, Intersection Delay [s/veh]	18.54											
Intersection LOS	B											
Intersection V/C	0.627											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1112	1594	618	0
d_b, Bicycle Delay [s]	7.98	1.67	19.34	40.48
I_b,int, Bicycle LOS Score for Intersection	2.663	2.280	2.350	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: US 31 at Kingswood Rd

Control Type:	Signalized	Delay (sec / veh):	20.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.611

Intersection Setup

Name	US 31			US 31			Winn Dixie Access			Kingswood Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	125.00	100.00	100.00	50.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			Winn Dixie Access			Kingswood Rd		
Base Volume Input [veh/h]	17	1053	7	46	639	123	111	4	34	8	5	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	8.00	8.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.2200	1.0000	1.0000	1.2200	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	39	0	0	40	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	1324	7	46	820	123	111	4	34	8	5	59
Peak Hour Factor	0.8000	0.8000	0.8000	0.8780	0.8780	0.8780	0.8470	0.8470	0.8470	0.8570	0.8570	0.8570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	414	2	13	233	35	33	1	10	2	1	17
Total Analysis Volume [veh/h]	21	1655	9	52	934	140	131	5	40	9	6	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	8	0	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	15	0	4	15	0	0	8	8	0	5	0
Maximum Green [s]	25	45	0	20	45	0	0	30	30	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	0.0
All red [s]	1.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.5	3.5	0.0	3.5	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	3.0	3.5	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	R	C
C, Cycle Length [s]	77	77	77	77	77	77	77	77	77
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	3.50	3.50	0.00	3.50	3.50	3.00	0.00	3.00
g_i, Effective Green Time [s]	48	41	41	48	42	42	8	25	5
g / C, Green / Cycle	0.63	0.53	0.53	0.63	0.54	0.54	0.10	0.32	0.07
(v / s)_i Volume / Saturation Flow Rate	0.03	0.47	0.47	0.24	0.28	0.09	0.08	0.03	0.05
s, saturation flow rate [veh/h]	610	1780	1777	218	3389	1513	1784	1589	1574
c, Capacity [veh/h]	433	937	936	338	1839	821	186	511	159
d1, Uniform Delay [s]	6.66	16.24	16.25	13.82	11.14	8.89	33.51	18.24	35.36
k, delay calibration	0.11	0.32	0.32	0.15	0.15	0.15	0.13	0.11	0.13
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	8.42	8.51	0.30	0.31	0.14	6.50	0.06	3.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.89	0.89	0.15	0.51	0.17	0.73	0.08	0.53
d, Delay for Lane Group [s/veh]	6.71	24.66	24.76	14.11	11.45	9.03	40.01	18.30	38.60
Lane Group LOS	A	C	C	B	B	A	D	B	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.10	12.46	12.48	0.27	4.09	0.99	2.77	0.50	1.68
50th-Percentile Queue Length [ft/ln]	2.49	311.50	311.96	6.64	102.27	24.79	69.17	12.40	41.92
95th-Percentile Queue Length [veh/ln]	0.18	18.25	18.27	0.48	7.36	1.78	4.98	0.89	3.02
95th-Percentile Queue Length [ft/ln]	4.49	456.23	456.79	11.95	184.08	44.62	124.50	22.33	75.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.71	24.71	24.76	14.11	11.45	9.03	40.01	40.01	18.30	38.60	38.60	38.60
Movement LOS	A	C	C	B	B	A	D	D	B	D	D	D
d_A, Approach Delay [s/veh]	24.49			11.27			35.07			38.60		
Approach LOS	C			B			D			D		
d_I, Intersection Delay [s/veh]	20.63											
Intersection LOS	C											
Intersection V/C	0.611											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1168	1168	779	779
d_b, Bicycle Delay [s]	6.66	6.66	14.36	14.36
I_b,int, Bicycle LOS Score for Intersection	2.950	2.489	1.850	1.698
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	8	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 10: US 31 at Burnsdale Dr

Control Type:	Signalized	Delay (sec / veh):	9.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.408

Intersection Setup

Name	US 31		US 31		Burnsdale Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	40.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	US 31		US 31		Burnsdale Dr	
Base Volume Input [veh/h]	16	1220	659	27	37	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.0000	1.2200	1.2200	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	33	35	6	6	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	1521	839	33	43	20
Peak Hour Factor	0.8000	0.8000	0.8580	0.8580	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	475	244	10	13	6
Total Analysis Volume [veh/h]	21	1901	978	38	54	25
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Overlap	Overlap	Permissive	Permissive	Permissive
Signal Group	4	2	2	0	3	0
Auxiliary Signal Groups		2,4	2			
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	20	20	0	4	0
Maximum Green [s]	20	70	70	0	20	0
Amber [s]	3.0	4.0	4.0	0.0	3.0	0.0
All red [s]	1.5	2.0	2.0	0.0	1.5	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	4.0	8.0	8.0	0.0	4.0	0.0
Walk [s]	0	4	4	0	0	0
Pedestrian Clearance [s]	0	16	16	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	112	112	112	112	112
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	0.00	4.00	4.00	2.50
g_i, Effective Green Time [s]	20	94	70	70	7
g / C, Green / Cycle	0.18	0.85	0.63	0.63	0.06
(v / s)_i Volume / Saturation Flow Rate	0.01	0.56	0.29	0.03	0.05
s, saturation flow rate [veh/h]	1695	3389	3389	1513	1716
c, Capacity [veh/h]	303	2866	2123	948	103
d1, Uniform Delay [s]	38.13	3.03	10.95	7.99	51.72
k, delay calibration	0.15	1.18	1.18	1.18	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.14	2.88	1.70	0.19	15.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.66	0.46	0.04	0.76
d, Delay for Lane Group [s/veh]	38.26	5.90	12.66	8.18	66.93
Lane Group LOS	D	A	B	A	E
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.48	3.75	6.01	0.36	2.61
50th-Percentile Queue Length [ft/ln]	11.93	93.87	150.22	9.04	65.33
95th-Percentile Queue Length [veh/ln]	0.86	6.76	10.03	0.65	4.70
95th-Percentile Queue Length [ft/ln]	21.47	168.96	250.73	16.28	117.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.26	5.90	12.66	8.18	66.93	66.93
Movement LOS	D	A	B	A	E	E
d_A, Approach Delay [s/veh]	6.26		12.49		66.93	
Approach LOS	A		B		E	
d_I, Intersection Delay [s/veh]	9.94					
Intersection LOS	A					
Intersection V/C	0.408					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft^2/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft^2/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1066	1254	358
d_b, Bicycle Delay [s]	12.19	7.78	37.63
I_b,int, Bicycle LOS Score for Intersection	3.145	2.398	1.690
Bicycle LOS	C	B	A

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: US 31 at Southlawn Dr

Control Type:	Signalized	Delay (sec / veh):	12.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.535

Intersection Setup

Name	US 31		US 31		Southlawn Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	225.00	100.00	350.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	1	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	350.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	US 31		US 31		Southlawn Dr	
Base Volume Input [veh/h]	783	16	131	494	8	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.2200	1.0000	1.0000	1.2200	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	34	0	0	36	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	989	16	131	639	8	181
Peak Hour Factor	0.8000	0.8000	0.9770	0.9770	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	309	5	34	164	3	57
Total Analysis Volume [veh/h]	1236	20	134	654	10	226
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	15	0	5	15	8	0
Maximum Green [s]	45	0	25	45	30	0
Amber [s]	4.0	0.0	4.0	4.0	4.0	0.0
All red [s]	1.5	0.0	1.0	1.5	1.0	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	5.0	0.0	2.0	5.0	1.5	0.0
Walk [s]	15	0	0	15	5	0
Pedestrian Clearance [s]	18	0	0	18	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	0.0	3.0	3.5	3.0	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	59	59	59	59	59	59
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	0.00	3.50	3.00	3.00
g_i, Effective Green Time [s]	29	29	38	38	10	10
g / C, Green / Cycle	0.49	0.49	0.65	0.65	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.35	0.35	0.20	0.19	0.01	0.14
s, saturation flow rate [veh/h]	1780	1770	668	3389	1781	1589
c, Capacity [veh/h]	873	868	496	2205	306	273
d1, Uniform Delay [s]	11.85	11.88	7.31	4.47	20.38	23.63
k, delay calibration	0.23	0.23	0.04	0.23	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.40	2.46	0.11	0.16	0.02	2.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.72	0.27	0.30	0.03	0.83
d, Delay for Lane Group [s/veh]	14.25	14.34	7.41	4.63	20.40	26.10
Lane Group LOS	B	B	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.22	5.25	0.33	0.92	0.11	3.00
50th-Percentile Queue Length [ft/ln]	130.55	131.19	8.21	23.06	2.72	75.08
95th-Percentile Queue Length [veh/ln]	8.97	9.00	0.59	1.66	0.20	5.41
95th-Percentile Queue Length [ft/ln]	224.24	225.11	14.79	41.51	4.90	135.14

Movement, Approach, & Intersection Results

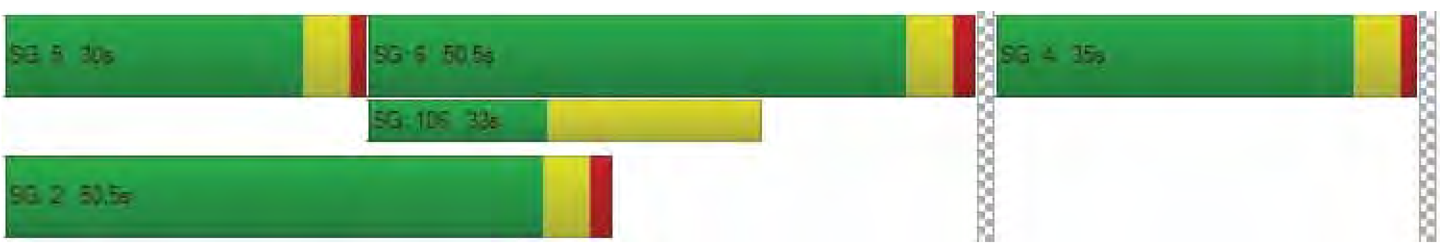
d_M, Delay for Movement [s/veh]	14.29	14.34	7.41	4.63	20.40	26.10
Movement LOS	B	B	A	A	C	C
d_A, Approach Delay [s/veh]	14.29		5.10		25.86	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	12.31					
Intersection LOS	B					
Intersection V/C	0.535					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	19.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	13.54
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.288
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1527	1527	1018
d_b, Bicycle Delay [s]	1.65	1.65	7.11
I_b,int, Bicycle LOS Score for Intersection	2.596	2.210	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: US 31 at Hyundai Blvd

Control Type:	Signalized	Delay (sec / veh):	24.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.620

Intersection Setup

Name	Hyundai Blvd			US 31			US 31			Pyramid Ave		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Scenario 2: 2 2045 PM

Volumes

Name	Hyundai Blvd			US 31			US 31			Pyramid Ave		
Base Volume Input [veh/h]	244	6	270	2	175	172	112	208	11	6	3	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	4.00	4.00	8.00	8.00	8.00	8.00	8.00	8.00	2.00	2.00	2.00
Growth Factor	1.2200	1.2200	1.2200	1.2200	1.2200	1.2200	1.2200	1.2200	1.2200	1.2200	1.2200	1.2200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	0	7	0	5	8	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	298	7	334	2	221	210	142	262	13	7	4	4
Peak Hour Factor	0.5650	0.5650	0.5650	0.8730	0.8730	0.8730	0.8900	0.8900	0.8900	0.8000	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	132	3	148	1	63	60	40	74	4	2	1	1
Total Analysis Volume [veh/h]	527	12	591	2	253	241	160	294	15	9	5	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split
Signal Group	0	4	0	5	2	0	1	6	0	0	3	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	4	18	0	4	18	0	0	6	0
Maximum Green [s]	0	50	0	35	60	0	35	60	0	0	25	0
Amber [s]	0.0	3.5	0.0	3.5	4.0	0.0	3.5	4.0	0.0	0.0	3.5	0.0
All red [s]	0.0	1.0	0.0	0.5	1.5	0.0	0.5	1.5	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0	0.0	4.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	2.0	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0
Minimum Recall		No		No	Yes		No	Yes			No	
Maximum Recall		No		No	No		No	No			No	
Pedestrian Recall		No		No	No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	C
C, Cycle Length [s]	82	82	82	82	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	5.50	5.50	5.50	5.50	5.50	5.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	0.00	3.50	3.50	0.00	3.50	3.50	2.50
g_i, Effective Green Time [s]	36	36	36	30	18	18	30	26	26	2
g / C, Green / Cycle	0.44	0.44	0.44	0.36	0.22	0.22	0.36	0.31	0.31	0.03
(v / s)_i Volume / Saturation Flow Rate	0.15	0.15	0.38	0.00	0.14	0.16	0.14	0.09	0.09	0.01
s, saturation flow rate [veh/h]	1752	1756	1564	1068	1780	1513	1134	1780	1750	1747
c, Capacity [veh/h]	766	767	683	448	388	330	410	553	544	45
d1, Uniform Delay [s]	15.46	15.45	21.03	17.02	29.39	29.99	19.70	21.47	21.48	39.58
k, delay calibration	0.15	0.15	0.22	0.15	0.15	0.15	0.13	0.15	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.39	0.39	6.66	0.01	2.62	4.38	0.73	0.39	0.40	8.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.35	0.86	0.00	0.65	0.73	0.39	0.28	0.28	0.42
d, Delay for Lane Group [s/veh]	15.85	15.85	27.69	17.02	32.01	34.37	20.43	21.87	21.88	48.15
Lane Group LOS	B	B	C	B	C	C	C	C	C	D
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.27	3.27	10.77	0.02	4.50	4.50	2.03	2.14	2.11	0.48
50th-Percentile Queue Length [ft/ln]	81.78	81.74	269.32	0.57	112.61	112.62	50.85	53.47	52.86	12.01
95th-Percentile Queue Length [veh/ln]	5.89	5.89	16.16	0.04	7.99	7.99	3.66	3.85	3.81	0.87
95th-Percentile Queue Length [ft/ln]	147.21	147.14	403.88	1.03	199.63	199.65	91.53	96.25	95.14	21.63

Movement, Approach, & Intersection Results

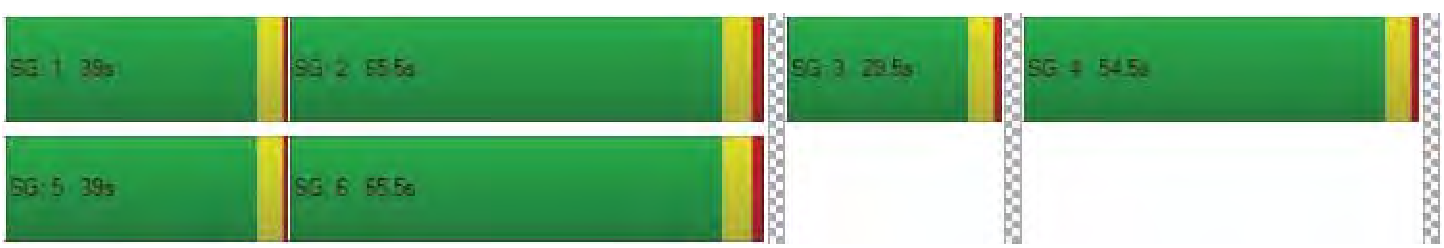
d_M, Delay for Movement [s/veh]	15.85	15.85	27.69	17.02	32.01	34.37	20.43	21.87	21.88	48.15	48.15	48.15
Movement LOS	B	B	C	B	C	C	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	22.04			33.10			21.38			48.15		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	24.72											
Intersection LOS	C											
Intersection V/C	0.620											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1214	1457	1457	607
d_b, Bicycle Delay [s]	6.36	3.04	3.04	19.98
I_b,int, Bicycle LOS Score for Intersection	3.424	1.969	1.947	1.591
Bicycle LOS	C	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: US 31 at Windy Wood Dr

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.628

Intersection Setup

Name	US 31		US 31		Windy Wood Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	40.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	US 31		US 31		Windy Wood Dr	
Base Volume Input [veh/h]	1210	24	43	634	12	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	8.00	8.00	8.00	2.00	2.00
Growth Factor	1.2200	1.0000	1.0000	1.2200	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	34	0	0	36	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1510	24	43	809	12	36
Peak Hour Factor	0.8000	0.8000	0.8720	0.8720	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	472	8	12	232	4	11
Total Analysis Volume [veh/h]	1888	30	49	928	15	45
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Overlap	Overlap	ProtPerm	Overlap	Permissive	Permissive
Signal Group	2	2	3	2	4	0
Auxiliary Signal Groups	2	2		2,3		
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	20	20	4	20	4	0
Maximum Green [s]	70	70	20	70	20	0
Amber [s]	4.0	4.0	3.0	4.0	3.0	0.0
All red [s]	2.0	2.0	1.5	2.0	1.5	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	8.0	8.0	4.0	8.0	4.0	0.0
Walk [s]	4	4	0	4	0	0
Pedestrian Clearance [s]	16	16	0	16	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	2.5	4.0	2.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	107	107	107	107	107
L, Total Lost Time per Cycle [s]	6.00	6.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	2.50	0.00	2.50
g_i, Effective Green Time [s]	70	70	17	93	5
g / C, Green / Cycle	0.65	0.65	0.16	0.87	0.05
(v / s)_i Volume / Saturation Flow Rate	0.54	0.54	0.03	0.27	0.04
s, saturation flow rate [veh/h]	1780	1770	1695	3389	1633
c, Capacity [veh/h]	1159	1152	274	2942	79
d1, Uniform Delay [s]	14.20	14.29	38.93	1.29	50.57
k, delay calibration	1.18	1.18	0.15	1.18	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.84	15.27	0.44	0.67	19.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.83	0.18	0.32	0.76
d, Delay for Lane Group [s/veh]	29.04	29.56	39.37	1.95	69.84
Lane Group LOS	C	C	D	A	E
Critical Lane Group	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	18.97	19.17	1.12	0.50	2.03
50th-Percentile Queue Length [ft/ln]	474.14	479.25	27.91	12.43	50.63
95th-Percentile Queue Length [veh/ln]	26.11	26.35	2.01	0.89	3.65
95th-Percentile Queue Length [ft/ln]	652.69	658.76	50.24	22.37	91.13

Movement, Approach, & Intersection Results

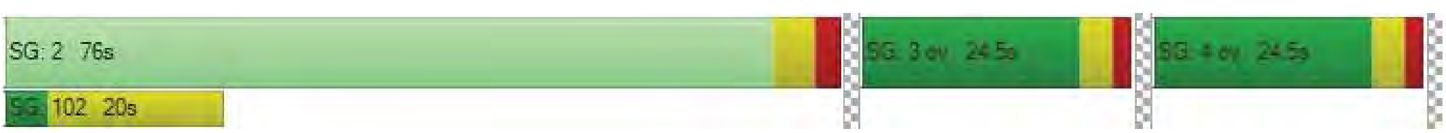
d_M, Delay for Movement [s/veh]	29.30	29.56	39.37	1.95	69.84	69.84
Movement LOS	C	C	D	A	E	E
d_A, Approach Delay [s/veh]	29.30		3.83		69.84	
Approach LOS	C		A		E	
d_I, Intersection Delay [s/veh]	21.70					
Intersection LOS	C					
Intersection V/C	0.628					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	45.99
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.782
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1304	112	372
d_b, Bicycle Delay [s]	6.51	47.86	35.56
I_b,int, Bicycle LOS Score for Intersection	3.142	2.366	1.659
Bicycle LOS	C	B	A

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: US 31 @ Green Leaf Dr/Site Access

Control Type:	Signalized	Delay (sec / veh):	9.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.438

Intersection Setup

Name	US 31			US 31			Site Access			Green Leaf Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	250.00	100.00	100.00	250.00	100.00	325.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US 31			US 31			Site Access			Green Leaf Dr		
Base Volume Input [veh/h]	0	589	35	174	321	0	0	0	0	26	0	134
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	60.00	8.00	8.00	8.00	8.00	60.00	60.00	60.00	60.00	2.00	2.00	2.00
Growth Factor	1.0000	1.2200	1.0000	1.0000	1.2200	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	1	0	0	2	35	33	0	12	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	720	35	174	394	35	33	0	12	26	0	134
Peak Hour Factor	0.8000	0.8000	0.8000	0.9380	0.9380	0.9380	0.9000	0.9000	0.9000	0.9090	0.9090	0.9090
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	225	11	46	105	9	9	0	3	7	0	37
Total Analysis Volume [veh/h]	14	900	44	186	420	37	37	0	13	29	0	147
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	4	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	5	5	0
Maximum Green [s]	30	50	0	30	50	0	0	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	5	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	R
C, Cycle Length [s]	32	32	32	32	32	32	32	32	32
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	12	12	20	15	15	4	4	4
g / C, Green / Cycle	0.62	0.37	0.37	0.62	0.48	0.48	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.03	0.27	0.27	0.20	0.12	0.04	0.11	0.02	0.09
s, saturation flow rate [veh/h]	558	1780	1751	909	3389	849	463	1738	1589
c, Capacity [veh/h]	594	658	647	763	1618	406	255	453	210
d1, Uniform Delay [s]	2.44	8.76	8.76	3.86	5.03	4.61	13.87	12.37	13.40
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	1.53	1.55	0.16	0.08	0.10	0.37	0.06	4.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.72	0.72	0.24	0.26	0.09	0.20	0.06	0.70
d, Delay for Lane Group [s/veh]	2.46	10.29	10.31	4.03	5.11	4.70	14.24	12.43	17.60
Lane Group LOS	A	B	B	A	A	A	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.00	1.63	1.60	0.03	0.28	0.05	0.31	0.16	1.07
50th-Percentile Queue Length [ft/ln]	0.07	40.64	40.09	0.87	7.11	1.34	7.77	3.95	26.79
95th-Percentile Queue Length [veh/ln]	0.00	2.93	2.89	0.06	0.51	0.10	0.56	0.28	1.93
95th-Percentile Queue Length [ft/ln]	0.12	73.16	72.17	1.57	12.79	2.41	13.98	7.10	48.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	2.46	10.30	10.31	4.03	5.11	4.70	14.24	14.24	14.24	12.43	12.43	17.60
Movement LOS	A	B	B	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	10.19			4.78			14.24			16.75		
Approach LOS	B			A			B			B		
d_I, Intersection Delay [s/veh]	9.03											
Intersection LOS	A											
Intersection V/C	0.438											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3109	3109	1866	1866
d_b, Bicycle Delay [s]	4.95	4.95	0.07	0.07
I_b,int, Bicycle LOS Score for Intersection	2.350	2.090	1.642	1.850
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 46: US 31 @ Southlawn School Exit

Control Type:	Two-way stop	Delay (sec / veh):	46.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.055

Intersection Setup

Name	US 31		US 31		Southlawn School Exit	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	US 31		US 31		Southlawn School Exit	
Base Volume Input [veh/h]	822	0	0	466	4	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	2.00	2.00	8.00	2.00	2.00
Growth Factor	1.2200	1.0000	1.0000	1.2200	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	34	0	0	36	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1037	0	0	605	4	37
Peak Hour Factor	0.8000	1.0000	1.0000	0.8890	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	324	0	0	170	1	12
Total Analysis Volume [veh/h]	1296	0	0	681	5	46
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

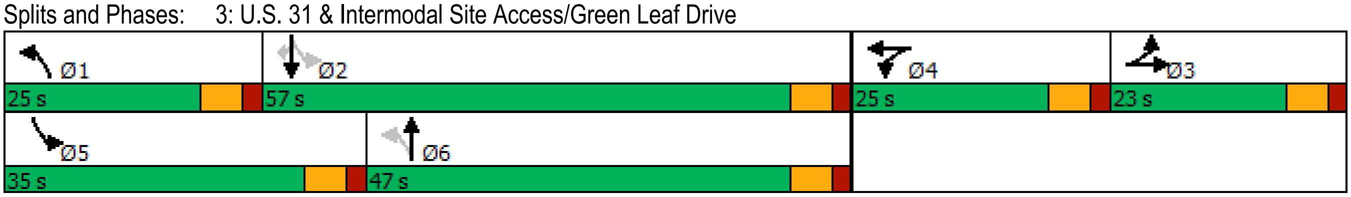
V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.05	0.11
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	46.60	14.81
Movement LOS	A			A	E	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.17	0.37
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	4.27	9.32
d_A, Approach Delay [s/veh]	0.00		0.00		17.92	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.45					
Intersection LOS	E					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	0	17	12	0	180	17	505	40	352	269	51
Future Volume (vph)	55	0	17	12	0	180	17	505	40	352	269	51
Satd. Flow (prot)	926	828	0	1805	1615	0	926	3324	0	1805	3343	828
Flt Permitted	0.950			0.950			0.549			0.208		
Satd. Flow (perm)	926	828	0	1805	1615	0	535	3324	0	395	3343	828
Satd. Flow (RTOR)		574			474			7				126
Lane Group Flow (vph)	61	19	0	15	225	0	21	681	0	440	336	64
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases							6			2		2
Total Split (s)	23.0	23.0		25.0	25.0		25.0	47.0		35.0	57.0	57.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Act Effct Green (s)	11.5	11.5		6.7	6.7		31.1	24.4		56.6	52.2	52.2
Actuated g/C Ratio	0.13	0.13		0.07	0.07		0.35	0.27		0.63	0.58	0.58
v/c Ratio	0.52	0.03		0.11	0.40		0.10	0.75		0.68	0.17	0.12
Control Delay	58.1	0.1		49.0	2.2		12.8	37.0		19.7	11.7	0.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	58.1	0.1		49.0	2.2		12.8	37.0		19.7	11.7	0.5
LOS	E	A		D	A		B	D		B	B	A
Approach Delay		44.4			5.1			36.3			15.1	
Approach LOS		D			A			D			B	
Queue Length 50th (ft)	35	0		9	0		5	201		134	41	0
Queue Length 95th (ft)	86	0		29	0		14	247		227	85	0
Internal Link Dist (ft)		1121			1283			1230			1082	
Turn Bay Length (ft)				200			250			250		325
Base Capacity (vph)	188	625		410	733		355	1634		737	2144	576
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.32	0.03		0.04	0.31		0.06	0.42		0.60	0.16	0.11

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 90.1
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 23.0 Intersection LOS: C
Intersection Capacity Utilization 70.0% ICU Level of Service C
Analysis Period (min) 15

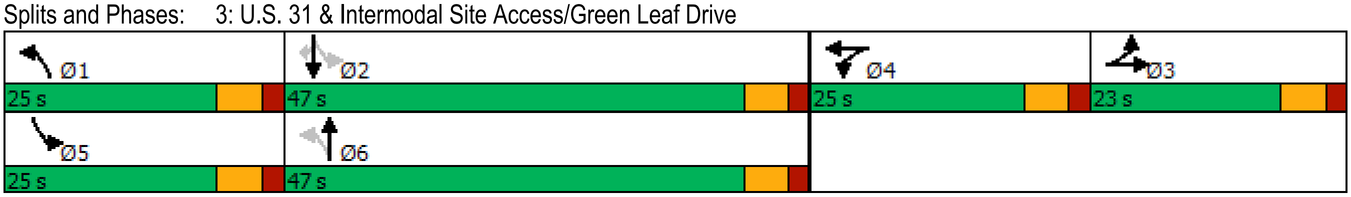
Splits and Phases: 3: U.S. 31 & Intermodal Site Access/Green Leaf Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	0	12	40	0	156	11	720	52	224	394	35
Future Volume (vph)	33	0	12	40	0	156	11	720	52	224	394	35
Satd. Flow (prot)	926	828	0	1805	1615	0	926	3326	0	1805	3343	828
Flt Permitted	0.950			0.950			0.507			0.147		
Satd. Flow (perm)	926	828	0	1805	1615	0	494	3326	0	279	3343	828
Satd. Flow (RTOR)		497			458			7				136
Lane Group Flow (vph)	37	13	0	44	171	0	14	965	0	238	419	37
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases							6			2		2
Total Split (s)	23.0	23.0		25.0	25.0		25.0	47.0		25.0	47.0	47.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Act Effct Green (s)	9.5	9.5		8.1	8.1		37.0	30.4		53.1	51.1	51.1
Actuated g/C Ratio	0.11	0.11		0.10	0.10		0.45	0.37		0.64	0.61	0.61
v/c Ratio	0.35	0.02		0.25	0.30		0.06	0.79		0.50	0.20	0.07
Control Delay	51.0	0.1		46.4	1.3		10.2	30.2		14.0	9.7	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	51.0	0.1		46.4	1.3		10.2	30.2		14.0	9.7	0.2
LOS	D	A		D	A		B	C		B	A	A
Approach Delay		37.8			10.6			29.9			10.7	
Approach LOS		D			B			C			B	
Queue Length 50th (ft)	21	0		25	0		3	263		55	50	0
Queue Length 95th (ft)	58	0		65	0		11	327		138	123	0
Internal Link Dist (ft)		1121			1283			1230			1082	
Turn Bay Length (ft)				200			250			250		325
Base Capacity (vph)	208	571		453	749		407	1807		562	2161	583
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.18	0.02		0.10	0.23		0.03	0.53		0.42	0.19	0.06

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 83.1	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 21.1	Intersection LOS: C
Intersection Capacity Utilization 67.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: U.S. 31 & Intermodal Site Access/Green Leaf Drive



Intersection						
Int Delay, s/veh	0.4					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	7	7	452	228	9
Future Vol, veh/h	13	7	7	452	228	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	250	-	-	325
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	95	95	95	8	8	95
Mvmt Flow	15	8	8	532	268	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	550	134	279	0	-	0
Stage 1	268	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	8.7	8.8	6	-	-	-
Critical Hdwy Stg 1	7.7	-	-	-	-	-
Critical Hdwy Stg 2	7.7	-	-	-	-	-
Follow-up Hdwy	4.45	4.25	3.15	-	-	-
Pot Cap-1 Maneuver	295	660	809	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	292	660	809	-	-	-
Mov Cap-2 Maneuver	374	-	-	-	-	-
Stage 1	531	-	-	-	-	-
Stage 2	524	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.4	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	809	-	374	660	-	-
HCM Lane V/C Ratio	0.01	-	0.041	0.012	-	-
HCM Control Delay (s)	9.5	-	15	10.5	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0	-	-

Intersection						
Int Delay, s/veh	0.3					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	5	11	637	332	35
Future Vol, veh/h	8	5	11	637	332	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	250	-	-	325
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	95	95	95	8	8	95
Mvmt Flow	9	6	13	749	391	41

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	792	196	432	0	-	0
Stage 1	391	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Critical Hdwy	8.7	8.8	6	-	-	-
Critical Hdwy Stg 1	7.7	-	-	-	-	-
Critical Hdwy Stg 2	7.7	-	-	-	-	-
Follow-up Hdwy	4.45	4.25	3.15	-	-	-
Pot Cap-1 Maneuver	187	588	668	-	-	-
Stage 1	442	-	-	-	-	-
Stage 2	435	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	183	588	668	-	-	-
Mov Cap-2 Maneuver	282	-	-	-	-	-
Stage 1	434	-	-	-	-	-
Stage 2	435	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.5	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	668	-	282	588	-	-
HCM Lane V/C Ratio	0.019	-	0.033	0.01	-	-
HCM Control Delay (s)	10.5	-	18.2	11.2	-	-
HCM Lane LOS	B	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	17	17	545	281	51
Future Vol, veh/h	55	17	17	545	281	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	250	-	-	325
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	95	95	95	8	8	95
Mvmt Flow	60	18	18	592	305	55

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	637	153	360	0	-	0
Stage 1	305	-	-	-	-	-
Stage 2	332	-	-	-	-	-
Critical Hdwy	8.7	8.8	6	-	-	-
Critical Hdwy Stg 1	7.7	-	-	-	-	-
Critical Hdwy Stg 2	7.7	-	-	-	-	-
Follow-up Hdwy	4.45	4.25	3.15	-	-	-
Pot Cap-1 Maneuver	251	637	731	-	-	-
Stage 1	506	-	-	-	-	-
Stage 2	485	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	245	637	731	-	-	-
Mov Cap-2 Maneuver	335	-	-	-	-	-
Stage 1	493	-	-	-	-	-
Stage 2	485	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.4	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	731	-	335	637	-	-
HCM Lane V/C Ratio	0.025	-	0.178	0.029	-	-
HCM Control Delay (s)	10.1	-	18.1	10.8	-	-
HCM Lane LOS	B	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	33	12	11	772	434	35
Future Vol, veh/h	33	12	11	772	434	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	250	-	-	325
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	95	95	95	8	8	95
Mvmt Flow	36	13	12	839	472	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	916	236	510	0	-	0
Stage 1	472	-	-	-	-	-
Stage 2	444	-	-	-	-	-
Critical Hdwy	8.7	8.8	6	-	-	-
Critical Hdwy Stg 1	7.7	-	-	-	-	-
Critical Hdwy Stg 2	7.7	-	-	-	-	-
Follow-up Hdwy	4.45	4.25	3.15	-	-	-
Pot Cap-1 Maneuver	148	545	606	-	-	-
Stage 1	389	-	-	-	-	-
Stage 2	407	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	145	545	606	-	-	-
Mov Cap-2 Maneuver	246	-	-	-	-	-
Stage 1	381	-	-	-	-	-
Stage 2	407	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.4	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	606	-	246	545	-	-
HCM Lane V/C Ratio	0.02	-	0.146	0.024	-	-
HCM Control Delay (s)	11.1	-	22.1	11.8	-	-
HCM Lane LOS	B	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	0.1	-	-

Appendix D – SIGNAL WARRANT

TRAFFIC SIGNAL WARRANTS

WARRANT 3 - PEAK HOUR VEHICULAR VOLUME

Applicable: [X] Yes [ ] No

Satisfied: [ ] Yes [X] No

This signal warrant sahll be applied only in unsual cases, such as office complexes, manufacturing plants, industrial complexes, or high-ocupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time period.

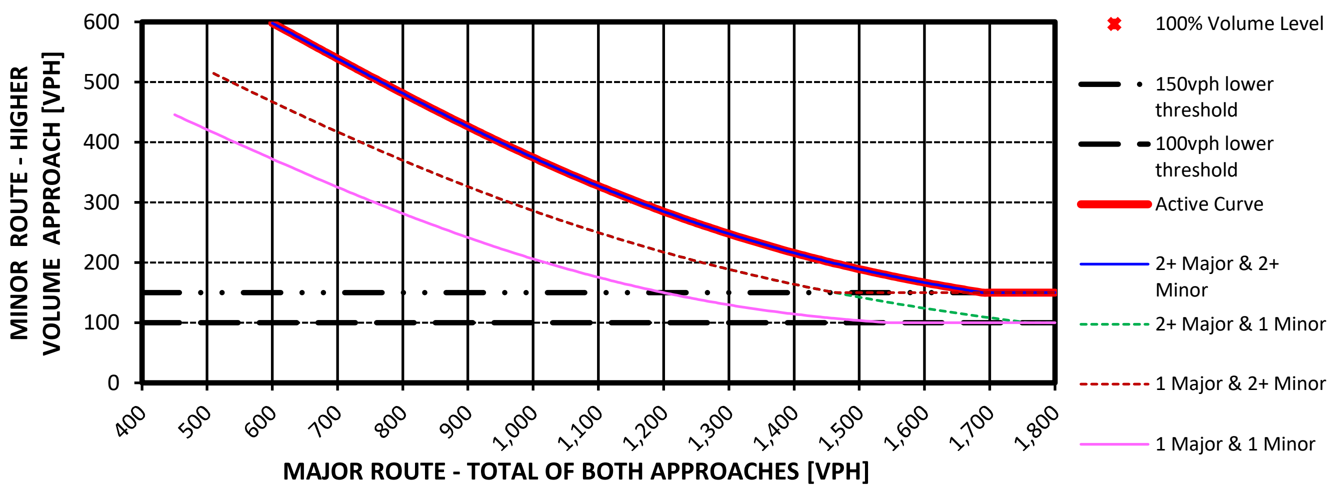
Signalization shall be considered if a point lies above the appropriate line or the Delay criteria is met.

Unusual case(s) justifying this Warrant:

Commercial/Industrial

Peak Hour Data		
Peak Hour	*Major Route*	*Minor Route*
7 AM	***696***	***20***

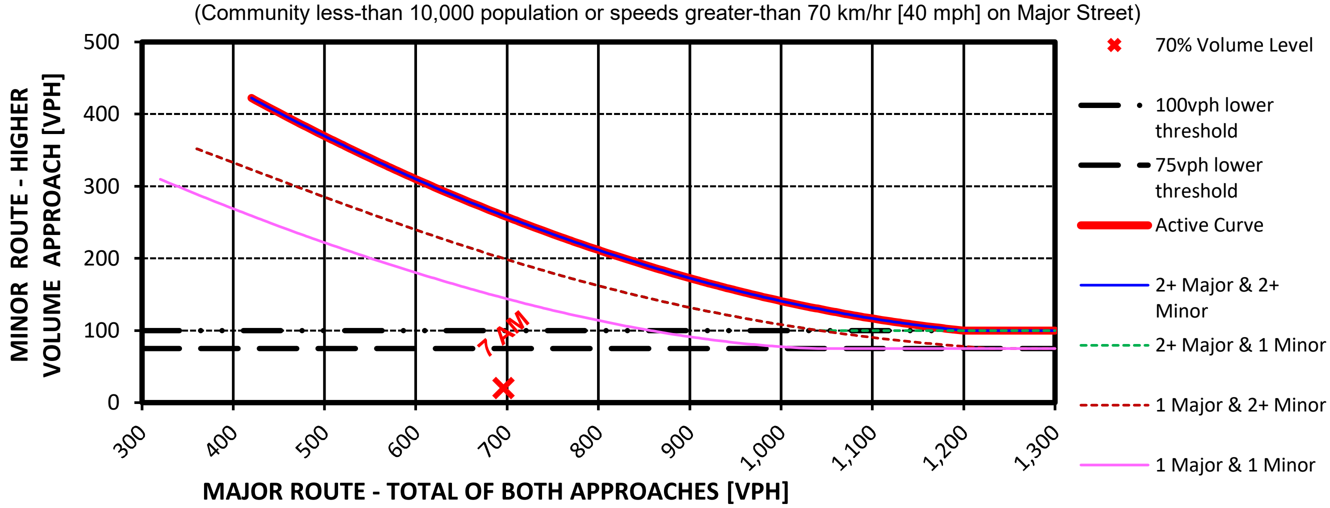
FIGURE W-3: Criteria for "100%" Volume Level



* *Note: 150 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor route approach with one lane.*

FIGURE W-3: Criteria for "70%" Volume Level

(Community less-than 10,000 population or speeds greater-than 70 km/hr [40 mph] on Major Street)



* *Note: 100 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor route approach with one lane.*

DELAY CRITERIA

1. Delay on Minor Approach (vehicle-hours)		
Approaches Lanes:	1	2
Delay Criteria:	4.0	5.0
Delay:		
Fullfilled?	[ ] Yes	[X] NO

2. Volume on Minor Approach (veh/hr)		
Approaches Lanes	1	2
Volume Criteria	100	150
Volume :		
Fullfilled?	[ ] Yes	[X] NO

3. Total Entering Volume (veh/hr)		
Number of Approaches	[ ] ***3***	[X] ***4 or more***
No. of Approaches	3	4
Volume Criteria	650	800
Volume :		
Fullfilled?	[ ] Yes	[X] NO

NOTE: *The satisfaction of a warrant or warrants shall not in itself require the installation of a traffic control signal*

TRAFFIC SIGNAL WARRANTS

WARRANT 3 - PEAK HOUR VEHICULAR VOLUME

Applicable: [X] Yes [ ] No
Satisfied: [ ] Yes [X] No

This signal warrant sahll be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-ocupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time period.

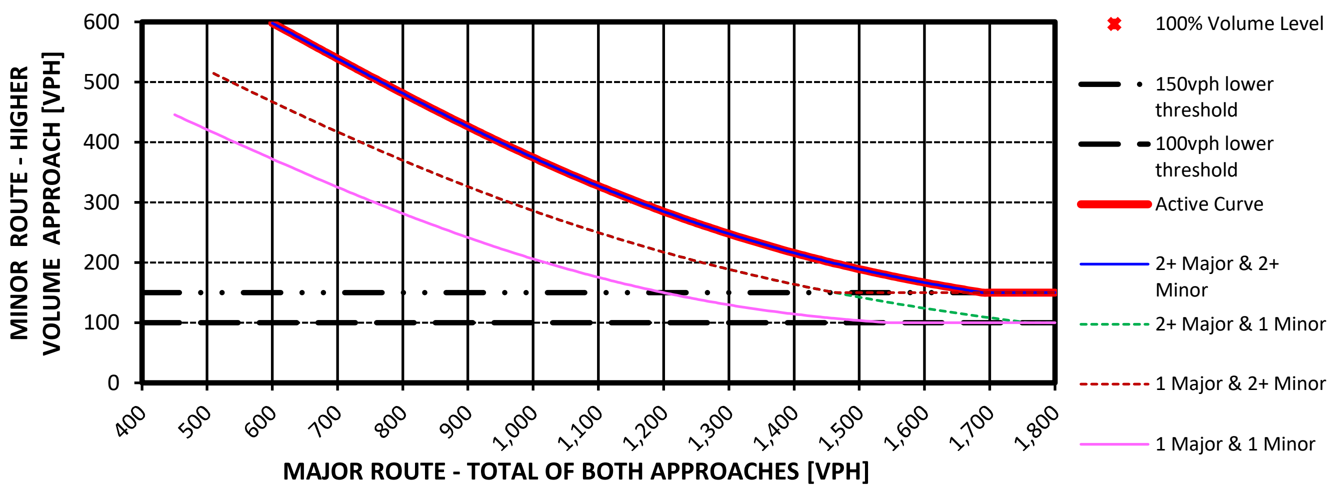
Signalization shall be considered if a point lies above the appropriate line or the Delay criteria is met.

Unusual case(s) justifying this Warrant:

Commercial/Industrial

Peak Hour Data		
Peak Hour	*Major Route*	*Minor Route*
7 AM	***894***	***72***

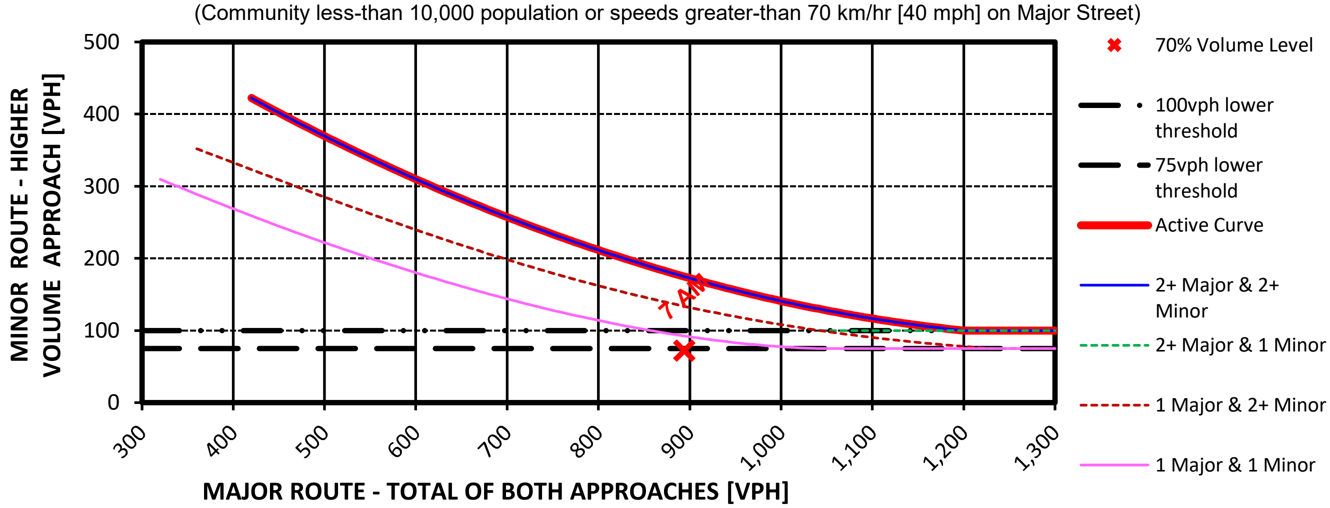
FIGURE W-3: Criteria for "100%" Volume Level



* Note: *150 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor route approach with one lane.*

FIGURE W-3: Criteria for "70%" Volume Level

(Community less-than 10,000 population or speeds greater-than 70 km/hr [40 mph] on Major Street)



* Note: *100 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor route approach with one lane.*

DELAY CRITERIA

1. Delay on Minor Approach (vehicle-hours)		
Approaches Lanes:	1	2
Delay Criteria:	4.0	5.0
Delay:		
Fullfilled?	[ ] Yes	[X] NO

2. Volume on Minor Approach (veh/hr)		
Approaches Lanes	1	2
Volume Criteria	100	150
Volume :		
Fullfilled?	[ ] Yes	[X] NO

3. Total Entering Volume (veh/hr)		
Number of Approaches	[ ] ***3***	[X] ***4 or more***
No. of Approaches	3	4
Volume Criteria	650	800
Volume :		
Fullfilled?	[ ] Yes	[X] NO

NOTE: *The satisfaction of a warrant or warrants shall not in itself require the installation of a traffic control signal*

Appendix C – Noise

FTA Noise Impact Spreadsheets

Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	**Montgomery ICTF**

Receiver Parameters	
Receiver:	**Receptor 1 Existing**
Land Use Category:	**2. Residential**
Existing Noise (Measured or Generic Value):	**60 dBA**

Noise Source Parameters	
Number of Noise Sources:	**3**

Noise Source Parameters		**Source 1**
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	**Avg. Number of Locos/train**	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	**Avg. Number of Locos/train**	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	**Distance from Source to Receiver (ft)**	160
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		**Source 2**
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	**Avg. Number of Rail Cars/train**	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	**Avg. Number of Rail Cars/train**	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	**Distance from Source to Receiver (ft)**	160
	Number of Intervening Rows of Buildings	0
Adjustments	**Noise Barrier?**	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		**Source 3**
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	**Distance from Source to Receiver (ft)**	160
	Number of Intervening Rows of Buildings	0
Adjustments		

Project Results Summary

Existing Ldn:	60 dBA
Total Project Ldn:	74 dBA
Total Noise Exposure:	74 dBA
Increase:	14 dB
Impact?:	**Severe**

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	53.1 dBA
Ldn:	58.8 dBA

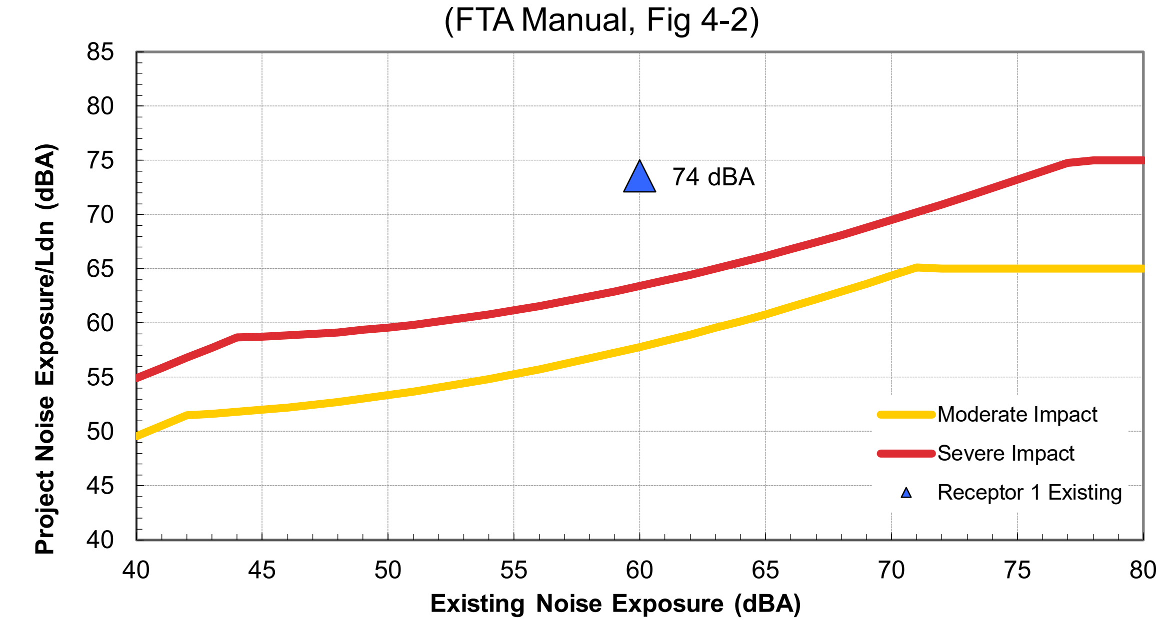
Source 2 Results

Leq(day):	58.2 dBA
Leq(night):	59.5 dBA
Ldn:	65.7 dBA
Incremental Ldn (Src 1-2):	66.5 dBA

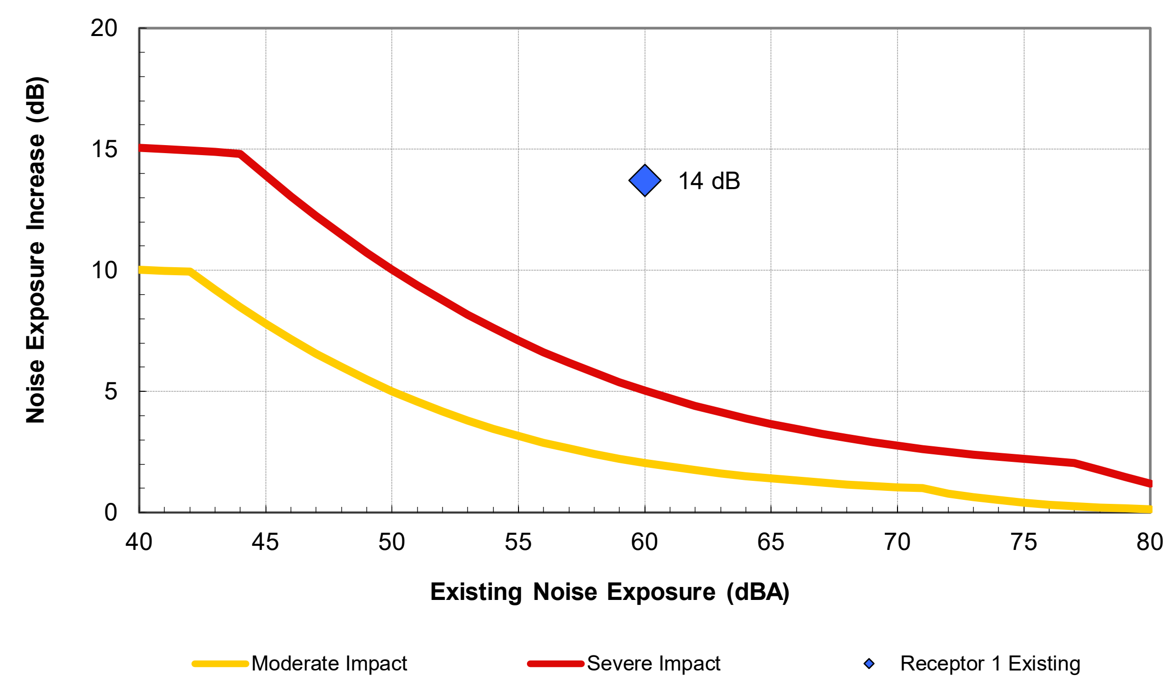
Source 3 Results

Leq(day):	65.1 dBA
Leq(night):	66.3 dBA
Ldn:	72.6 dBA
Incremental Ldn (Src 1-3):	73.5 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 1 Build
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	60 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	160
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	160
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	160
	Number of Intervening Rows of Buildings	0
Adjustments		

Project Results Summary

Existing Ldn:	60 dBA
Total Project Ldn:	74 dBA
Total Noise Exposure:	74 dBA
Increase:	14 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	53.1 dBA
Ldn:	58.8 dBA

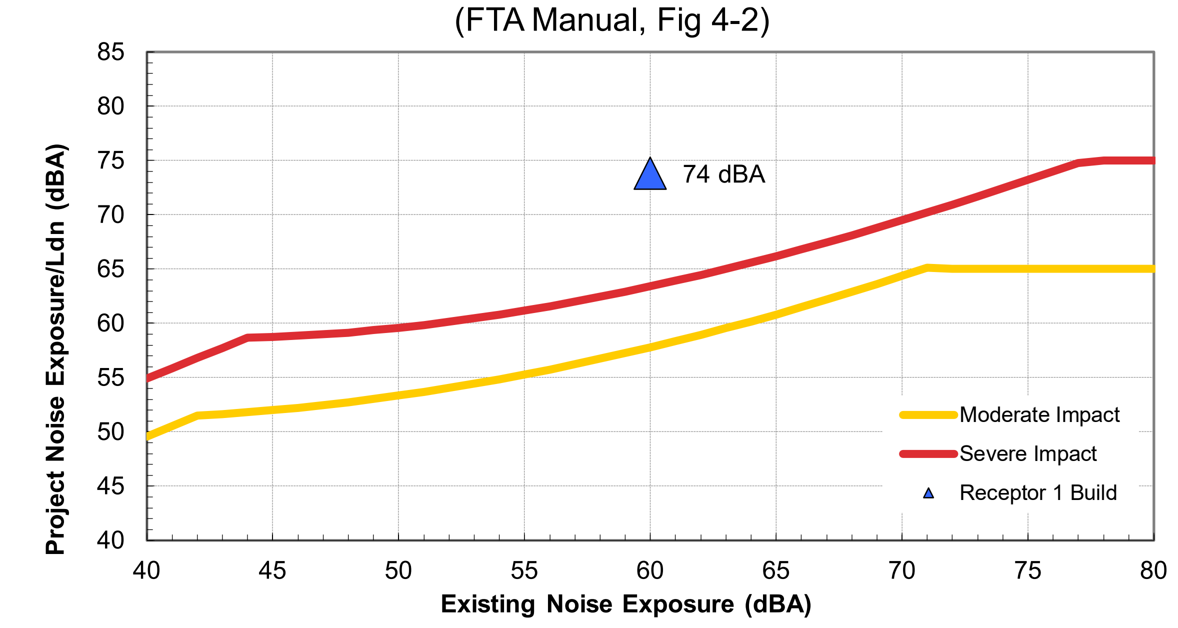
Source 2 Results

Leq(day):	59.6 dBA
Leq(night):	60.9 dBA
Ldn:	67.1 dBA
Incremental Ldn (Src 1-2):	67.7 dBA

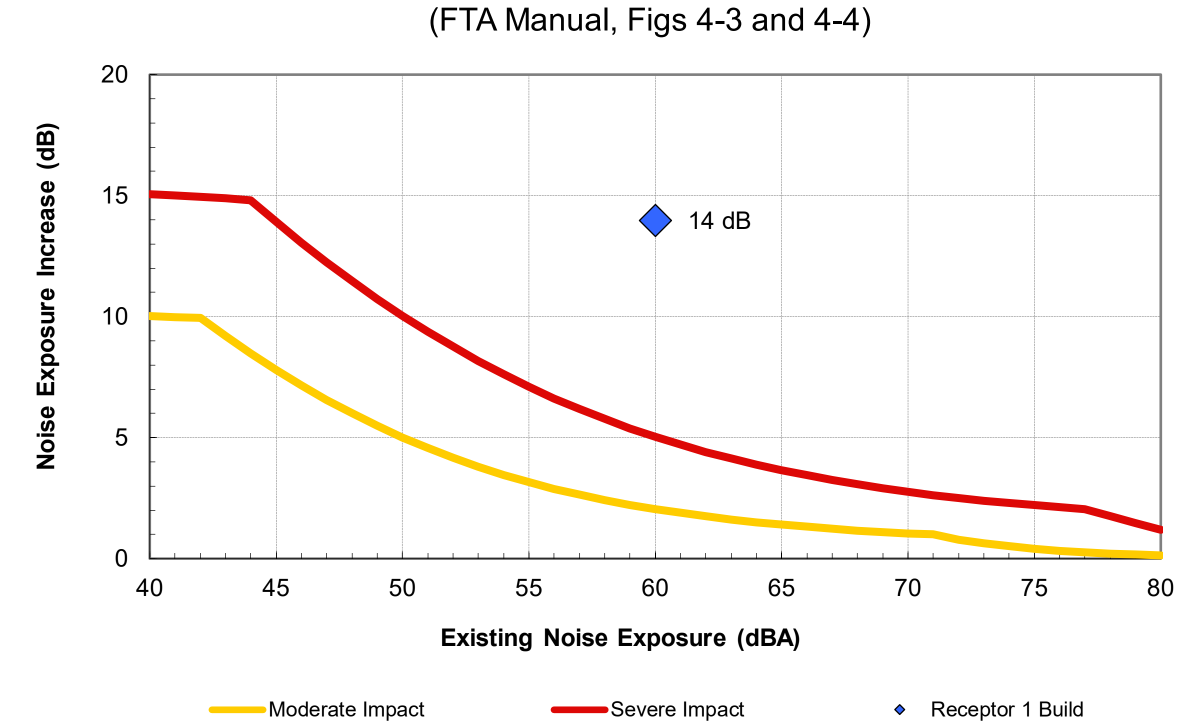
Source 3 Results

Leq(day):	65.1 dBA
Leq(night):	66.3 dBA
Ldn:	72.6 dBA
Incremental Ldn (Src 1-3):	73.8 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 2 Existing
Land Use Category:	3. Institutional
Existing Noise (Measured or Generic Value):	55 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Noisiest hr of Activity During Sensitive hrs	Number of Locos/train	3
	Speed (mph)	50
	Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	370
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Noisiest hr of Activity During Sensitive hrs	Number of Rail Cars/train	130
	Speed (mph)	50
	Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	370
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Noisiest hr of Activity During Sensitive hrs		
	Speed (mph)	50
	Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	370
	Number of Intervening Rows of Buildings	
Adjustments		

Project Results Summary

Existing Leqh:	55 dBA
Total Project Leqh:	60 dBA
Total Noise Exposure:	62 dBA
Increase:	7 dB
Impact?:	Moderate

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

Leqh: 0.0 dBA

Source 2 Results

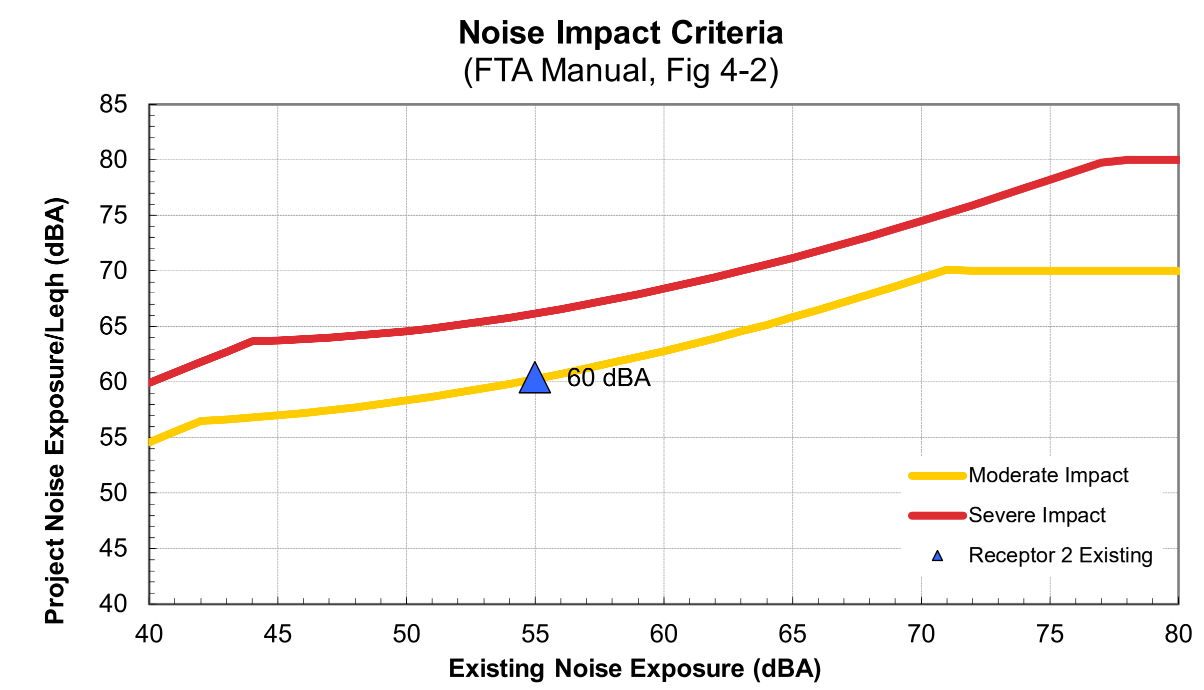
Leqh: 52.8 dBA

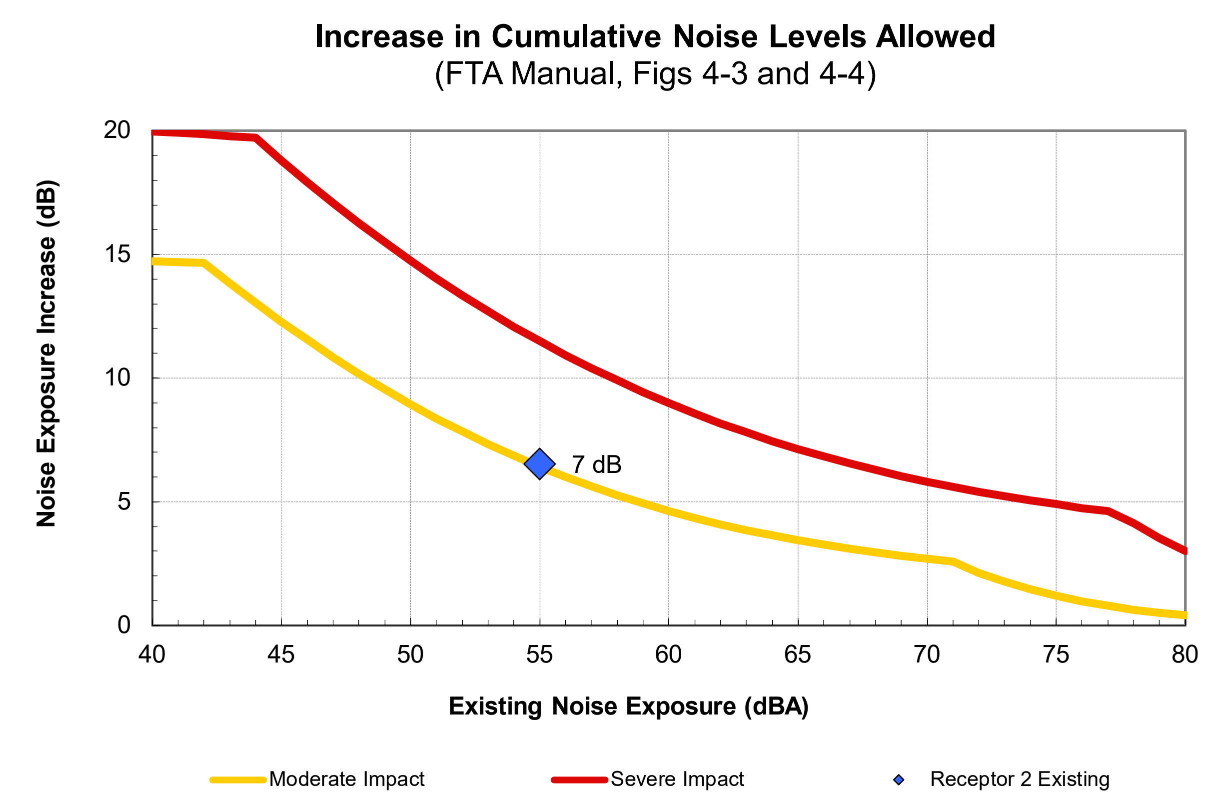
Incremental Leqh (Src 1-2): 52.8 dBA

Source 3 Results

Leqh: 59.6 dBA

Incremental Leqh (Src 1-3): 60.4 dBA





Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	**Montgomery ICTF**

Receiver Parameters	
Receiver:	**Receptor 2 Build**
Land Use Category:	**3. Institutional**
Existing Noise (Measured or Generic Value):	**55 dBA**

Noise Source Parameters	
Number of Noise Sources:	**3**

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Noisiest hr of	**Number of Locos/train**	3
Activity During	**Speed (mph)**	50
Sensitive hrs	**Number of Events/hr**	0.67
Distance	**Distance from Source to Receiver (ft)**	370
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Noisiest hr of	**Number of Rail Cars/train**	180
Activity During	**Speed (mph)**	50
Sensitive hrs	**Number of Events/hr**	0.67
Distance	**Distance from Source to Receiver (ft)**	370
	Number of Intervening Rows of Buildings	0
Adjustments	**Noise Barrier?**	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Noisiest hr of		
Activity During	**Speed (mph)**	50
Sensitive hrs	**Number of Events/hr**	0.67
Distance	**Distance from Source to Receiver (ft)**	370
	Number of Intervening Rows of Buildings	
Adjustments		

Project Results Summary

Existing Leqh:	55 dBA
Total Project Leqh:	61 dBA
Total Noise Exposure:	62 dBA
Increase:	7 dB
Impact?:	**Moderate**

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

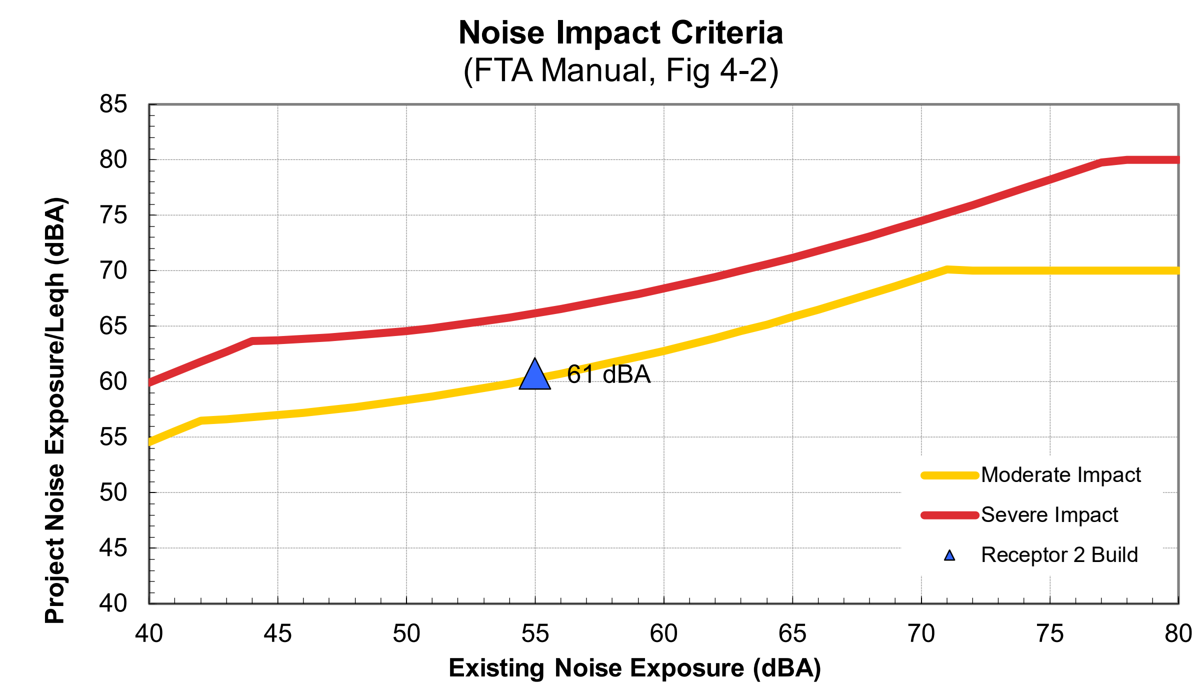
Leqh:	0.0 dBA

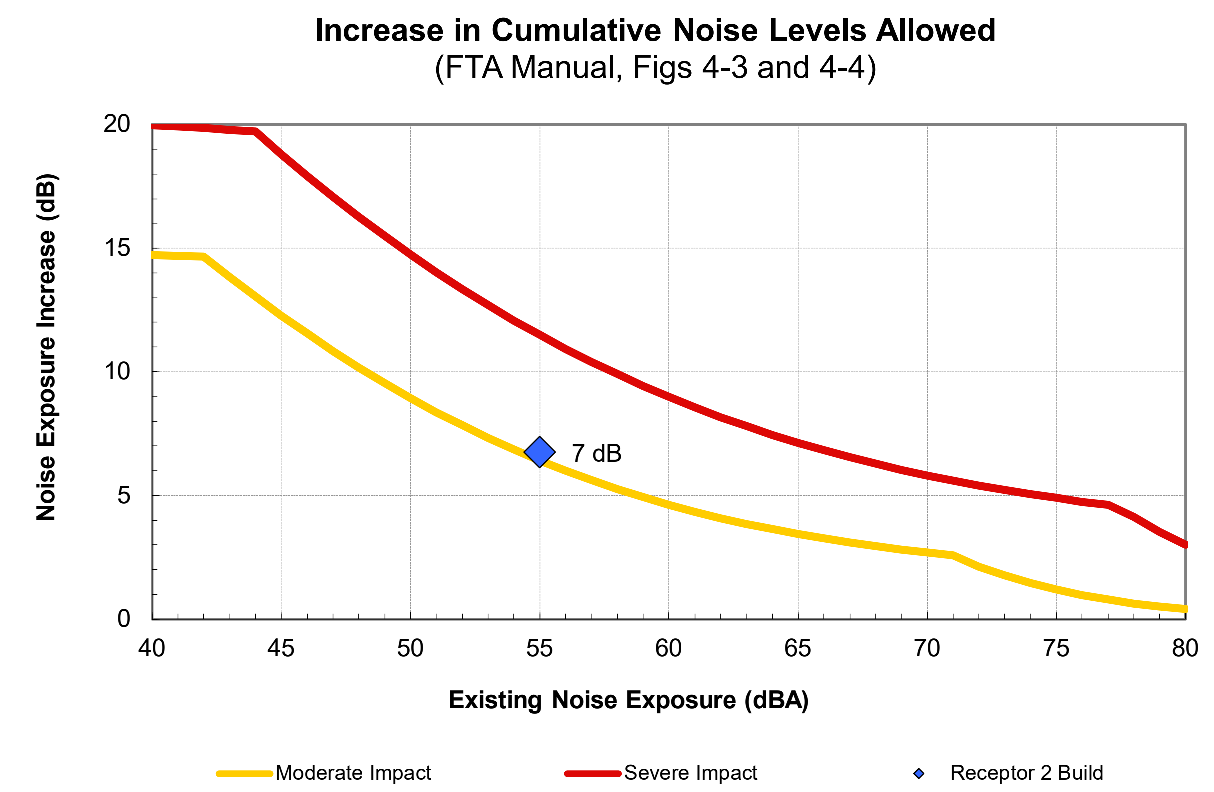
Source 2 Results

Leqh:	54.2 dBA
Incremental Leqh (Src 1-2):	54.2 dBA

Source 3 Results

Leqh:	59.6 dBA
Incremental Leqh (Src 1-3):	60.7 dBA





Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 3 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	60 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	200
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	200
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	200
	Number of Intervening Rows of Buildings	
Adjustments		

Project Results Summary

Existing Ldn:	60 dBA
Total Project Ldn:	72 dBA
Total Noise Exposure:	72 dBA
Increase:	12 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	51.6 dBA
Ldn:	57.4 dBA

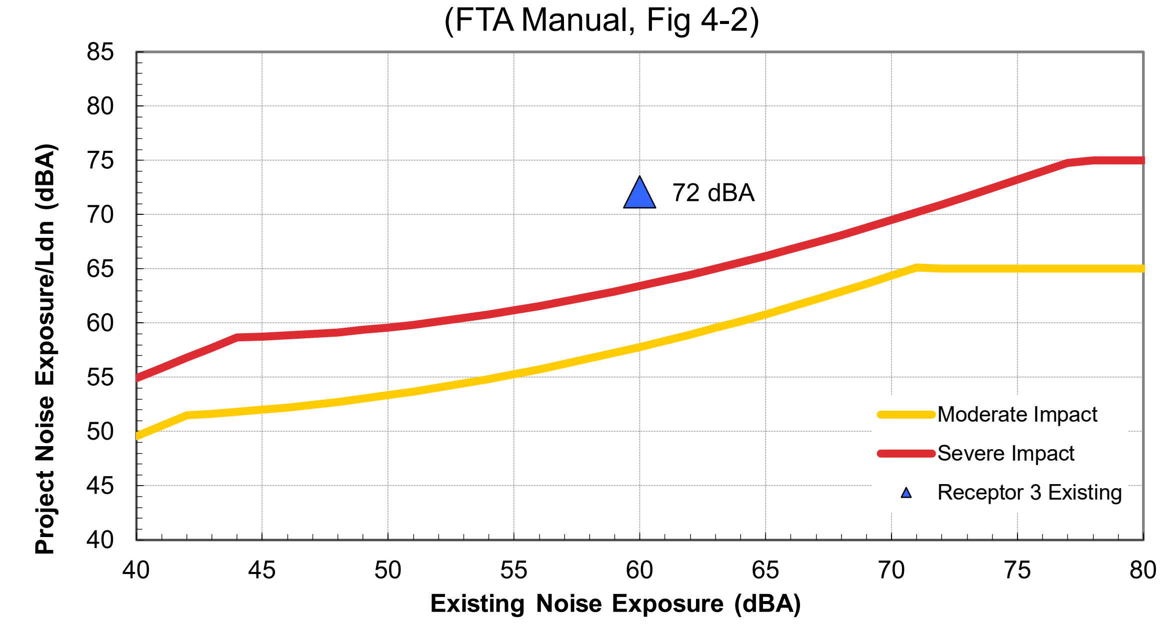
Source 2 Results

Leq(day):	56.8 dBA
Leq(night):	58.0 dBA
Ldn:	64.3 dBA
Incremental Ldn (Src 1-2):	65.1 dBA

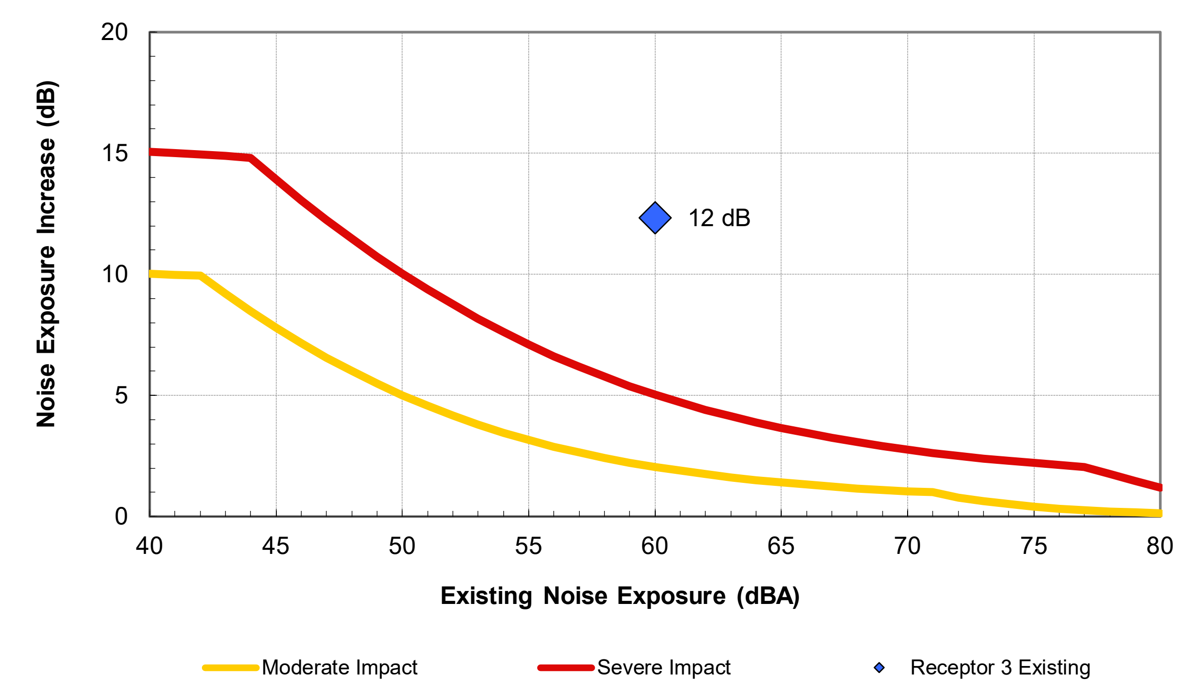
Source 3 Results

Leq(day):	63.6 dBA
Leq(night):	64.9 dBA
Ldn:	71.1 dBA
Incremental Ldn (Src 1-3):	72.1 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 3 Build
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	60 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	200
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	200
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	200
	Number of Intervening Rows of Buildings	
Adjustments		

Project Results Summary

Existing Ldn:	60 dBA
Total Project Ldn:	72 dBA
Total Noise Exposure:	73 dBA
Increase:	13 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	51.6 dBA
Ldn:	57.4 dBA

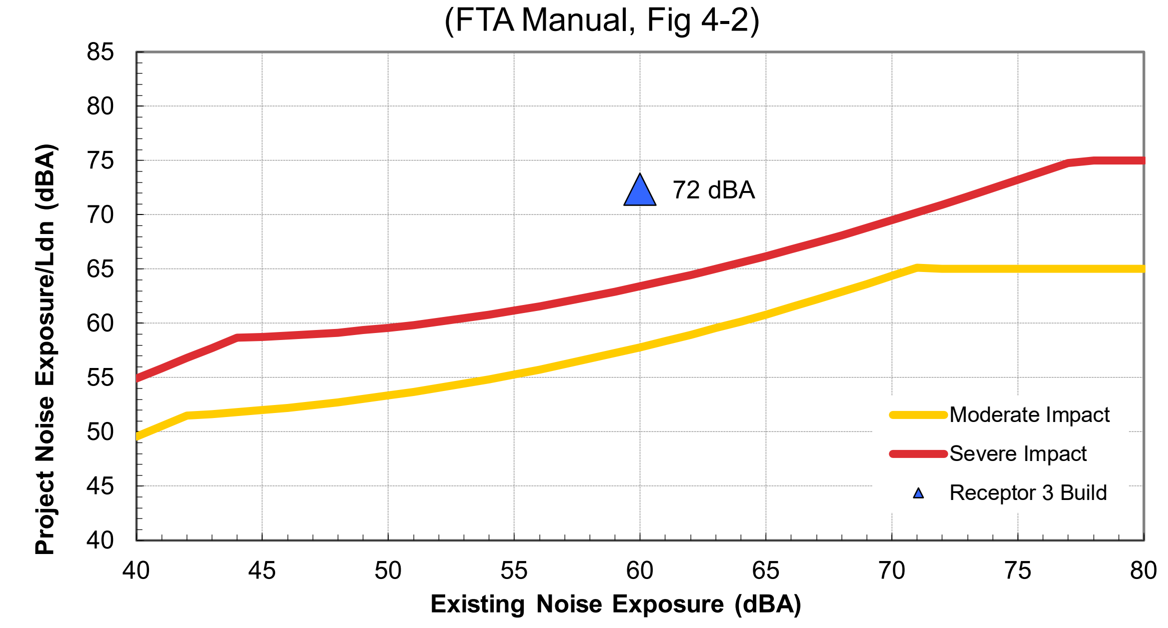
Source 2 Results

Leq(day):	58.2 dBA
Leq(night):	59.4 dBA
Ldn:	65.7 dBA
Incremental Ldn (Src 1-2):	66.3 dBA

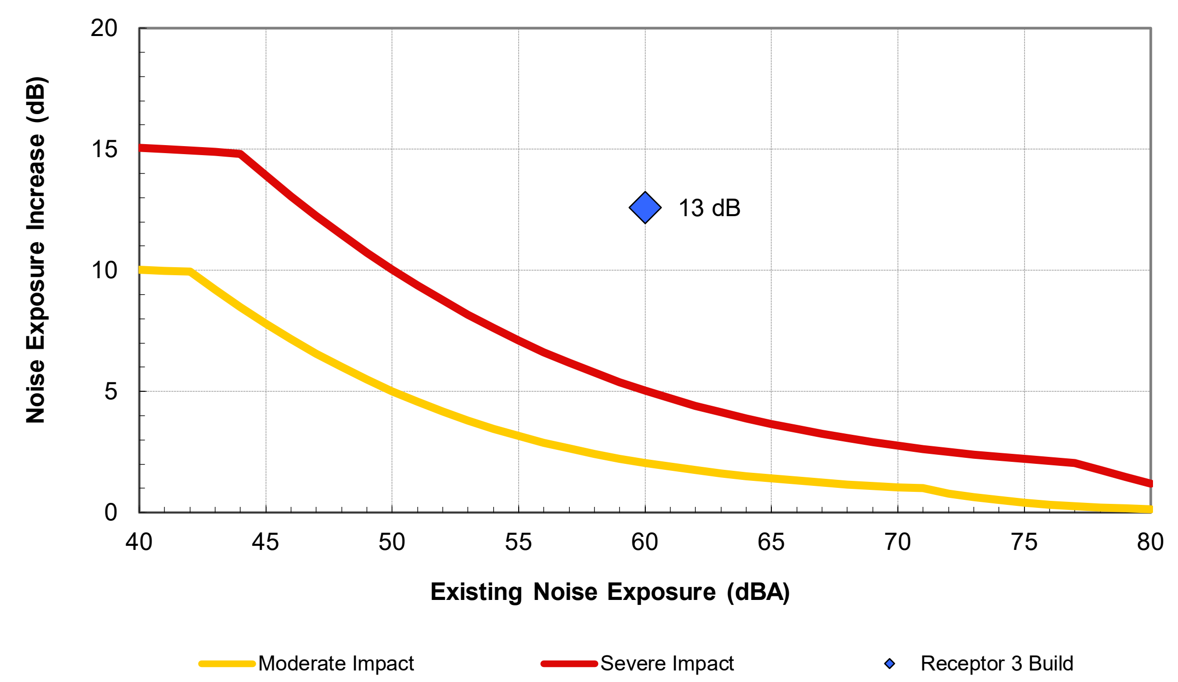
Source 3 Results

Leq(day):	63.6 dBA
Leq(night):	64.9 dBA
Ldn:	71.1 dBA
Incremental Ldn (Src 1-3):	72.3 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 4 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	55 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	250
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	250
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	200
	Number of Intervening Rows of Buildings	
Adjustments		

Project Results Summary

Existing Ldn:	55 dBA
Total Project Ldn:	72 dBA
Total Noise Exposure:	72 dBA
Increase:	17 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	50.2 dBA
Ldn:	55.9 dBA

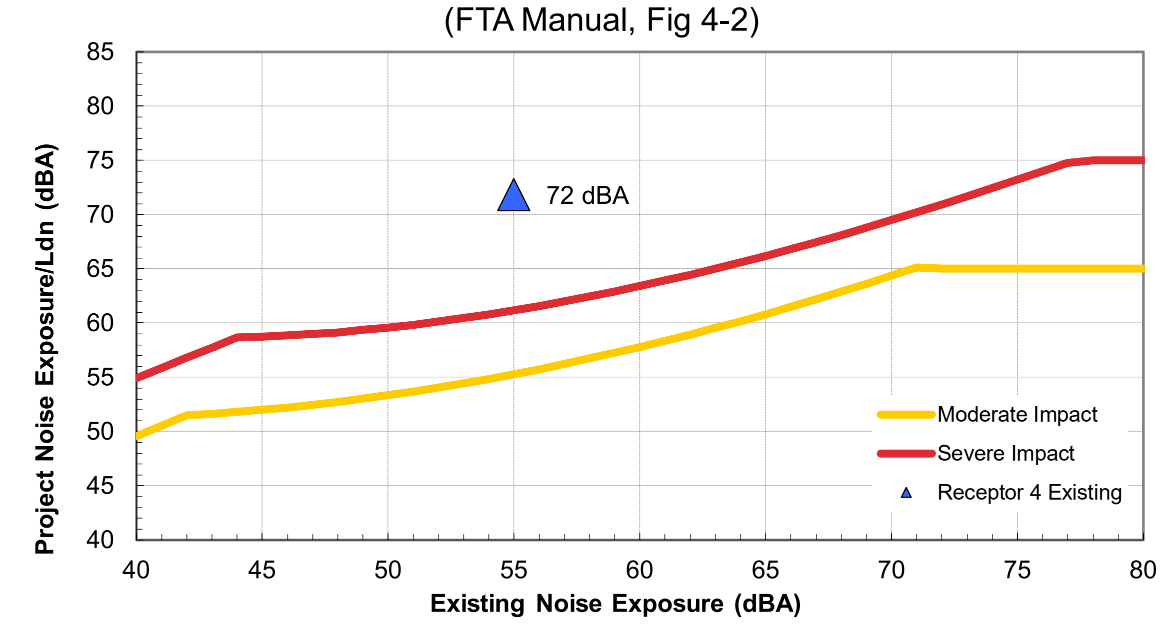
Source 2 Results

Leq(day):	55.3 dBA
Leq(night):	56.5 dBA
Ldn:	62.8 dBA
Incremental Ldn (Src 1-2):	63.6 dBA

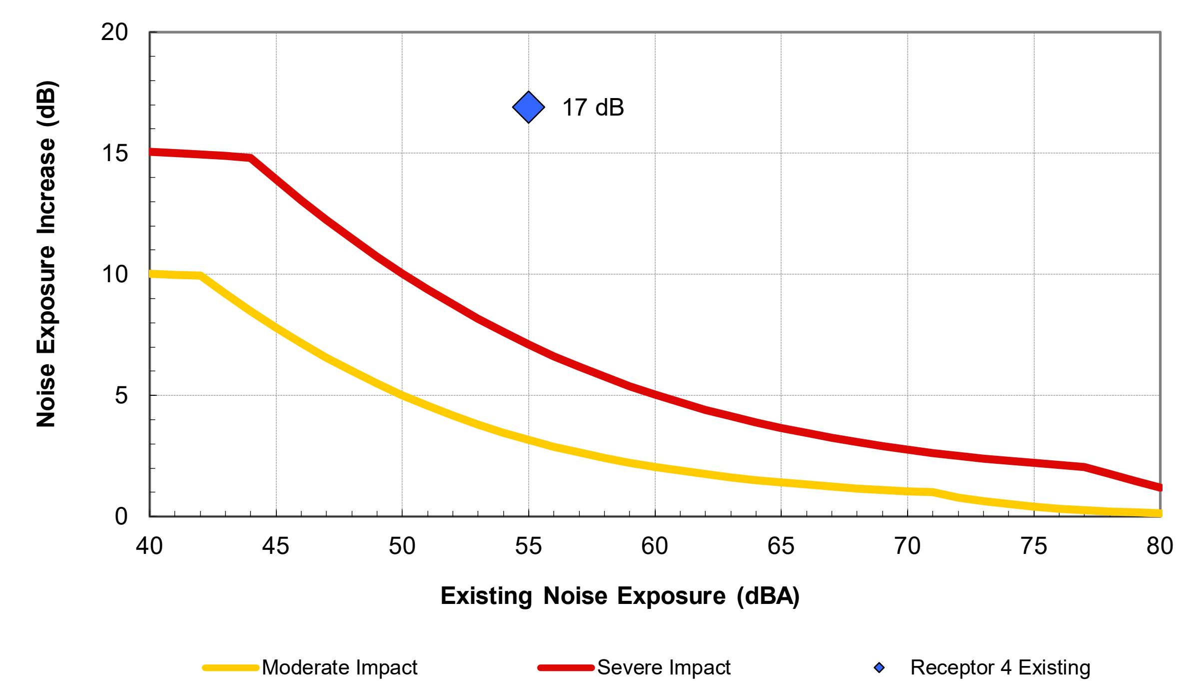
Source 3 Results

Leq(day):	63.6 dBA
Leq(night):	64.9 dBA
Ldn:	71.1 dBA
Incremental Ldn (Src 1-3):	71.8 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 4 Build
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	55 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	250
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	250
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	200
	Number of Intervening Rows of Buildings	
Adjustments		

Project Results Summary

Existing Ldn:	55 dBA
Total Project Ldn:	72 dBA
Total Noise Exposure:	72 dBA
Increase:	17 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	50.2 dBA
Ldn:	55.9 dBA

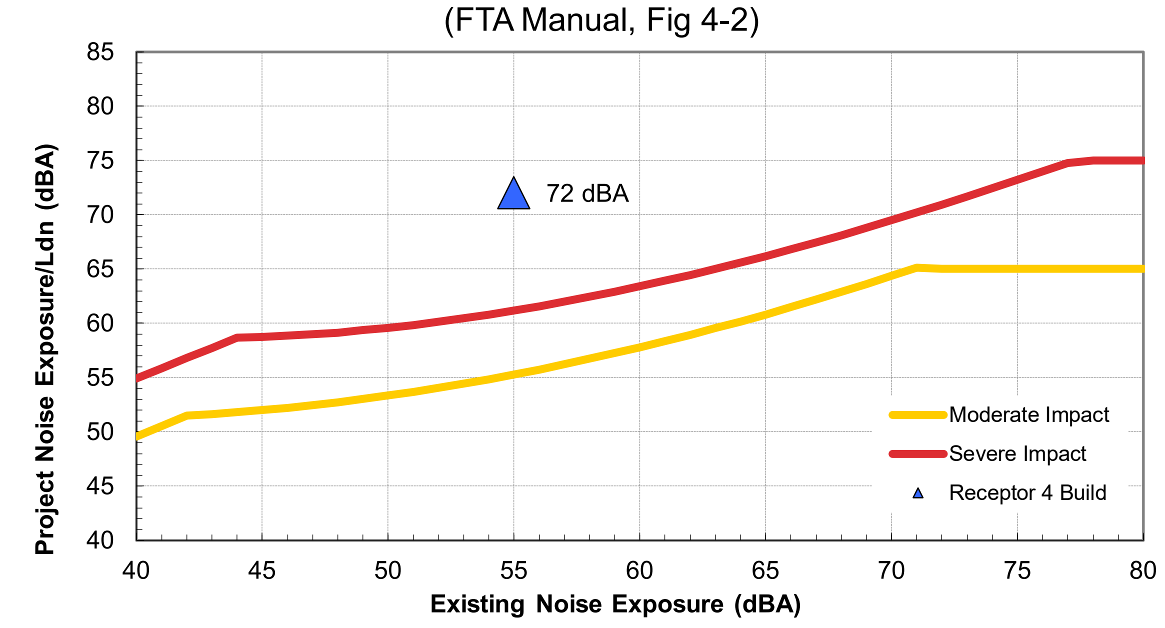
Source 2 Results

Leq(day):	56.7 dBA
Leq(night):	58.0 dBA
Ldn:	64.2 dBA
Incremental Ldn (Src 1-2):	64.8 dBA

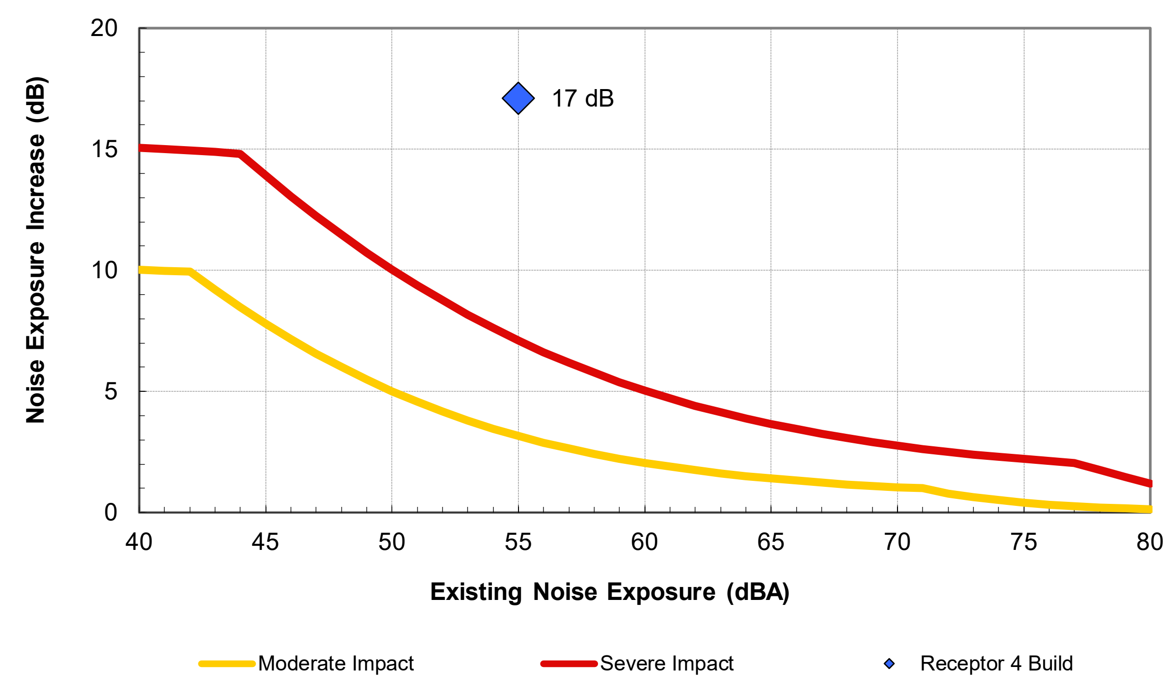
Source 3 Results

Leq(day):	63.6 dBA
Leq(night):	64.9 dBA
Ldn:	71.1 dBA
Incremental Ldn (Src 1-3):	72.0 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 5 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	50 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	600
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	600
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	600
	Number of Intervening Rows of Buildings	
Adjustments		

Project Results Summary

Existing Ldn:	50 dBA
Total Project Ldn:	65 dBA
Total Noise Exposure:	65 dBA
Increase:	15 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

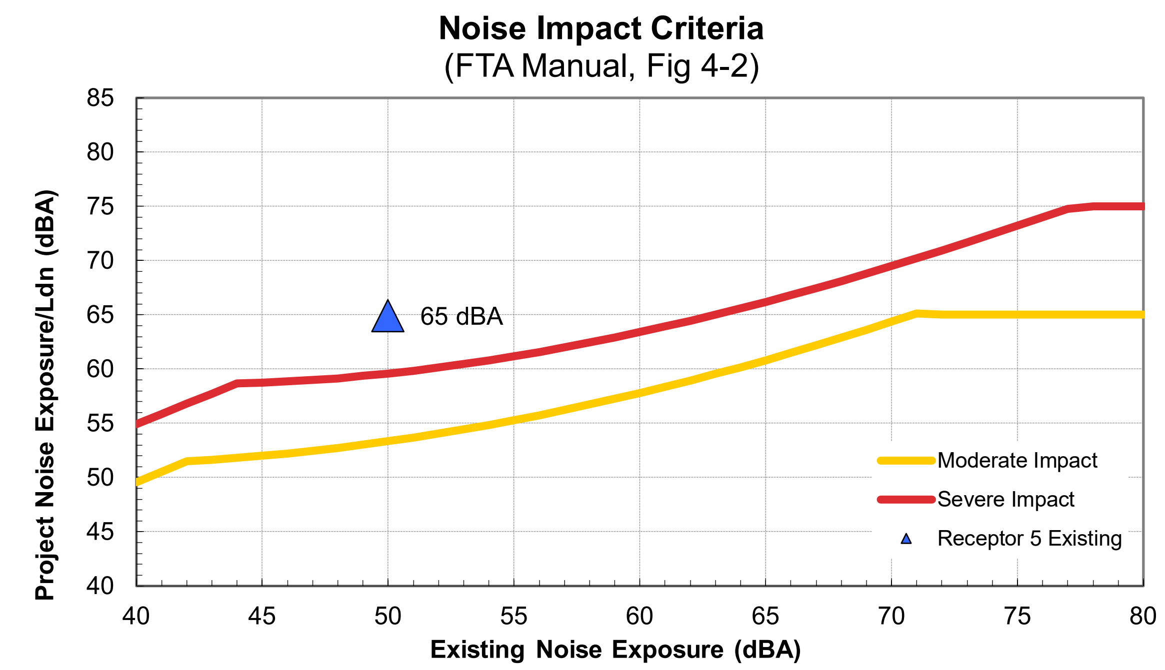
Leq(day):	0.0 dBA
Leq(night):	44.5 dBA
Ldn:	50.2 dBA

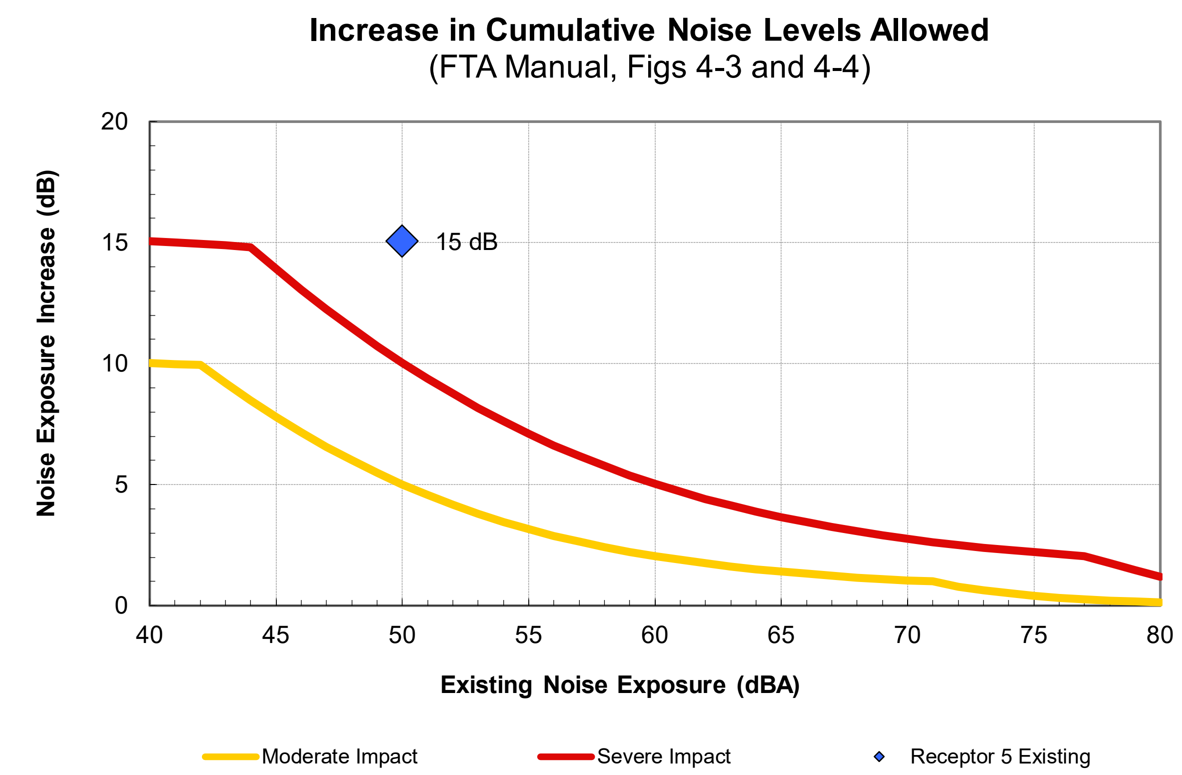
Source 2 Results

Leq(day):	49.6 dBA
Leq(night):	50.8 dBA
Ldn:	57.1 dBA
Incremental Ldn (Src 1-2):	57.9 dBA

Source 3 Results

Leq(day):	56.5 dBA
Leq(night):	57.7 dBA
Ldn:	64.0 dBA
Incremental Ldn (Src 1-3):	64.9 dBA





Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 5 Build
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	60 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	600
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	600
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	600
	Number of Intervening Rows of Buildings	
Adjustments		

Project Results Summary

Existing Ldn:	60 dBA
Total Project Ldn:	65 dBA
Total Noise Exposure:	66 dBA
Increase:	6 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	44.5 dBA
Ldn:	50.2 dBA

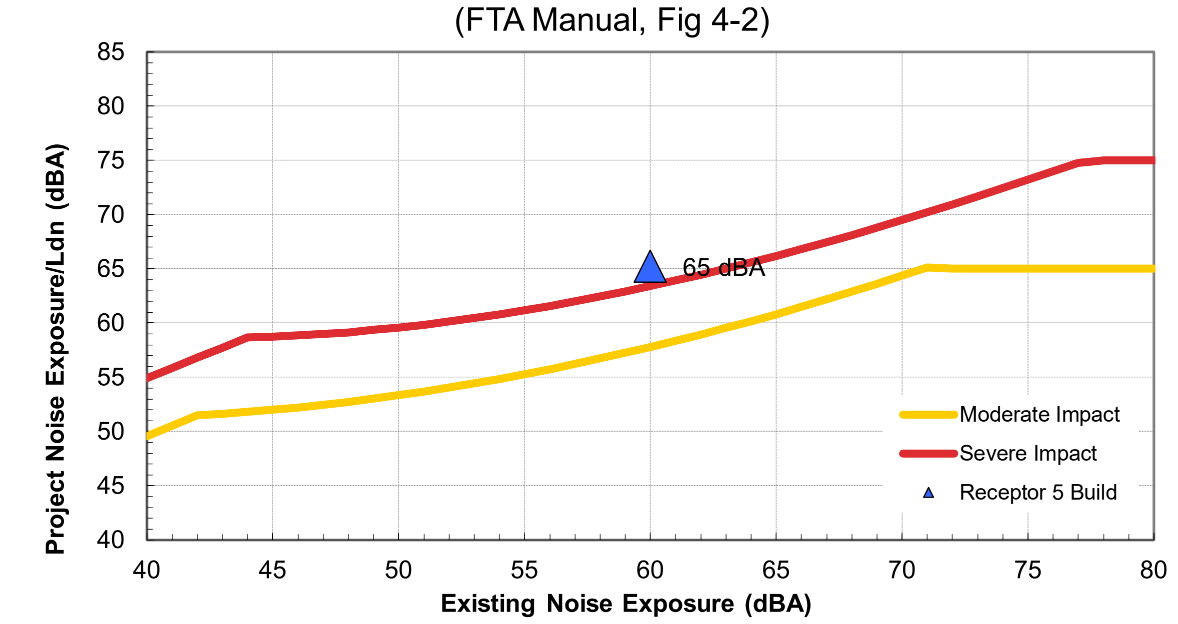
Source 2 Results

Leq(day):	51.0 dBA
Leq(night):	52.3 dBA
Ldn:	58.5 dBA
Incremental Ldn (Src 1-2):	59.1 dBA

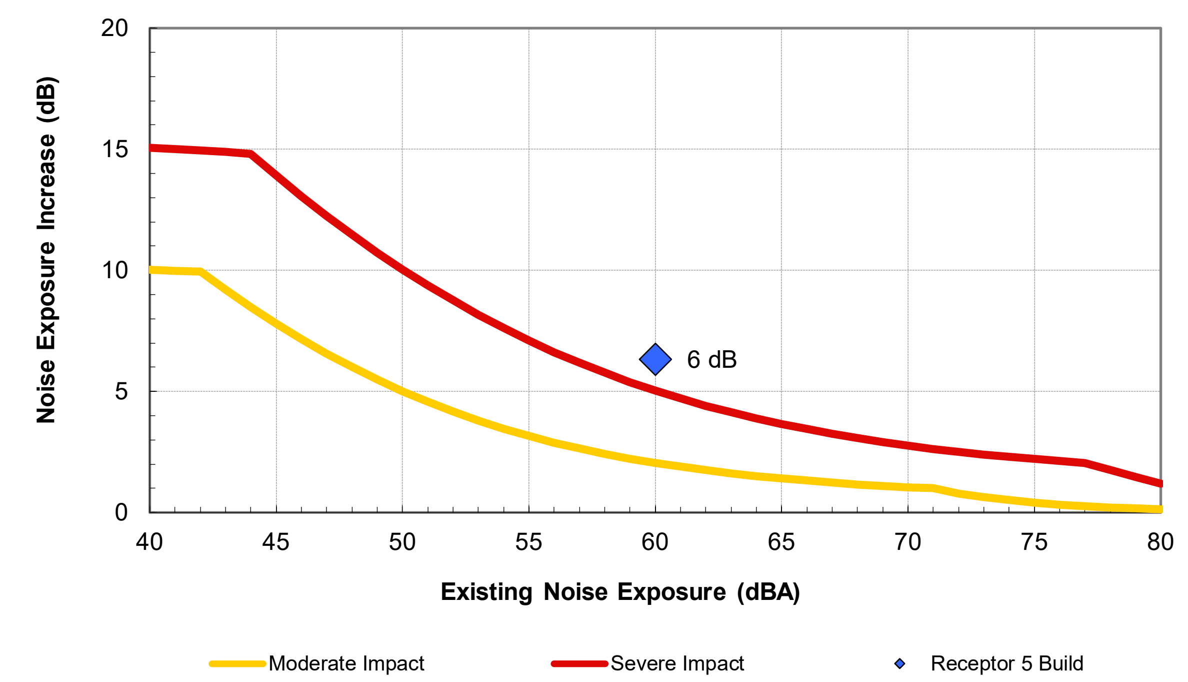
Source 3 Results

Leq(day):	56.5 dBA
Leq(night):	57.7 dBA
Ldn:	64.0 dBA
Incremental Ldn (Src 1-3):	65.2 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 6 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	60 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	215
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	215
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	215
	Number of Intervening Rows of Buildings	
Adjustments		

Project Results Summary

Existing Ldn:	60 dBA
Total Project Ldn:	72 dBA
Total Noise Exposure:	72 dBA
Increase:	12 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	51.2 dBA
Ldn:	56.9 dBA

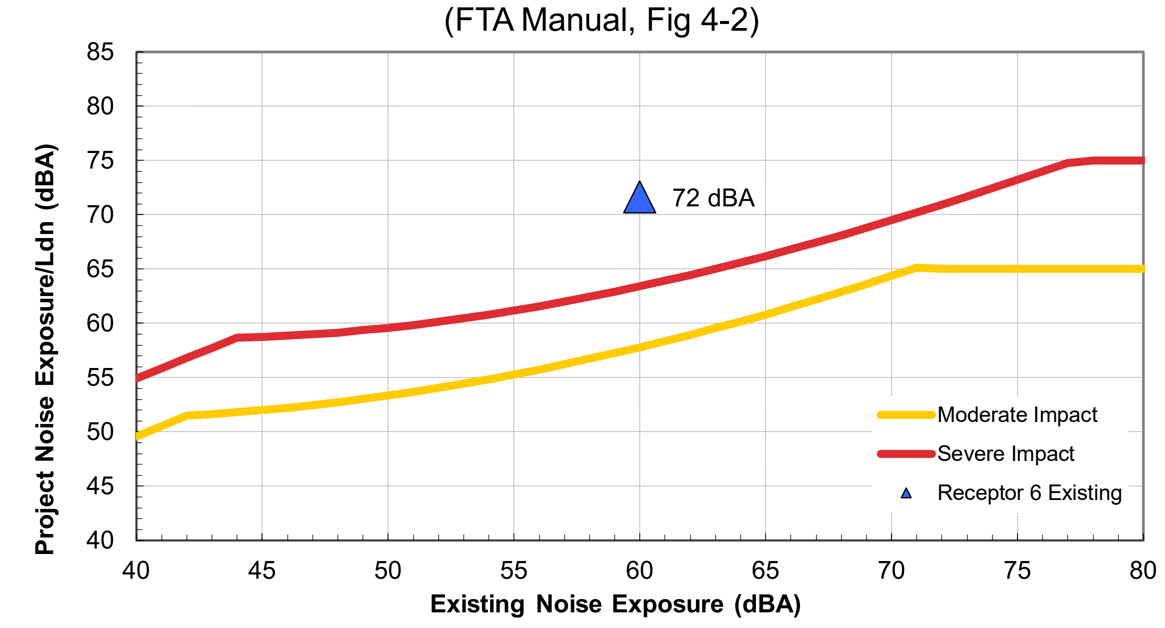
Source 2 Results

Leq(day):	56.3 dBA
Leq(night):	57.5 dBA
Ldn:	63.8 dBA
Incremental Ldn (Src 1-2):	64.6 dBA

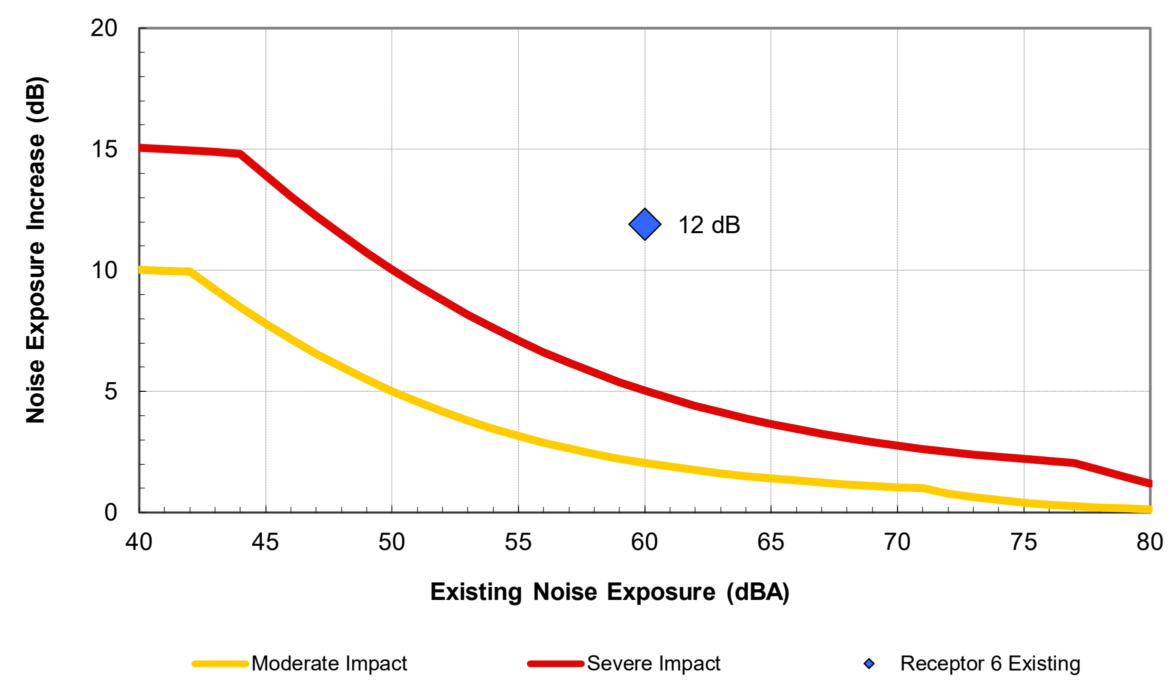
Source 3 Results

Leq(day):	63.2 dBA
Leq(night):	64.4 dBA
Ldn:	70.6 dBA
Incremental Ldn (Src 1-3):	71.6 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 6 Build
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	60 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	215
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	215
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	215
	Number of Intervening Rows of Buildings	
Adjustments		

Project Results Summary

Existing Ldn:	60 dBA
Total Project Ldn:	72 dBA
Total Noise Exposure:	72 dBA
Increase:	12 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	51.2 dBA
Ldn:	56.9 dBA

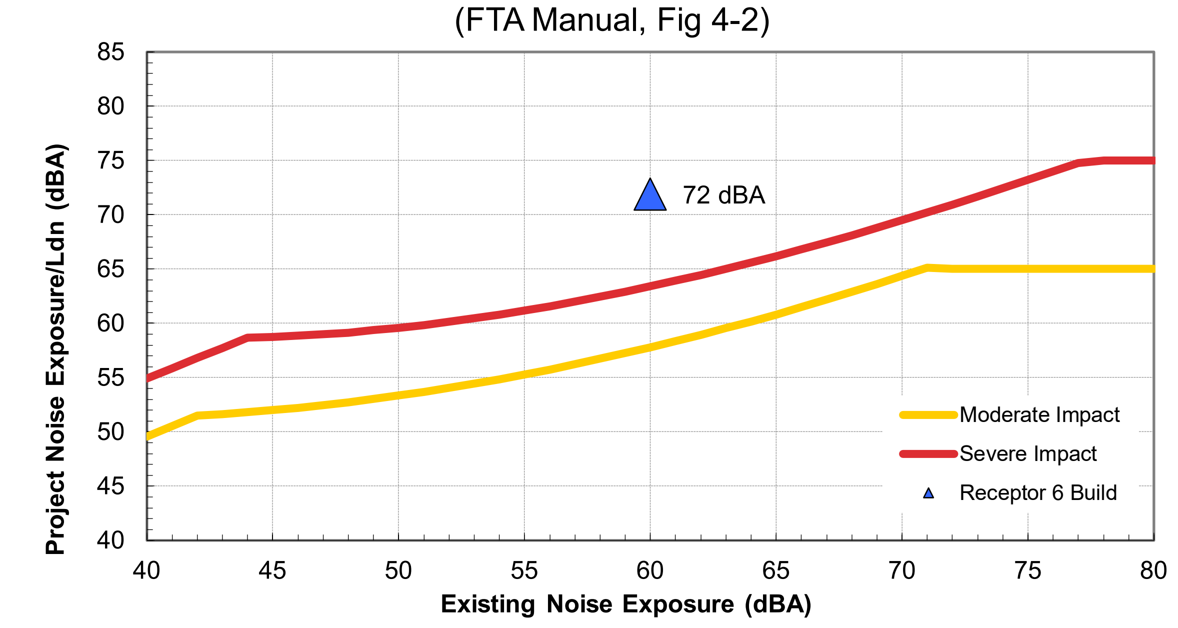
Source 2 Results

Leq(day):	57.7 dBA
Leq(night):	58.9 dBA
Ldn:	65.2 dBA
Incremental Ldn (Src 1-2):	65.8 dBA

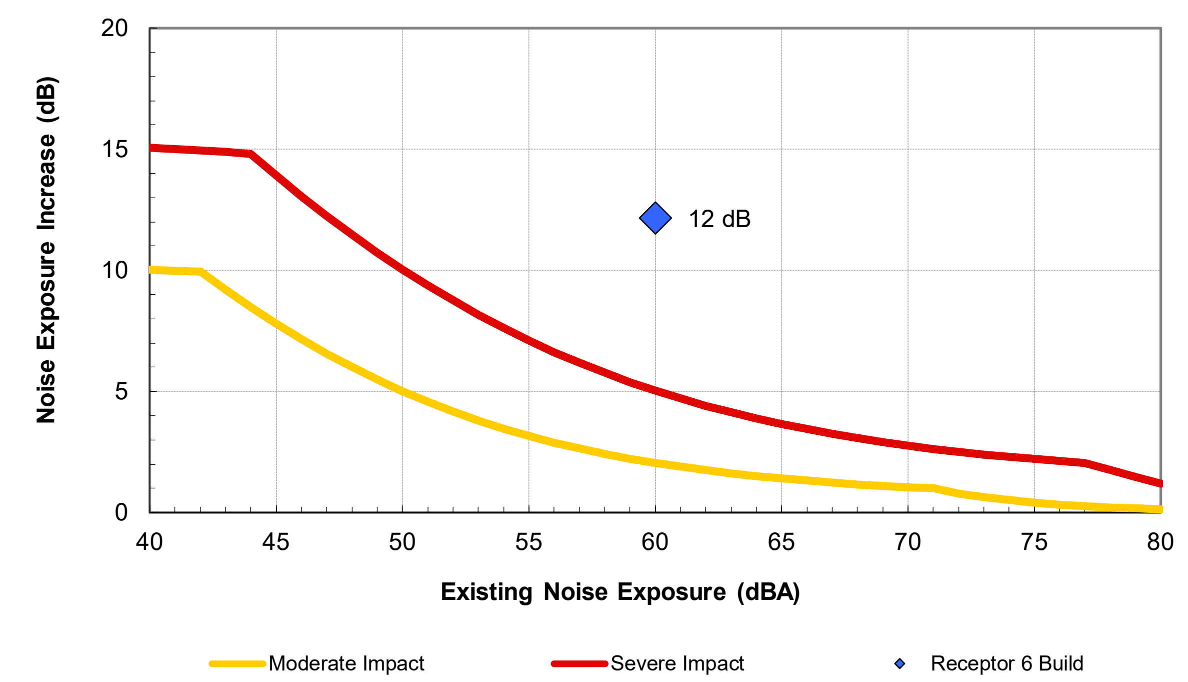
Source 3 Results

Leq(day):	63.2 dBA
Leq(night):	64.4 dBA
Ldn:	70.6 dBA
Incremental Ldn (Src 1-3):	71.9 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 7 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	50 dBA

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	560
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	560
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	50 dBA
Total Project Ldn:	58 dBA
Total Noise Exposure:	59 dBA
Increase:	9 dB
Impact?:	Moderate

Distance to Impact Contours

Dist to Mod. Impact Contour (Sources 1+2):	1208 ft
Dist to Sev. Impact Contour (Sources 1+2):	464 ft

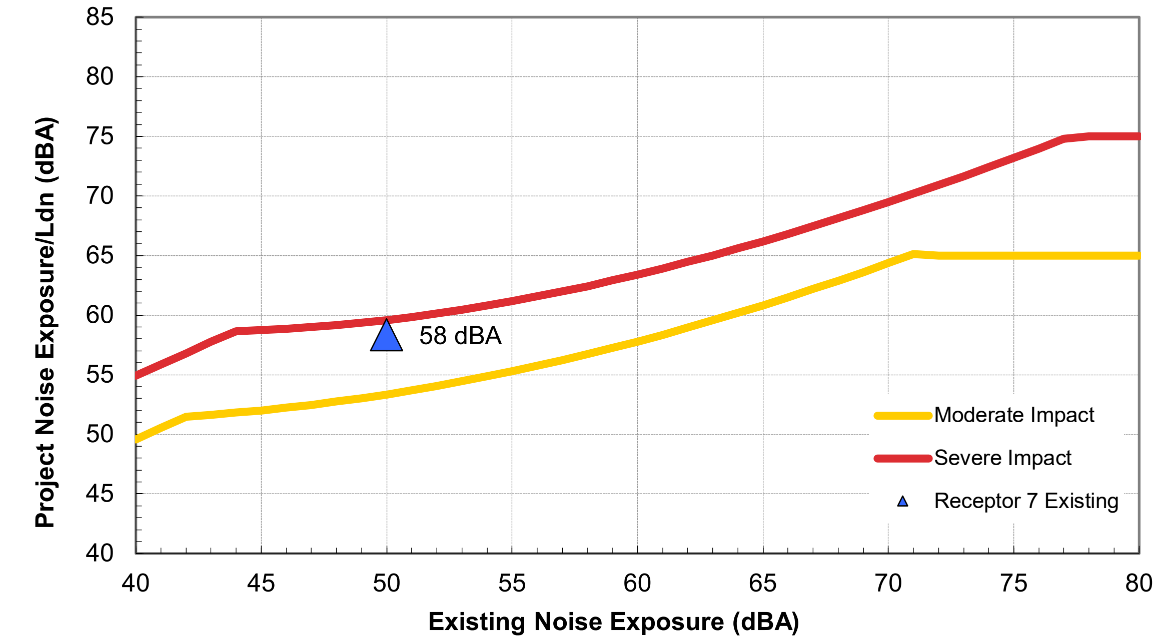
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	44.9 dBA
Ldn:	50.7 dBA

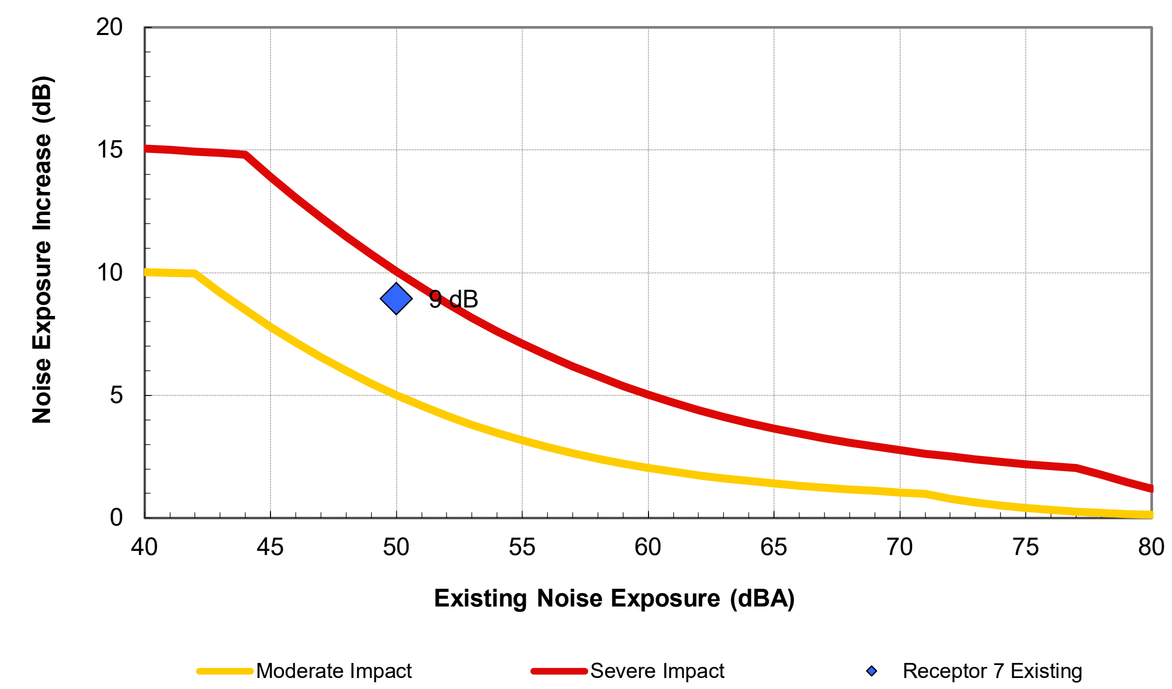
Source 2 Results

Leq(day):	50.1 dBA
Leq(night):	51.3 dBA
Ldn:	57.6 dBA
Incremental Ldn (Src 1-2):	58.4 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	**Montgomery ICTF**

Receiver Parameters	
Receiver:	**Receptor 7 Build**
Land Use Category:	**2. Residential**
Existing Noise (Measured or Generic Value):	**50 dBA**

Noise Source Parameters	
Number of Noise Sources:	**2**

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	**Avg. Number of Locos/train**	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	**Avg. Number of Locos/train**	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	**Distance from Source to Receiver (ft)**	560
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	**Avg. Number of Rail Cars/train**	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	**Avg. Number of Rail Cars/train**	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	**Distance from Source to Receiver (ft)**	560
	Number of Intervening Rows of Buildings	0
Adjustments	**Noise Barrier?**	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	50 dBA
Total Project Ldn:	60 dBA
Total Noise Exposure:	60 dBA
Increase:	10 dB
Impact?:	**Moderate**

Distance to Impact Contours

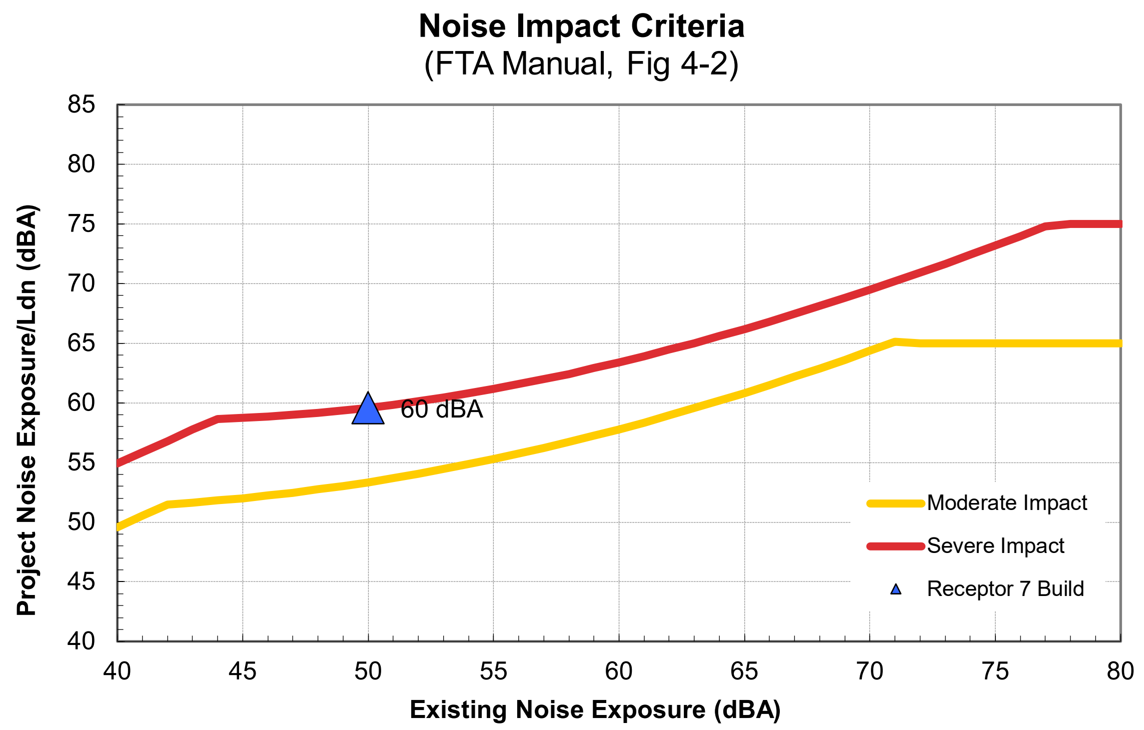
Dist to Mod. Impact Contour (Sources 1+2):	1453 ft
Dist to Sev. Impact Contour (Sources 1+2):	558 ft

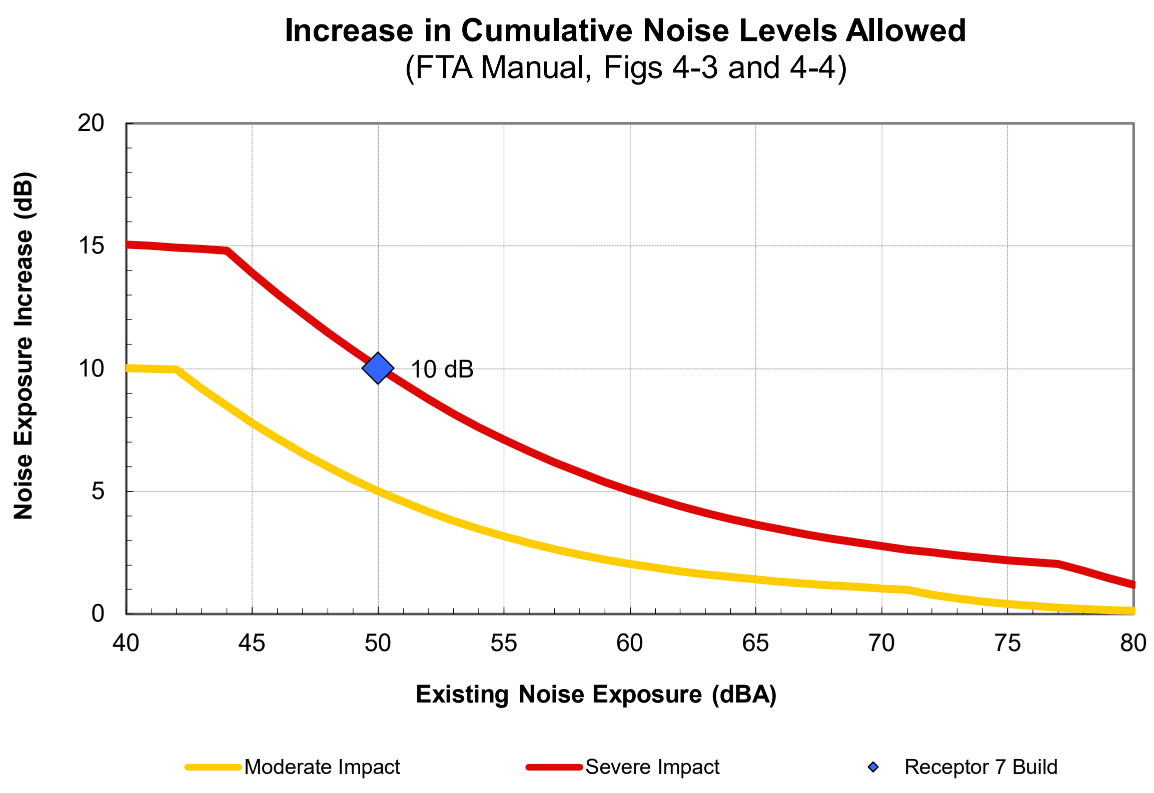
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	44.9 dBA
Ldn:	50.7 dBA

Source 2 Results

Leq(day):	51.5 dBA
Leq(night):	52.7 dBA
Ldn:	59.0 dBA
Incremental Ldn (Src 1-2):	59.6 dBA





Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 8 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	55 dBA

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	265
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	265
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	55 dBA
Total Project Ldn:	63 dBA
Total Noise Exposure:	64 dBA
Increase:	9 dB
Impact?:	Severe

Distance to Impact Contours

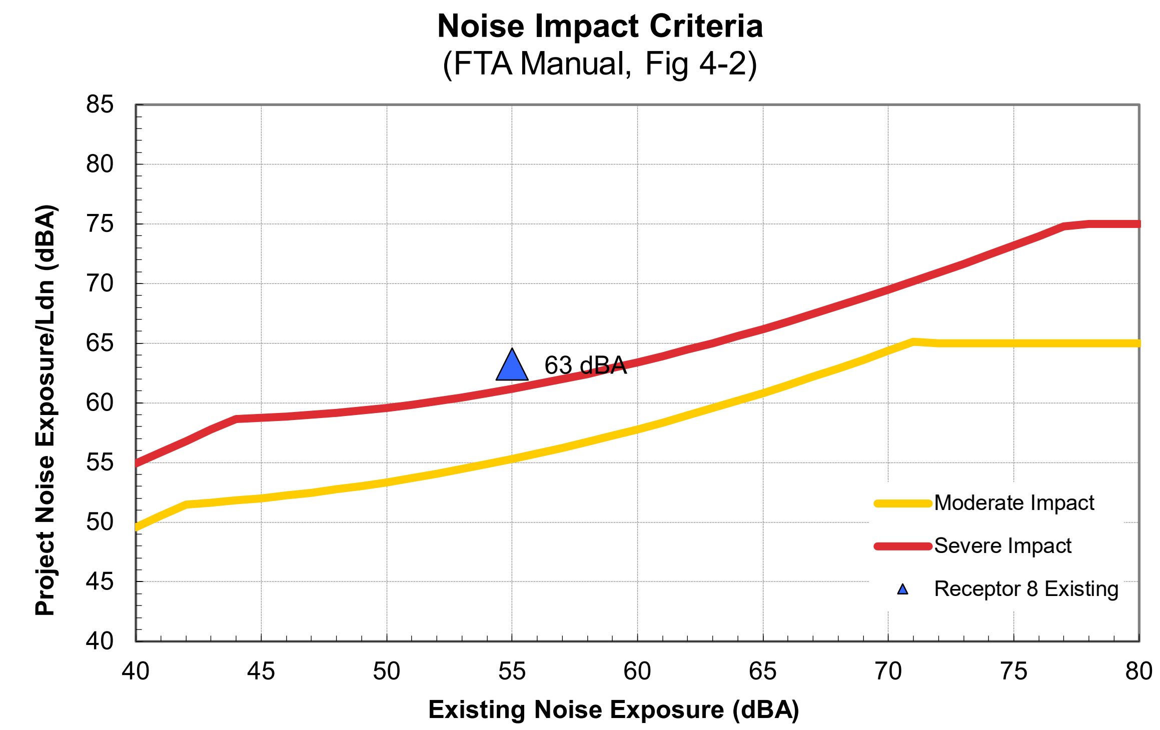
Dist to Mod. Impact Contour (Sources 1+2):	897 ft
Dist to Sev. Impact Contour (Sources 1+2):	364 ft

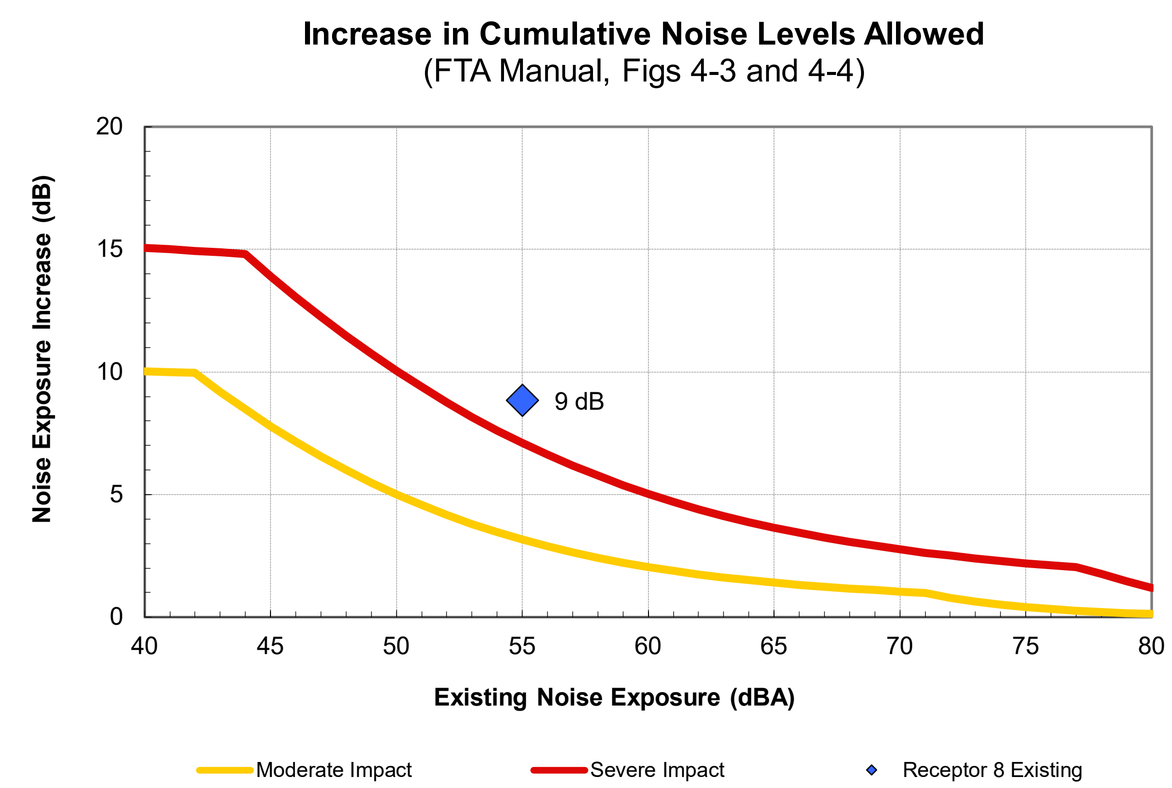
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	49.8 dBA
Ldn:	55.5 dBA

Source 2 Results

Leq(day):	54.9 dBA
Leq(night):	56.2 dBA
Ldn:	62.4 dBA
Incremental Ldn (Src 1-2):	63.2 dBA





Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 8 Build
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	55 dBA

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	265
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	265
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	55 dBA
Total Project Ldn:	64 dBA
Total Noise Exposure:	65 dBA
Increase:	10 dB
Impact?:	Severe

Distance to Impact Contours

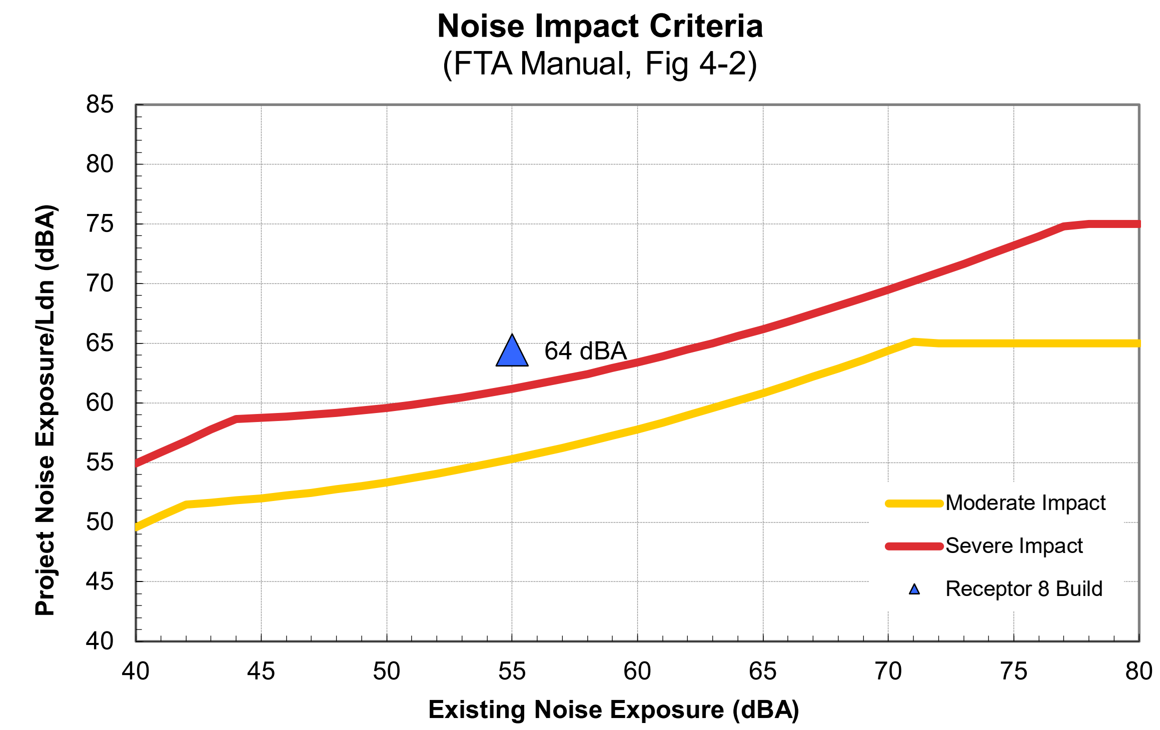
Dist to Mod. Impact Contour (Sources 1+2):	1079 ft
Dist to Sev. Impact Contour (Sources 1+2):	438 ft

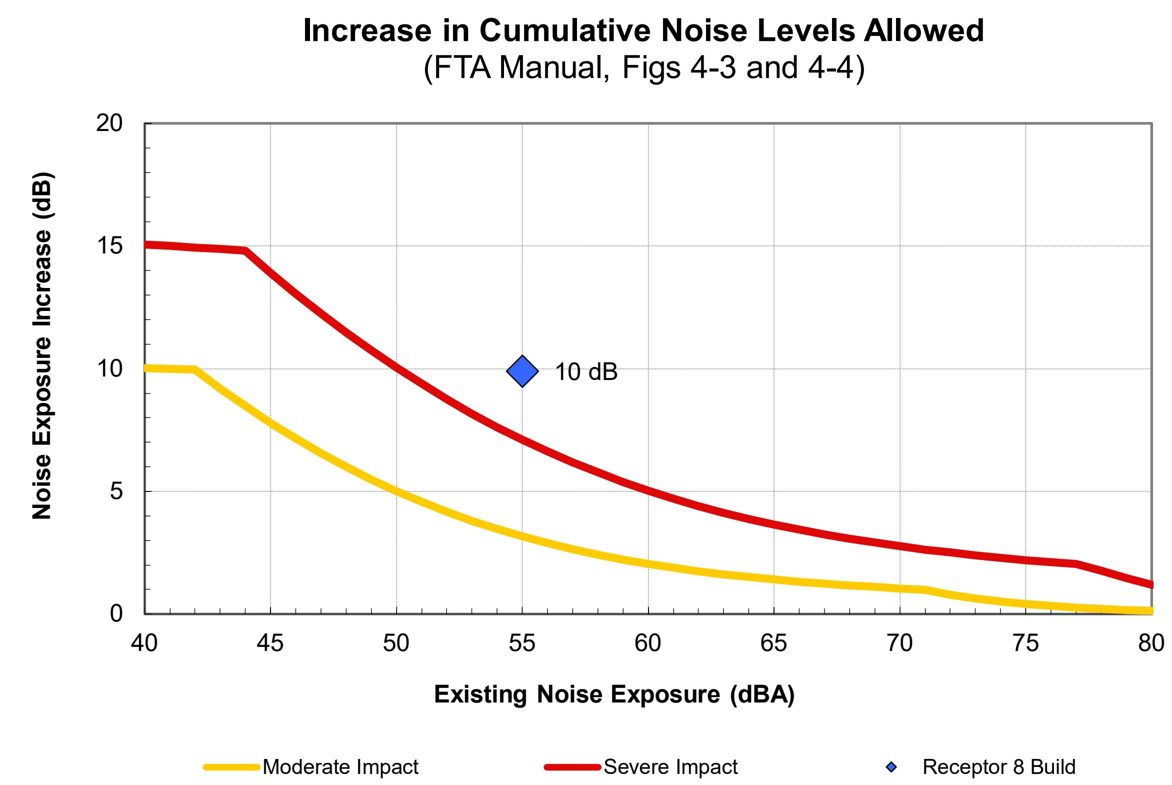
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	49.8 dBA
Ldn:	55.5 dBA

Source 2 Results

Leq(day):	56.3 dBA
Leq(night):	57.6 dBA
Ldn:	63.8 dBA
Incremental Ldn (Src 1-2):	64.4 dBA





Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 9 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	55 dBA

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	363
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	363
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	55 dBA
Total Project Ldn:	61 dBA
Total Noise Exposure:	62 dBA
Increase:	7 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour (Sources 1+2):	897 ft
Dist to Sev. Impact Contour (Sources 1+2):	364 ft

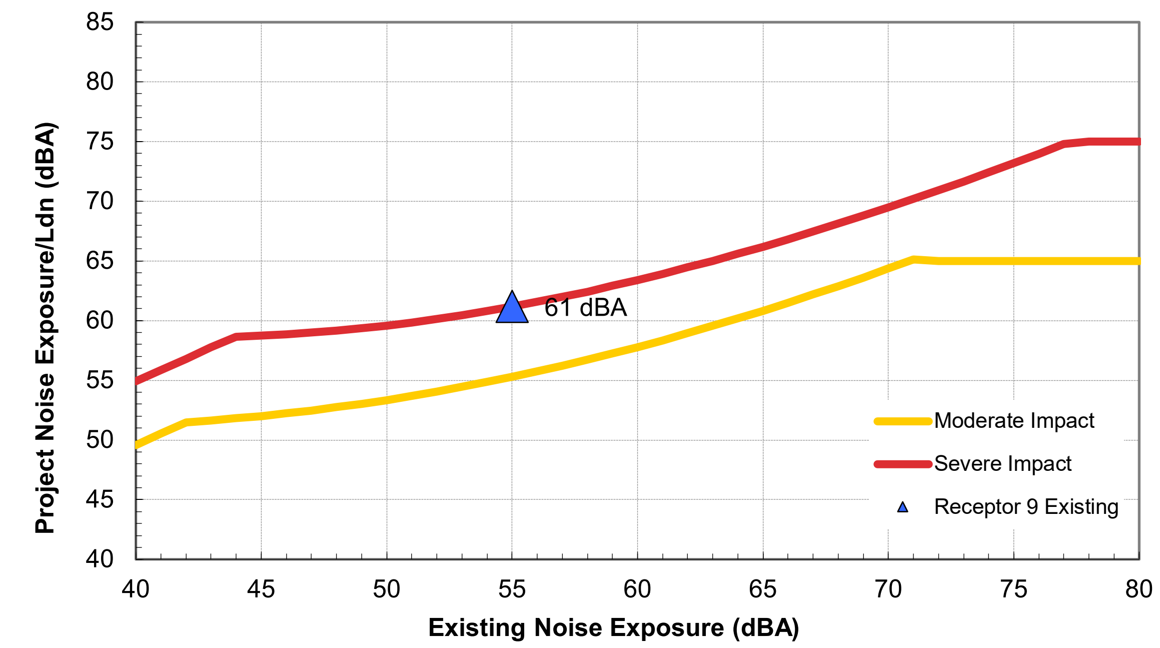
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	47.8 dBA
Ldn:	53.5 dBA

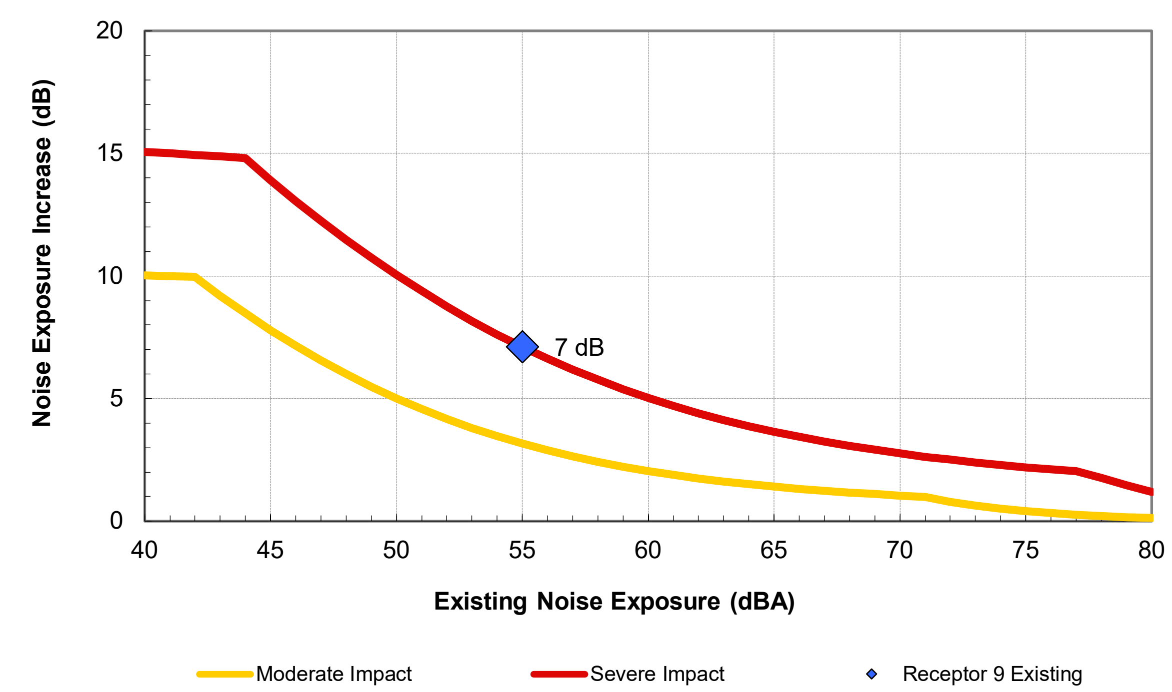
Source 2 Results

Leq(day):	52.9 dBA
Leq(night):	54.1 dBA
Ldn:	60.4 dBA
Incremental Ldn (Src 1-2):	61.2 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 9 Build
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	55 dBA

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	380
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	380
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	55 dBA
Total Project Ldn:	62 dBA
Total Noise Exposure:	63 dBA
Increase:	8 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour (Sources 1+2):	1079 ft
Dist to Sev. Impact Contour (Sources 1+2):	438 ft

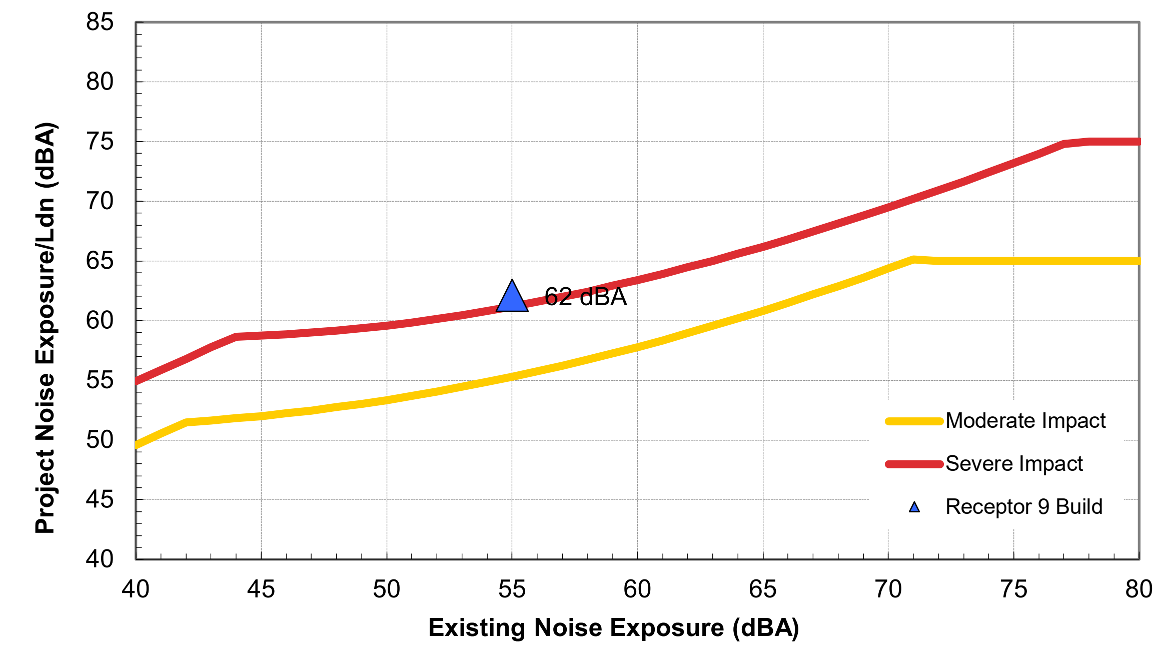
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	47.5 dBA
Ldn:	53.2 dBA

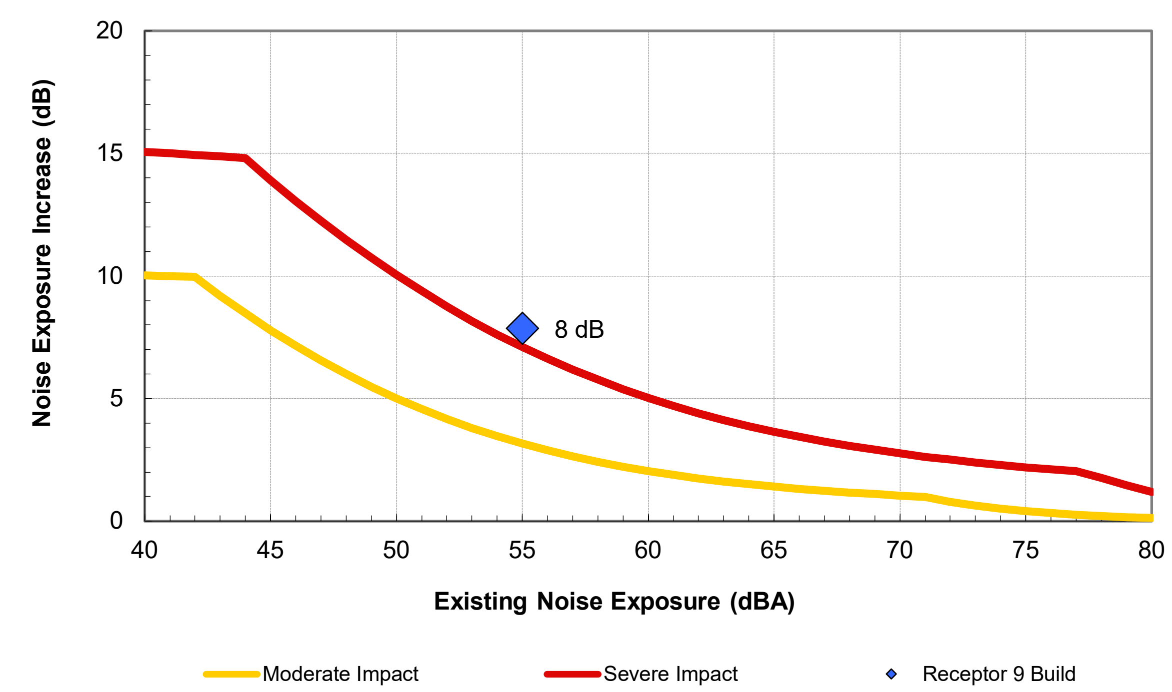
Source 2 Results

Leq(day):	54.0 dBA
Leq(night):	55.2 dBA
Ldn:	61.5 dBA
Incremental Ldn (Src 1-2):	62.1 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 10 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	60 dBA

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	140
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	140
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	60 dBA
Total Project Ldn:	67 dBA
Total Noise Exposure:	68 dBA
Increase:	8 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour (Sources 1+2):	611 ft
Dist to Sev. Impact Contour (Sources 1+2):	259 ft

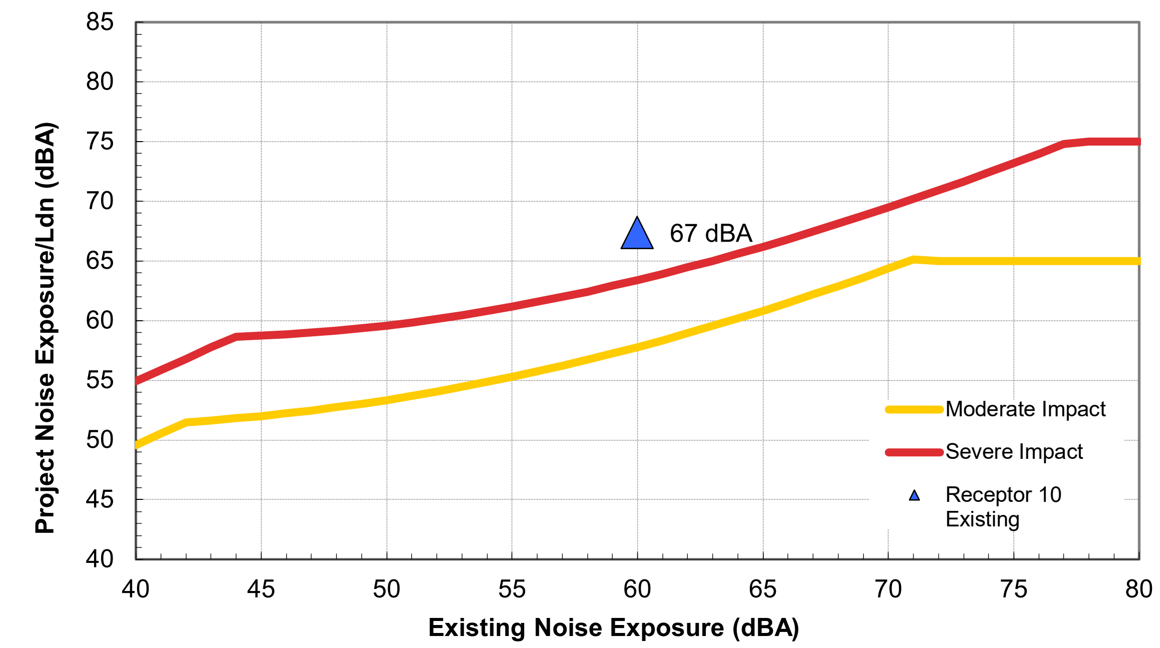
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	54.0 dBA
Ldn:	59.7 dBA

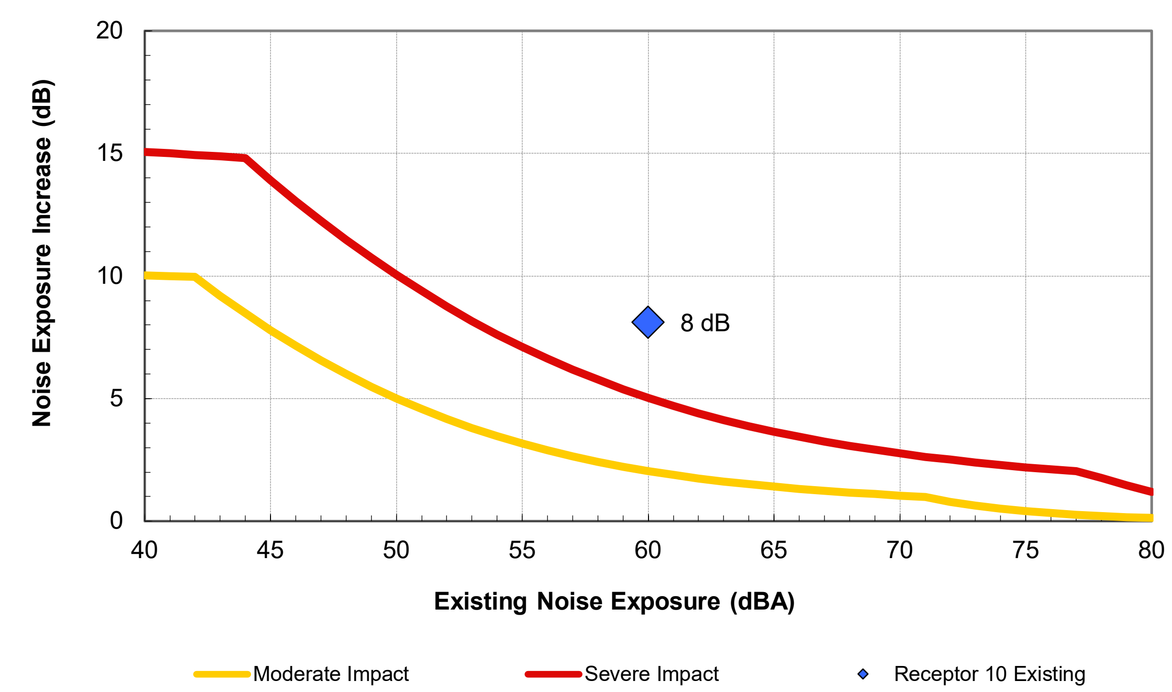
Source 2 Results

Leq(day):	59.1 dBA
Leq(night):	60.3 dBA
Ldn:	66.6 dBA
Incremental Ldn (Src 1-2):	67.4 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 10 Build
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	60 dBA

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	140
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	140
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	60 dBA
Total Project Ldn:	69 dBA
Total Noise Exposure:	69 dBA
Increase:	9 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour (Sources 1+2):	735 ft
Dist to Sev. Impact Contour (Sources 1+2):	311 ft

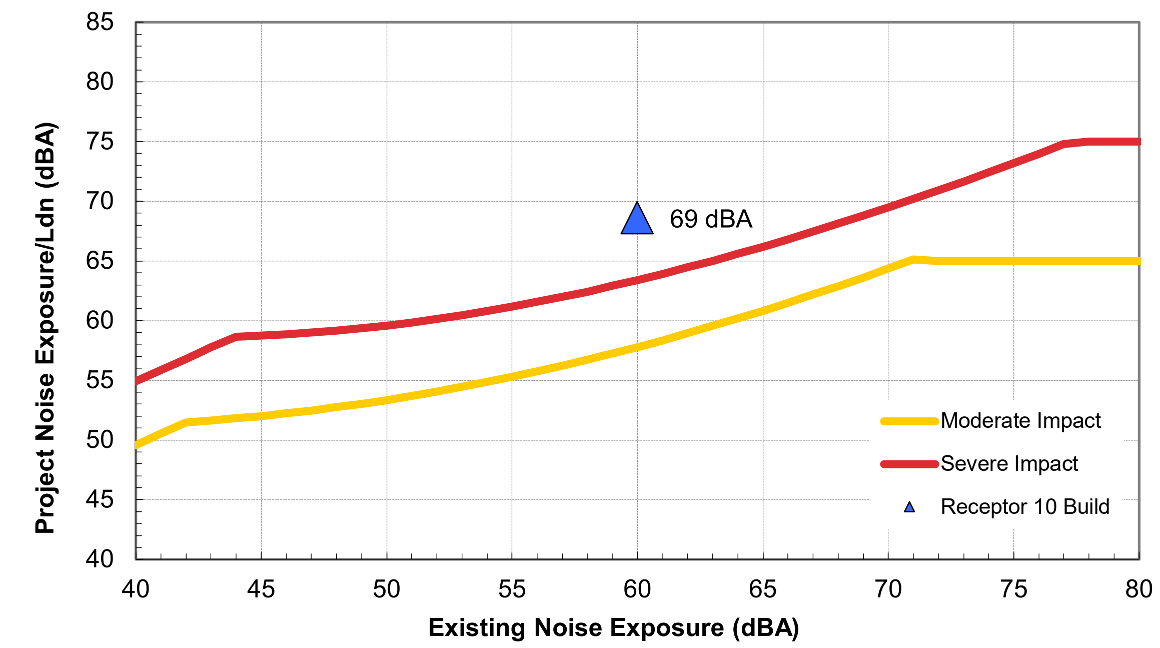
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	54.0 dBA
Ldn:	59.7 dBA

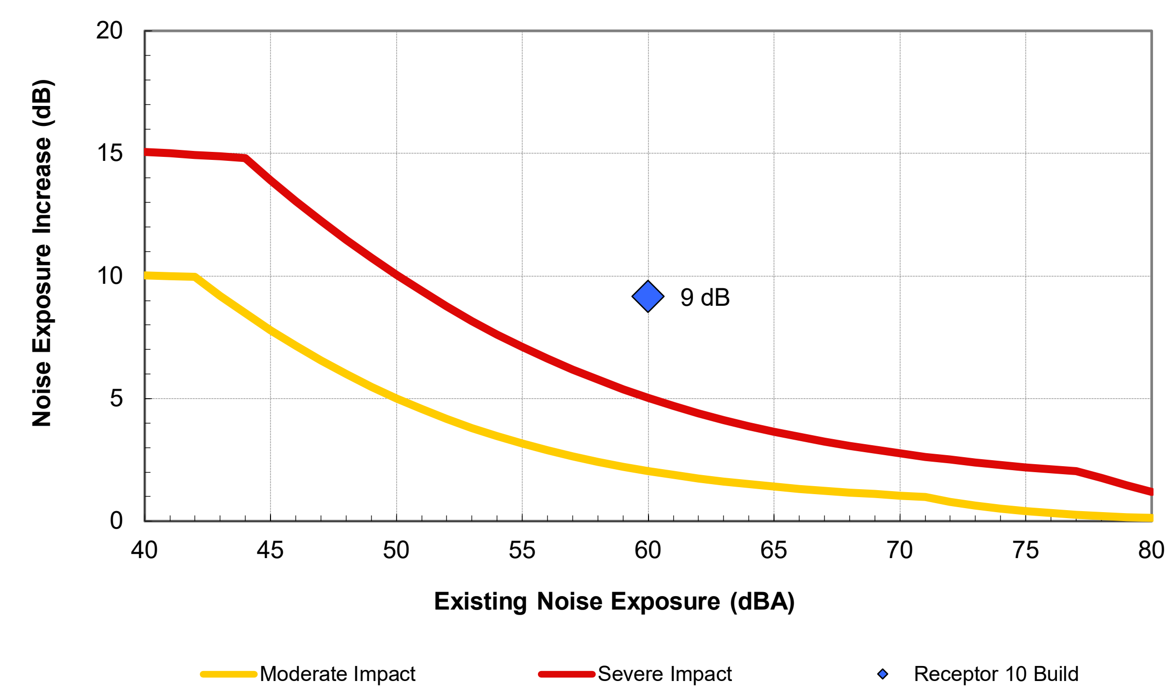
Source 2 Results

Leq(day):	60.5 dBA
Leq(night):	61.7 dBA
Ldn:	68.0 dBA
Incremental Ldn (Src 1-2):	68.6 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 11 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	50 dBA

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	615
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	615
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	50 dBA
Total Project Ldn:	58 dBA
Total Noise Exposure:	58 dBA
Increase:	8 dB
Impact?:	Moderate

Distance to Impact Contours

Dist to Mod. Impact Contour (Sources 1+2):	1208 ft
Dist to Sev. Impact Contour (Sources 1+2):	464 ft

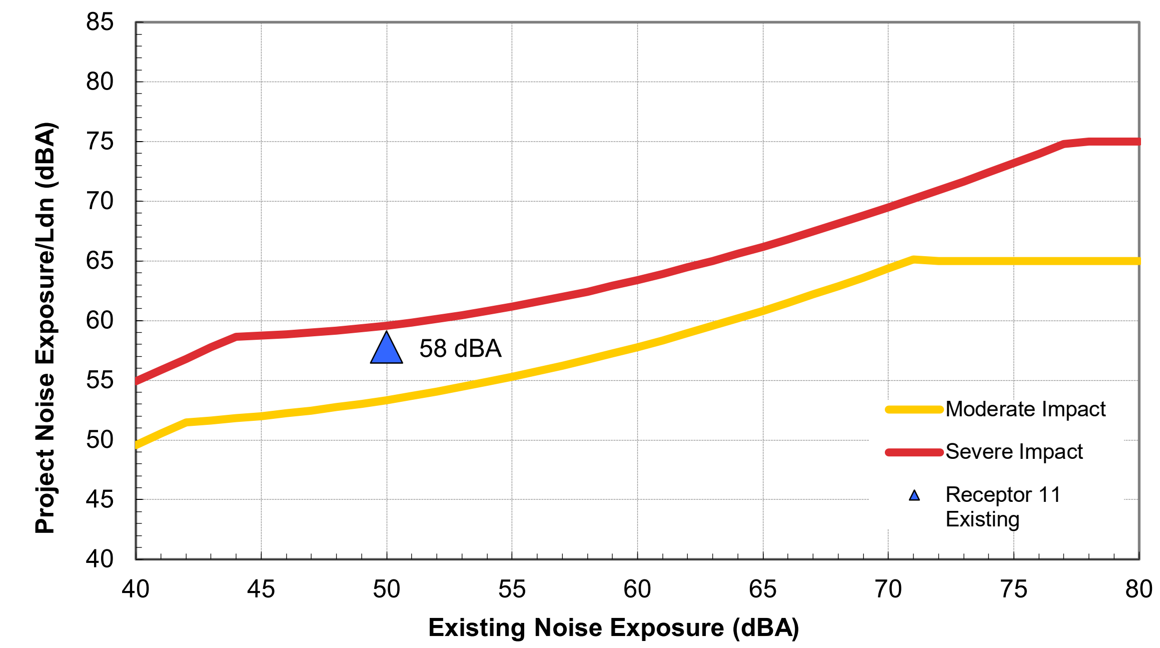
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	44.3 dBA
Ldn:	50.1 dBA

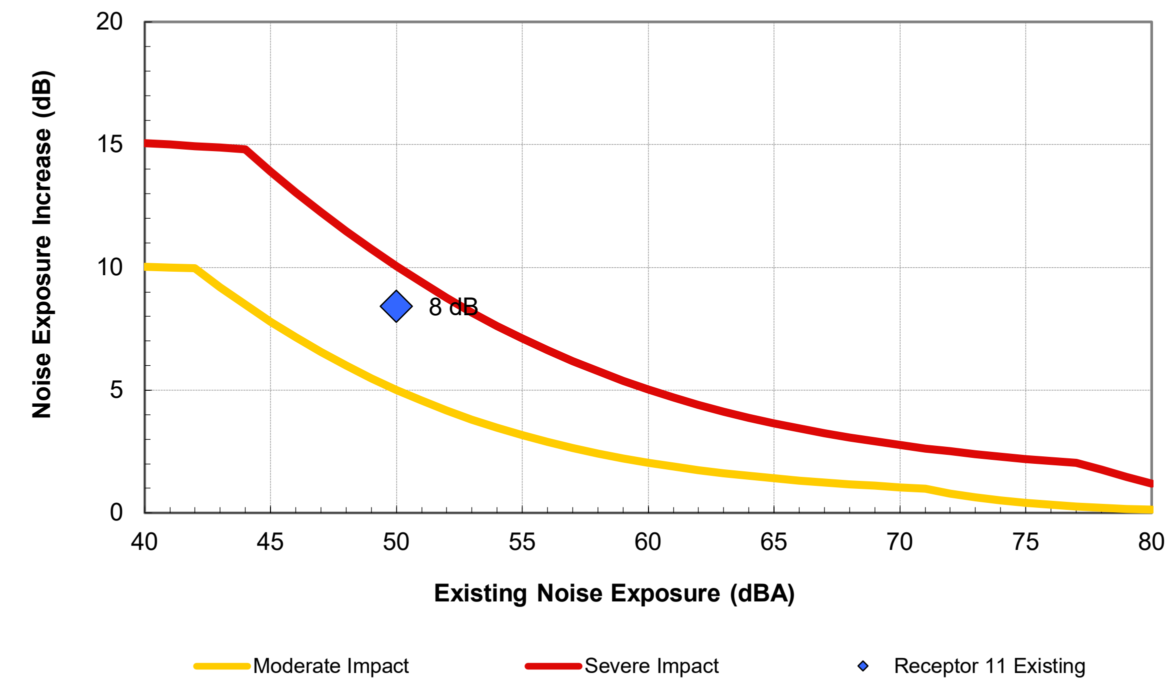
Source 2 Results

Leq(day):	49.5 dBA
Leq(night):	50.7 dBA
Ldn:	56.9 dBA
Incremental Ldn (Src 1-2):	57.8 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	**Montgomery ICTF**

Receiver Parameters	
Receiver:	**Receptor 11 Build**
Land Use Category:	**2. Residential**
Existing Noise (Measured or Generic Value):	**50 dBA**

Noise Source Parameters	
Number of Noise Sources:	**2**

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	**Avg. Number of Locos/train**	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	**Avg. Number of Locos/train**	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	**Distance from Source to Receiver (ft)**	615
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	**Avg. Number of Rail Cars/train**	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	**Avg. Number of Rail Cars/train**	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	**Distance from Source to Receiver (ft)**	615
	Number of Intervening Rows of Buildings	0
Adjustments	**Noise Barrier?**	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	50 dBA
Total Project Ldn:	59 dBA
Total Noise Exposure:	59 dBA
Increase:	9 dB
Impact?:	**Moderate**

Distance to Impact Contours

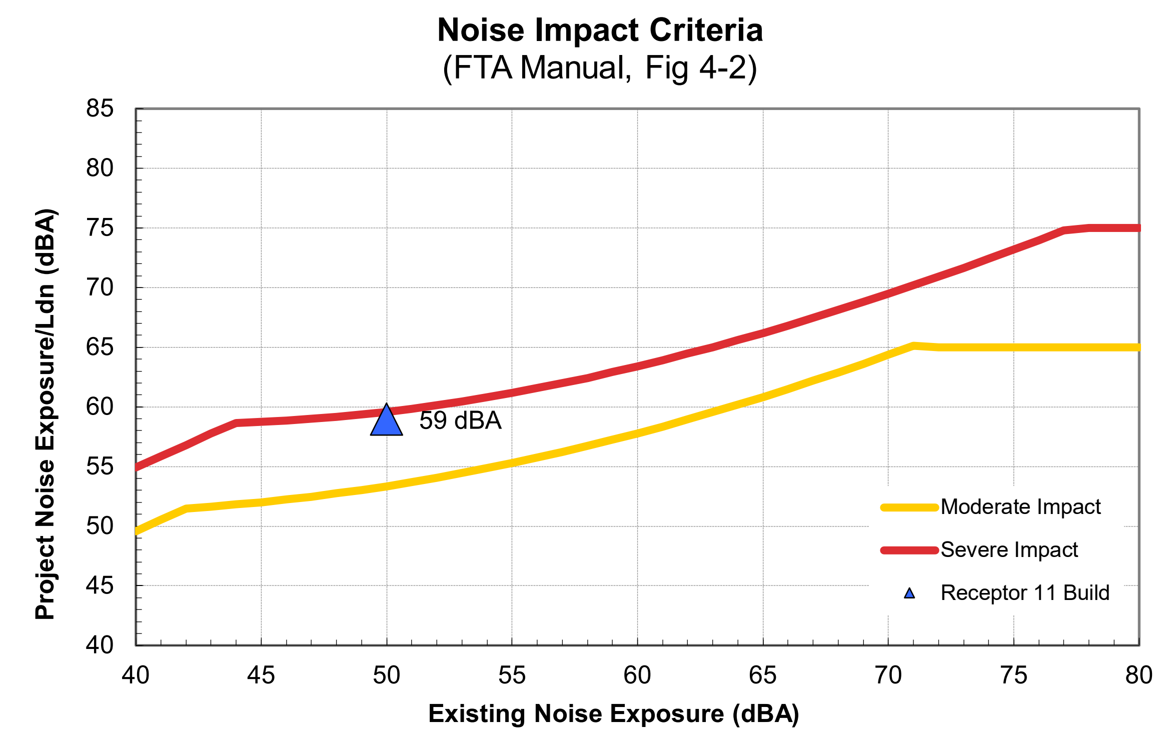
Dist to Mod. Impact Contour (Sources 1+2):	1453 ft
Dist to Sev. Impact Contour (Sources 1+2):	558 ft

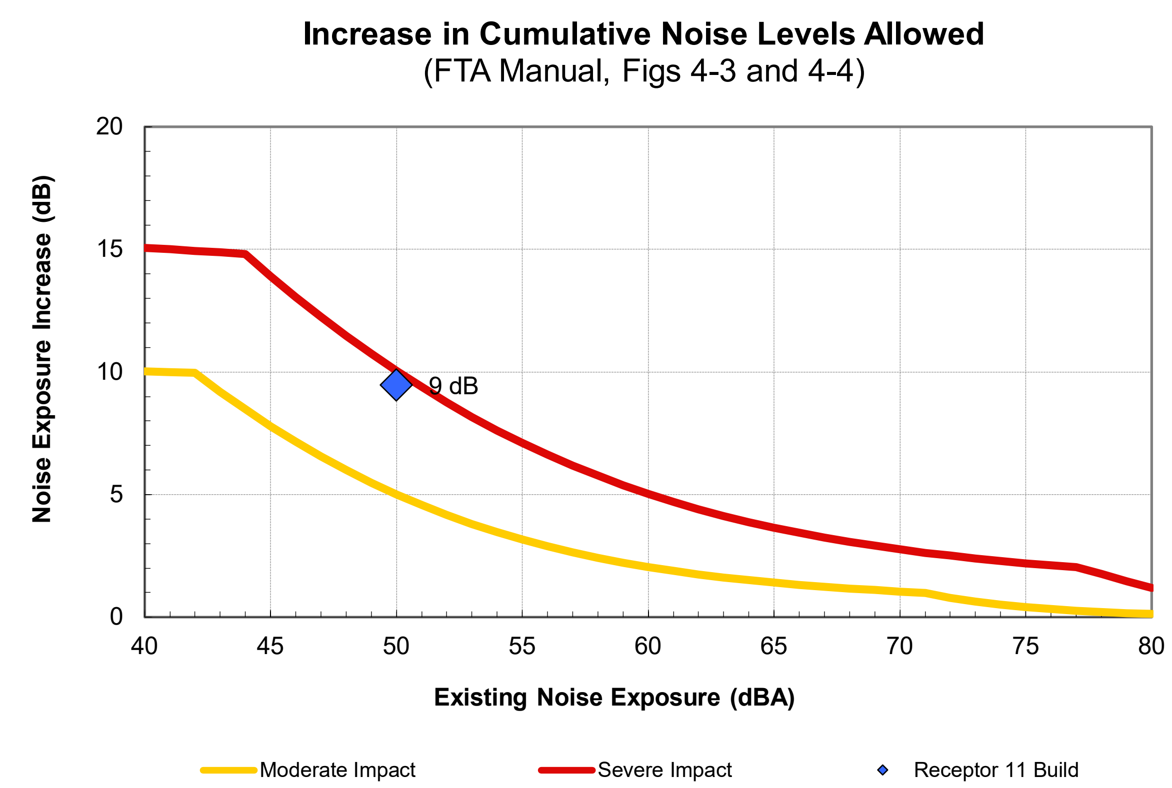
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	44.3 dBA
Ldn:	50.1 dBA

Source 2 Results

Leq(day):	50.9 dBA
Leq(night):	52.1 dBA
Ldn:	58.4 dBA
Incremental Ldn (Src 1-2):	59.0 dBA





Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 12 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	60 dBA

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	230
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	230
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	60 dBA
Total Project Ldn:	64 dBA
Total Noise Exposure:	66 dBA
Increase:	6 dB
Impact?:	Severe

Distance to Impact Contours

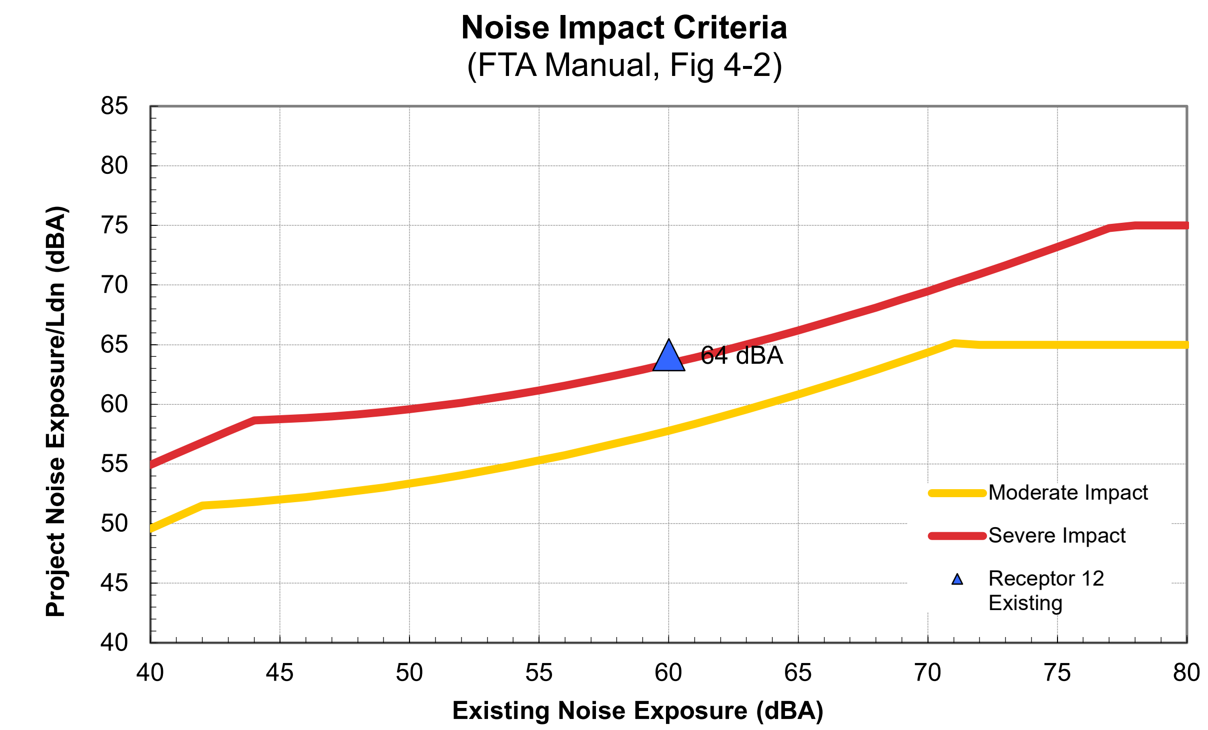
Dist to Mod. Impact Contour (Sources 1+2):	611 ft
Dist to Sev. Impact Contour (Sources 1+2):	259 ft

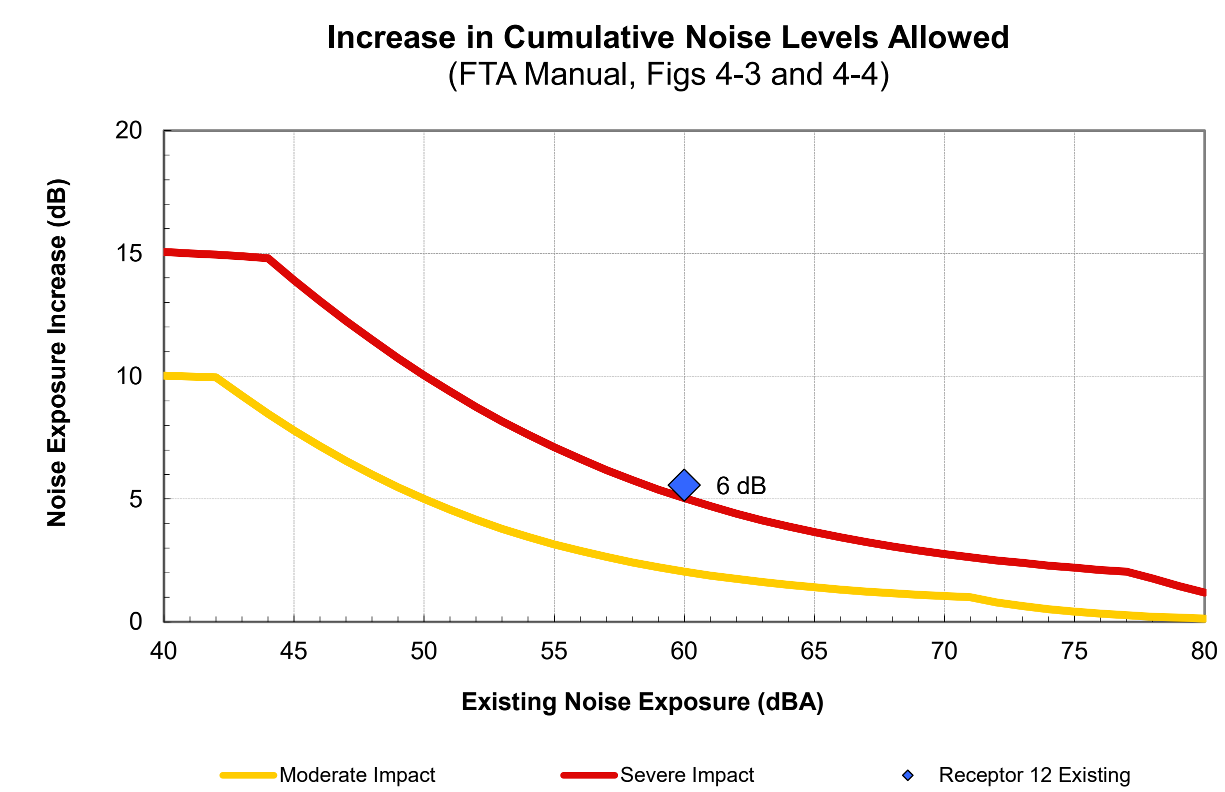
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	50.7 dBA
Ldn:	56.5 dBA

Source 2 Results

Leq(day):	55.9 dBA
Leq(night):	57.1 dBA
Ldn:	63.3 dBA
Incremental Ldn (Src 1-2):	64.2 dBA





Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 12 Build
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	60 dBA

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	230
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	230
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	60 dBA
Total Project Ldn:	65 dBA
Total Noise Exposure:	66 dBA
Increase:	6 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour (Sources 1+2):	735 ft
Dist to Sev. Impact Contour (Sources 1+2):	311 ft

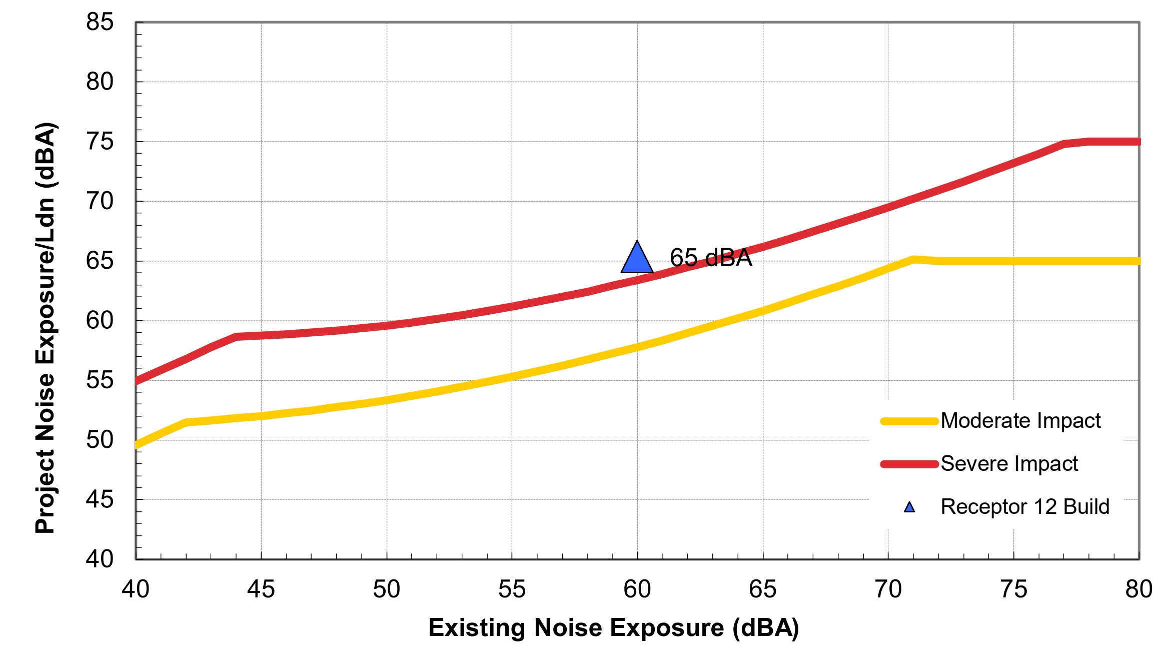
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	50.7 dBA
Ldn:	56.5 dBA

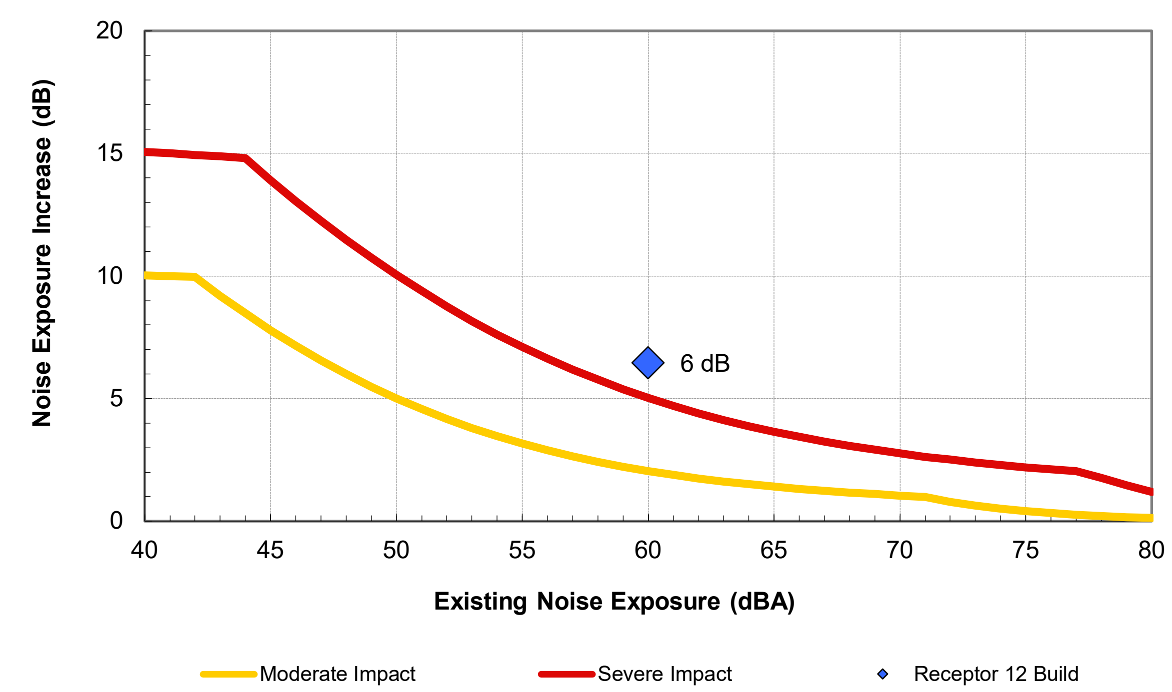
Source 2 Results

Leq(day):	57.3 dBA
Leq(night):	58.5 dBA
Ldn:	64.8 dBA
Incremental Ldn (Src 1-2):	65.4 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 13 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	55 dBA

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	352
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	352
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	55 dBA
Total Project Ldn:	61 dBA
Total Noise Exposure:	62 dBA
Increase:	7 dB
Impact?:	Severe

Distance to Impact Contours

Dist to Mod. Impact Contour (Sources 1+2):	897 ft
Dist to Sev. Impact Contour (Sources 1+2):	364 ft

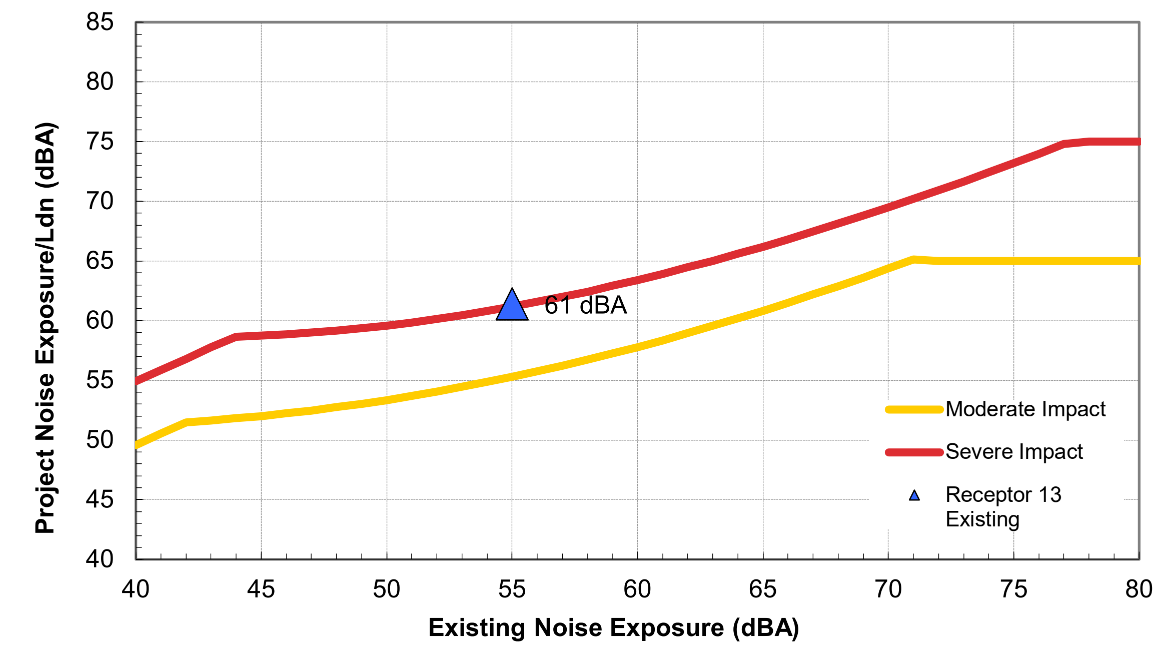
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	48.0 dBA
Ldn:	53.7 dBA

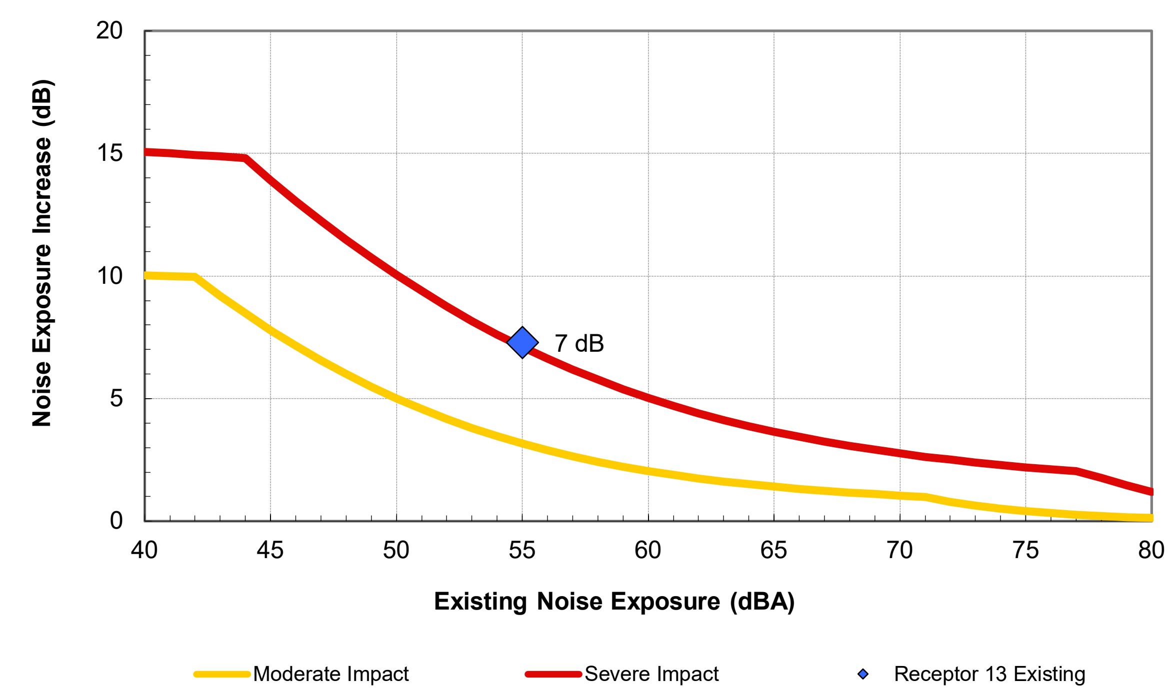
Source 2 Results

Leq(day):	53.1 dBA
Leq(night):	54.3 dBA
Ldn:	60.6 dBA
Incremental Ldn (Src 1-2):	61.4 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 13 Build
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	55 dBA

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	352
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	352
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	55 dBA
Total Project Ldn:	63 dBA
Total Noise Exposure:	63 dBA
Increase:	8 dB
Impact?:	Severe

Distance to Impact Contours

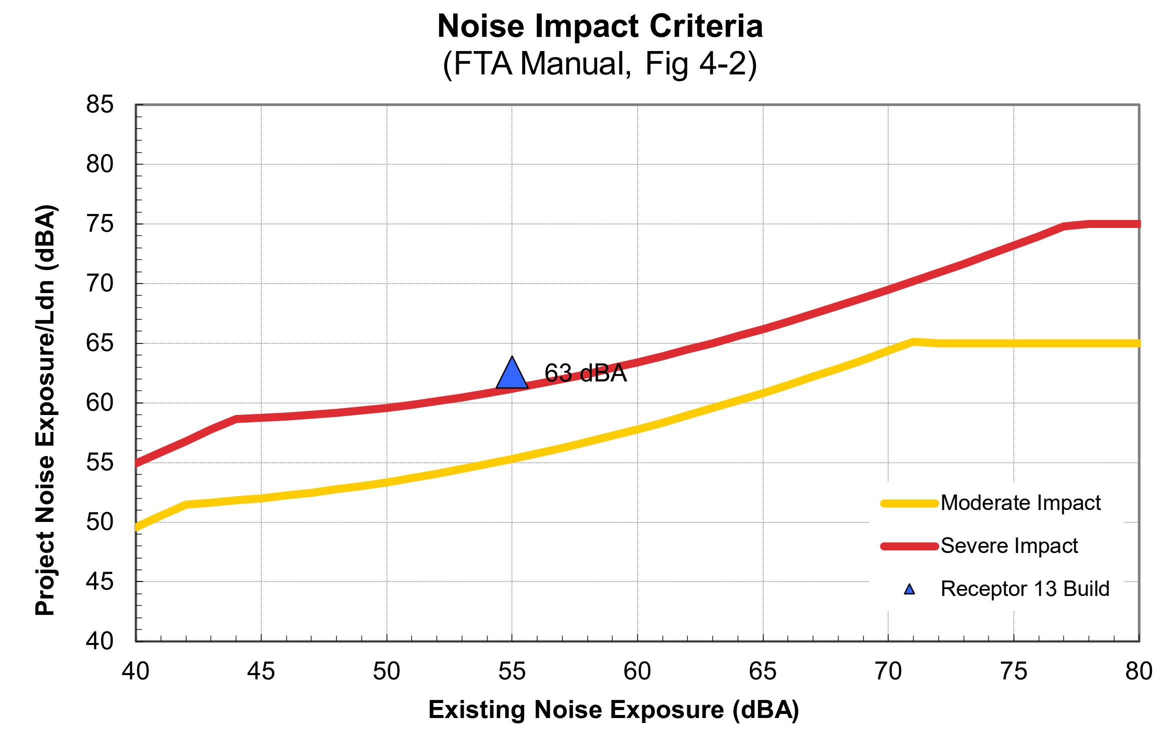
Dist to Mod. Impact Contour (Sources 1+2):	1079 ft
Dist to Sev. Impact Contour (Sources 1+2):	438 ft

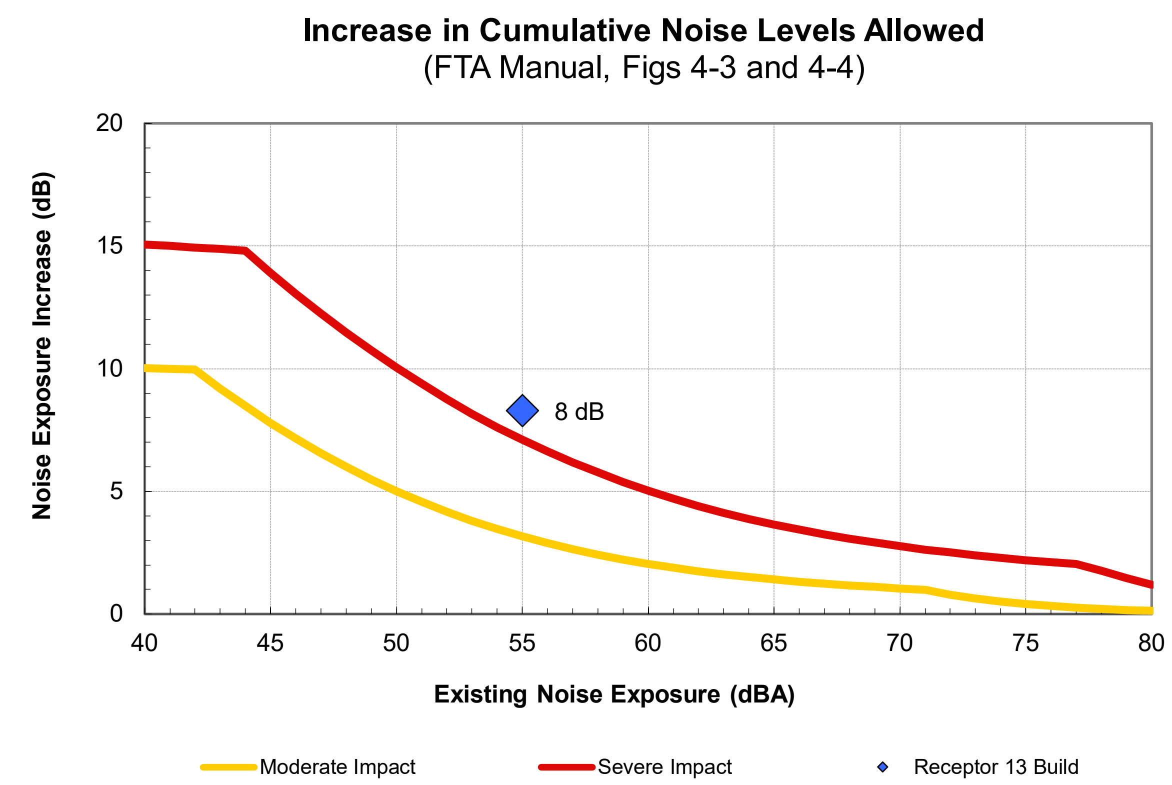
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	48.0 dBA
Ldn:	53.7 dBA

Source 2 Results

Leq(day):	54.5 dBA
Leq(night):	55.7 dBA
Ldn:	62.0 dBA
Incremental Ldn (Src 1-2):	62.6 dBA





Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 14 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	55 dBA

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	460
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	460
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	55 dBA
Total Project Ldn:	60 dBA
Total Noise Exposure:	61 dBA
Increase:	6 dB
Impact?:	Moderate

Distance to Impact Contours

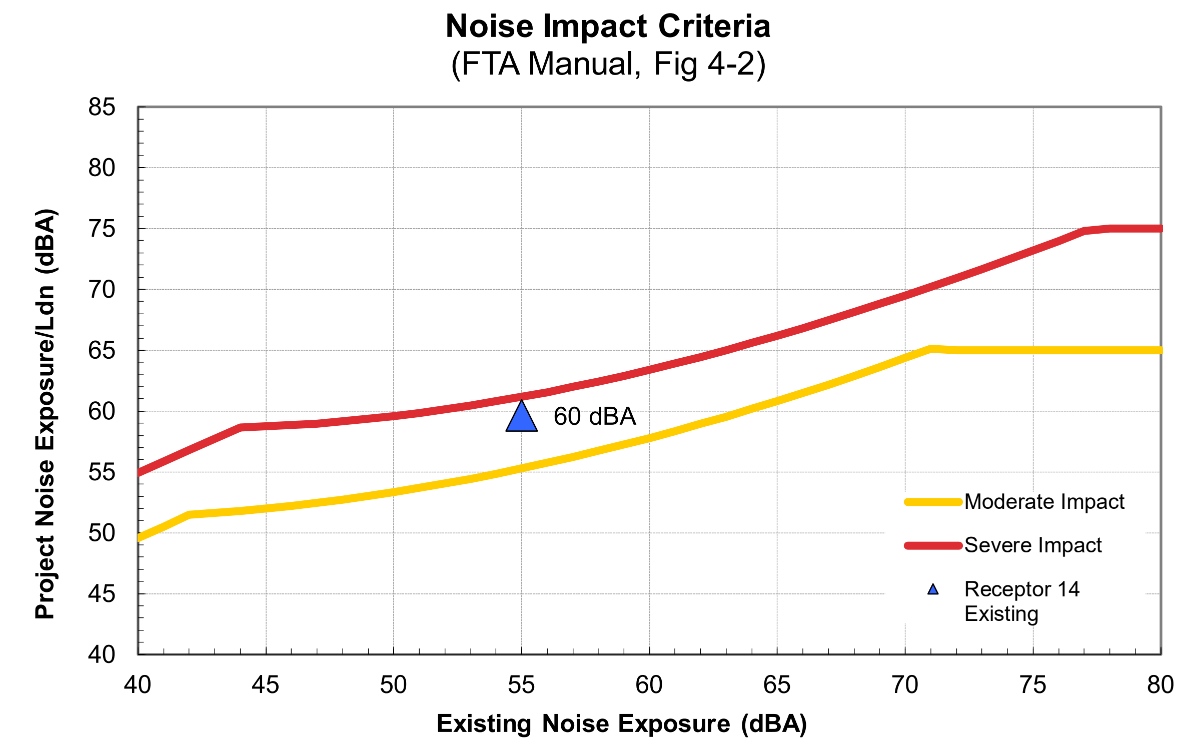
Dist to Mod. Impact Contour (Sources 1+2):	897 ft
Dist to Sev. Impact Contour (Sources 1+2):	364 ft

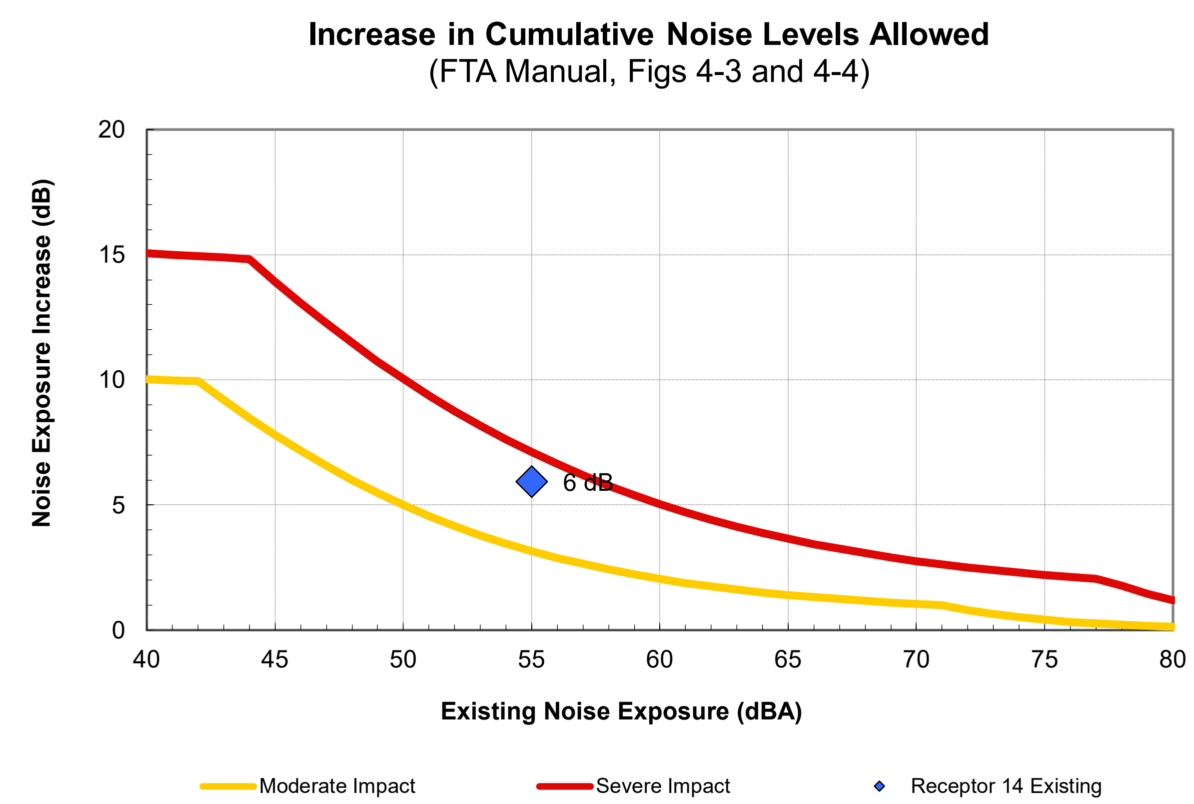
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	46.2 dBA
Ldn:	52.0 dBA

Source 2 Results

Leq(day):	51.3 dBA
Leq(night):	52.6 dBA
Ldn:	58.8 dBA
Incremental Ldn (Src 1-2):	59.6 dBA





Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	**Montgomery ICTF**

Receiver Parameters	
Receiver:	**Receptor 14 Build**
Land Use Category:	**2. Residential**
Existing Noise (Measured or Generic Value):	**55 dBA**

Noise Source Parameters	
Number of Noise Sources:	**2**

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	**Avg. Number of Locos/train**	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	**Avg. Number of Locos/train**	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	**Distance from Source to Receiver (ft)**	460
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	**Avg. Number of Rail Cars/train**	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	**Avg. Number of Rail Cars/train**	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	**Distance from Source to Receiver (ft)**	460
	Number of Intervening Rows of Buildings	0
Adjustments	**Noise Barrier?**	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	55 dBA
Total Project Ldn:	61 dBA
Total Noise Exposure:	62 dBA
Increase:	7 dB
Impact?:	**Moderate**

Distance to Impact Contours

Dist to Mod. Impact Contour (Sources 1+2):	1079 ft
Dist to Sev. Impact Contour (Sources 1+2):	438 ft

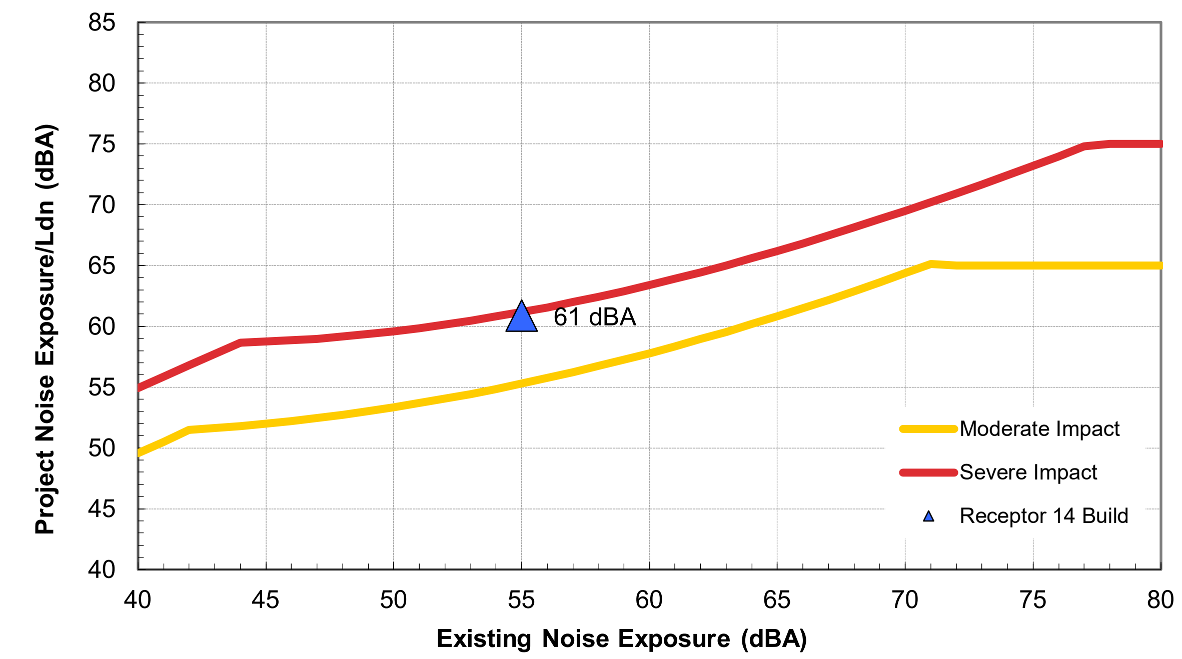
Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	46.2 dBA
Ldn:	52.0 dBA

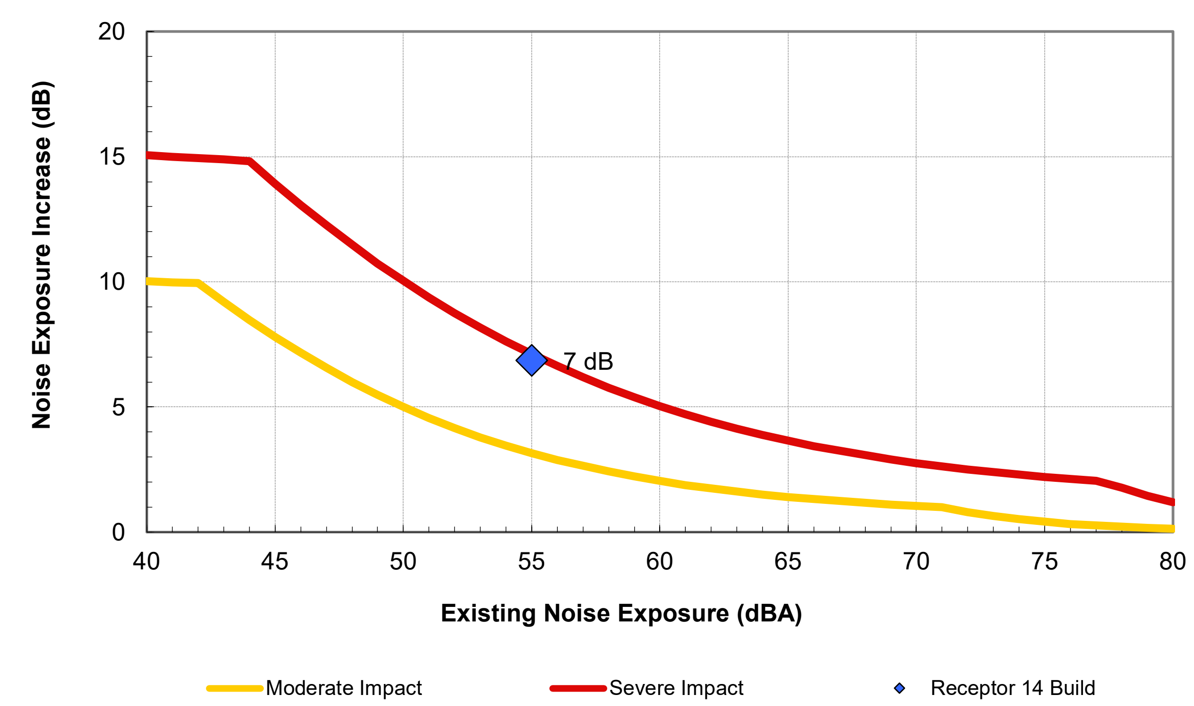
Source 2 Results

Leq(day):	52.8 dBA
Leq(night):	54.0 dBA
Ldn:	60.2 dBA
Incremental Ldn (Src 1-2):	60.8 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 15 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	45 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1288
	Number of Intervening Rows of Buildings	1
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1288
	Number of Intervening Rows of Buildings	1
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1288
	Number of Intervening Rows of Buildings	1
Adjustments		

Project Results Summary

Existing Ldn:	45 dBA
Total Project Ldn:	55 dBA
Total Noise Exposure:	56 dBA
Increase:	11 dB
Impact?:	Moderate

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

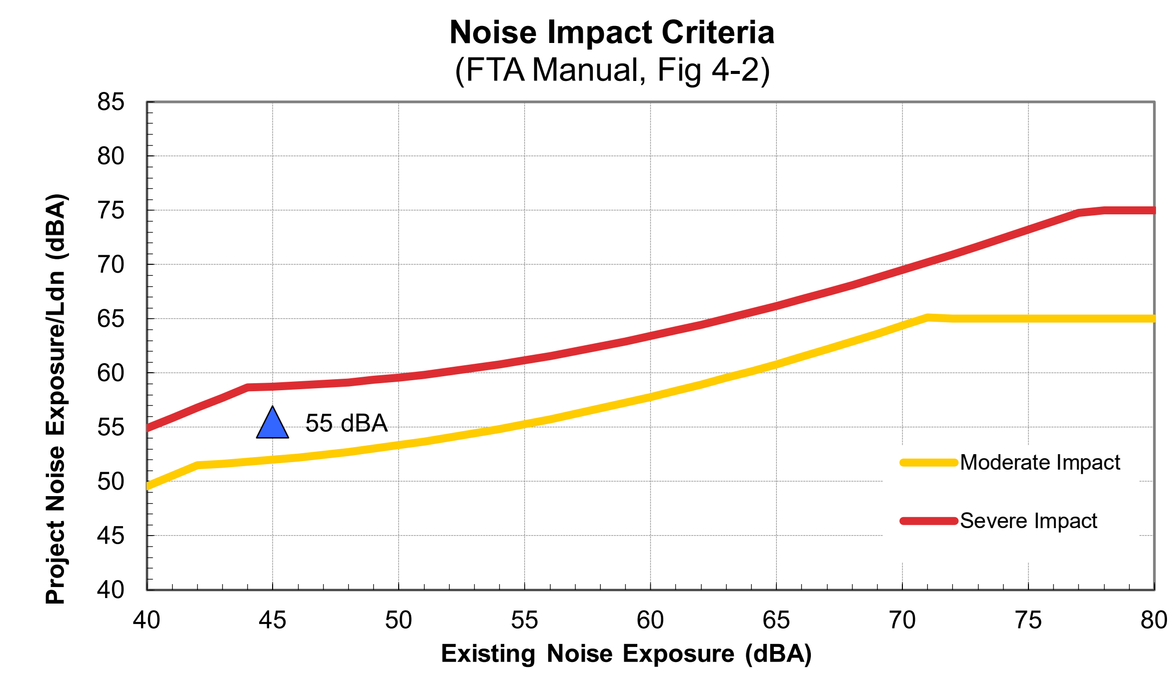
Leq(day):	0.0 dBA
Leq(night):	35.0 dBA
Ldn:	40.7 dBA

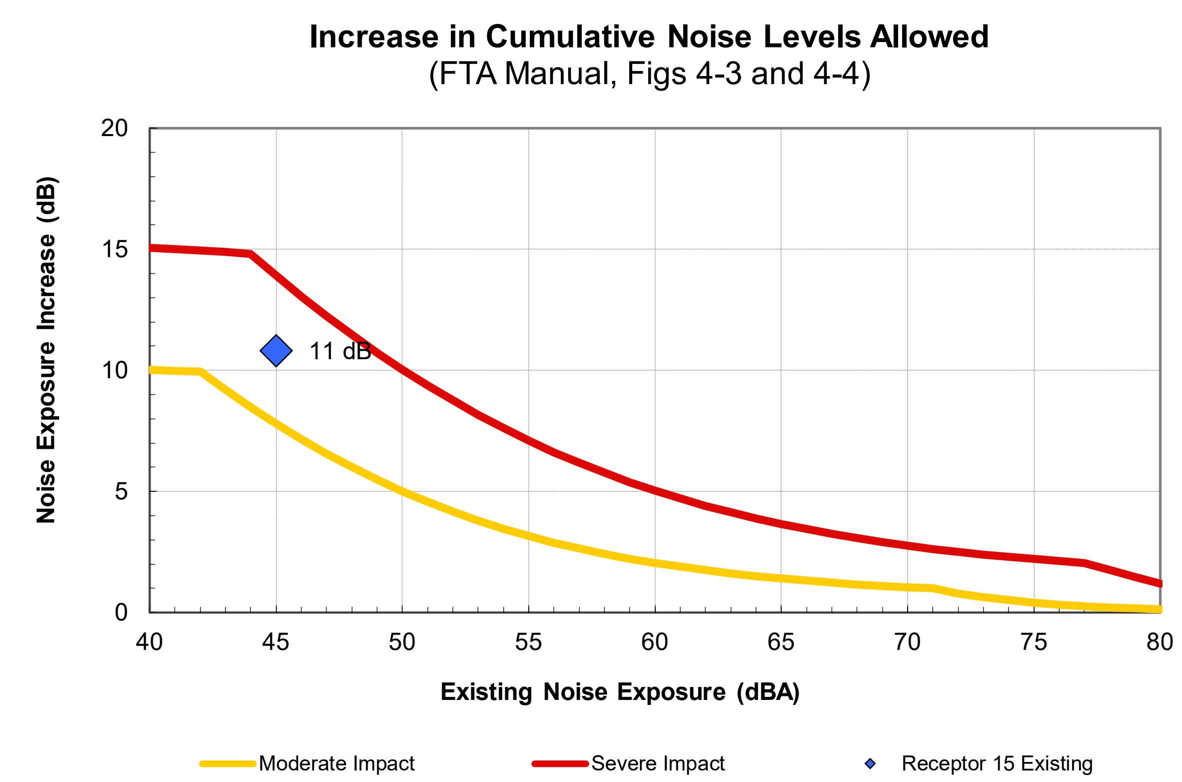
Source 2 Results

Leq(day):	40.1 dBA
Leq(night):	41.4 dBA
Ldn:	47.6 dBA
Incremental Ldn (Src 1-2):	48.4 dBA

Source 3 Results

Leq(day):	47.0 dBA
Leq(night):	48.2 dBA
Ldn:	54.5 dBA
Incremental Ldn (Src 1-3):	55.4 dBA





Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 15 Build
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	45 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1288
	Number of Intervening Rows of Buildings	1
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1288
	Number of Intervening Rows of Buildings	1
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1288
	Number of Intervening Rows of Buildings	1
Adjustments		

Project Results Summary

Existing Ldn:	45 dBA
Total Project Ldn:	56 dBA
Total Noise Exposure:	56 dBA
Increase:	11 dB
Impact?:	Moderate

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

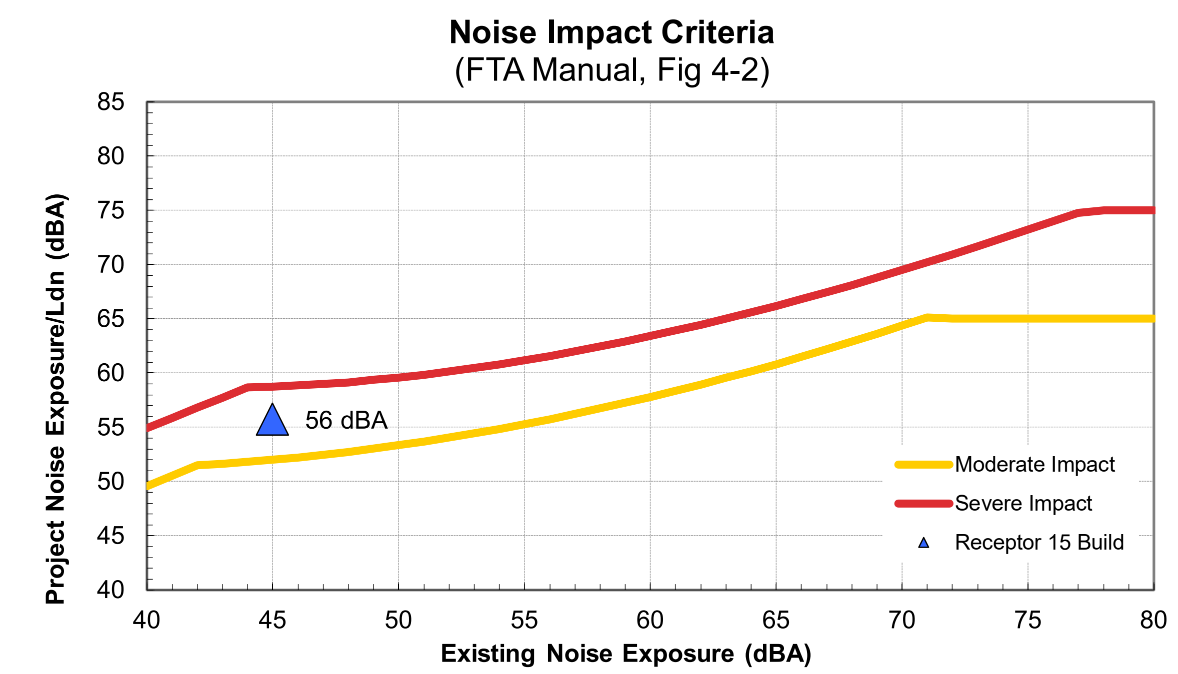
Leq(day):	0.0 dBA
Leq(night):	35.0 dBA
Ldn:	40.7 dBA

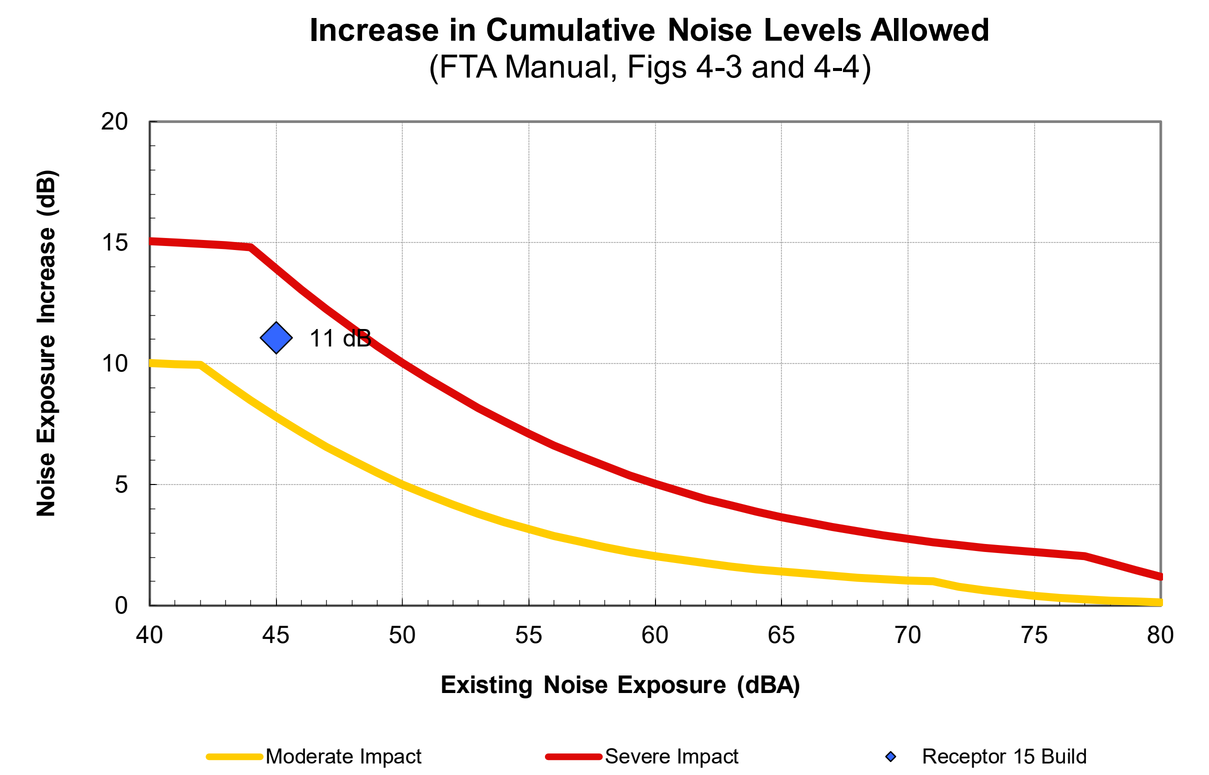
Source 2 Results

Leq(day):	41.5 dBA
Leq(night):	42.8 dBA
Ldn:	49.0 dBA
Incremental Ldn (Src 1-2):	49.6 dBA

Source 3 Results

Leq(day):	47.0 dBA
Leq(night):	48.2 dBA
Ldn:	54.5 dBA
Incremental Ldn (Src 1-3):	55.7 dBA





Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 16 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	45 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1120
	Number of Intervening Rows of Buildings	1
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1120
	Number of Intervening Rows of Buildings	1
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1120
	Number of Intervening Rows of Buildings	1
Adjustments		

Project Results Summary

Existing Ldn:	45 dBA
Total Project Ldn:	56 dBA
Total Noise Exposure:	57 dBA
Increase:	12 dB
Impact?:	Moderate

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

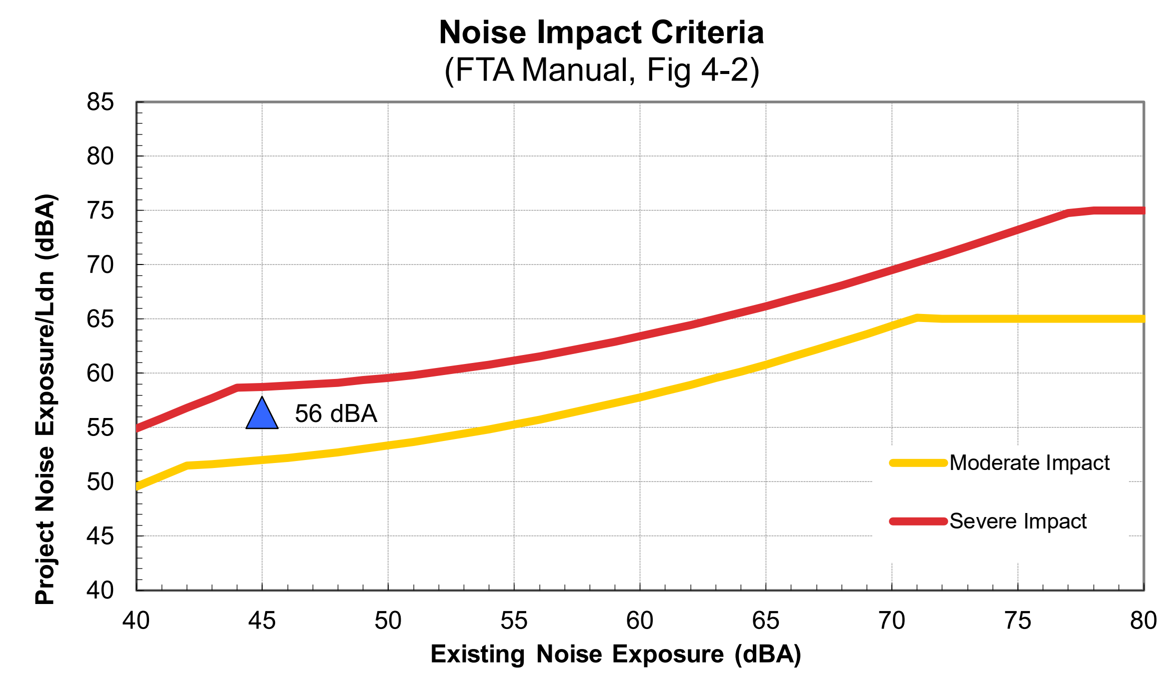
Leq(day):	0.0 dBA
Leq(night):	35.9 dBA
Ldn:	41.7 dBA

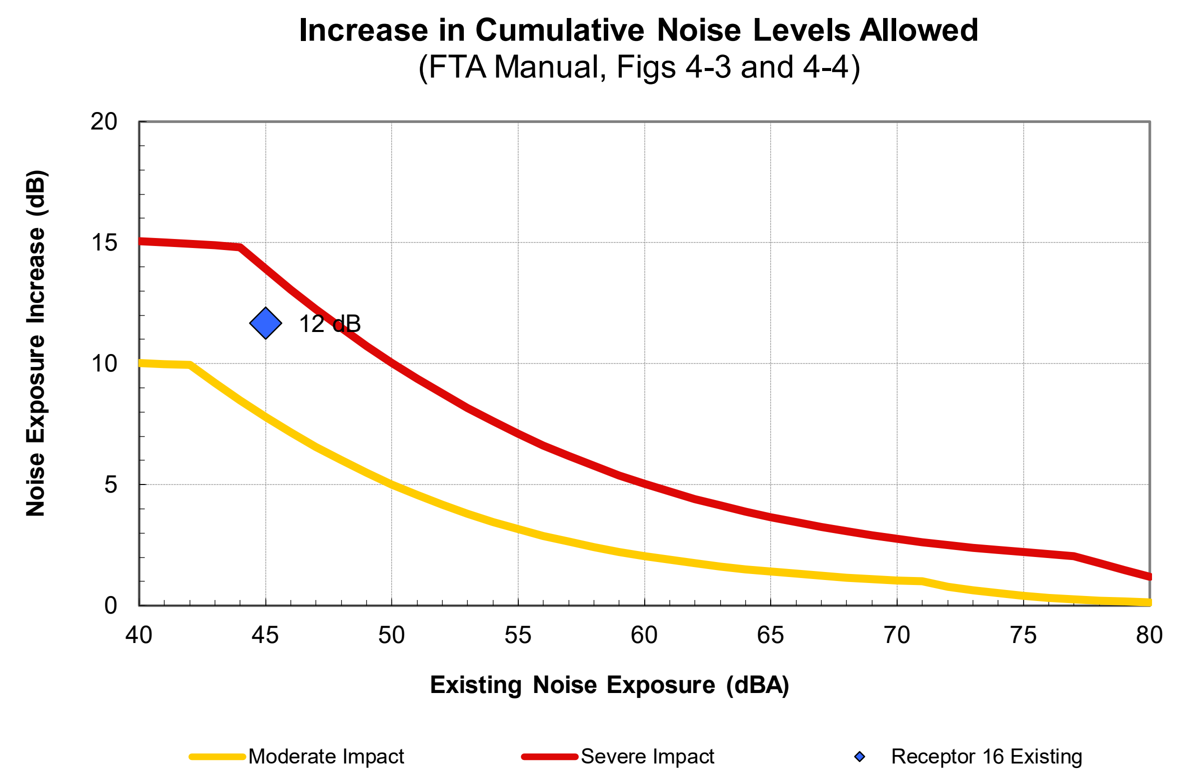
Source 2 Results

Leq(day):	41.0 dBA
Leq(night):	42.3 dBA
Ldn:	48.5 dBA
Incremental Ldn (Src 1-2):	49.3 dBA

Source 3 Results

Leq(day):	47.9 dBA
Leq(night):	49.1 dBA
Ldn:	55.4 dBA
Incremental Ldn (Src 1-3):	56.4 dBA





Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 16 Build
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	45 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1120
	Number of Intervening Rows of Buildings	1
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1120
	Number of Intervening Rows of Buildings	1
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1120
	Number of Intervening Rows of Buildings	1
Adjustments		

Project Results Summary

Existing Ldn:	45 dBA
Total Project Ldn:	57 dBA
Total Noise Exposure:	57 dBA
Increase:	12 dB
Impact?:	Moderate

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	35.9 dBA
Ldn:	41.7 dBA

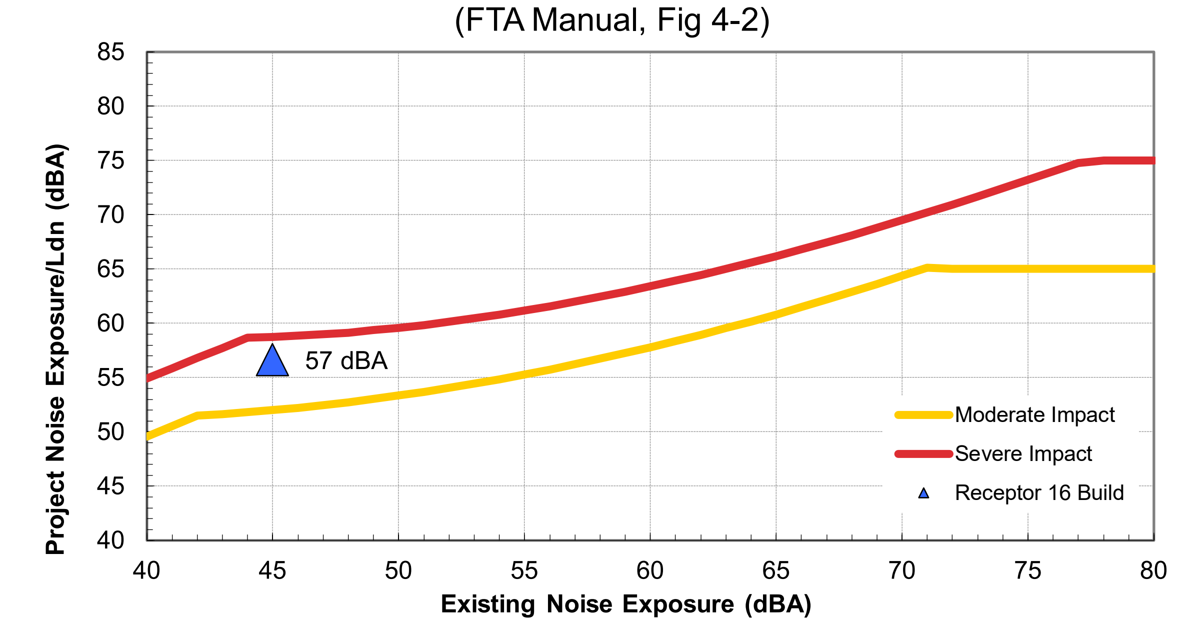
Source 2 Results

Leq(day):	42.5 dBA
Leq(night):	43.7 dBA
Ldn:	49.9 dBA
Incremental Ldn (Src 1-2):	50.5 dBA

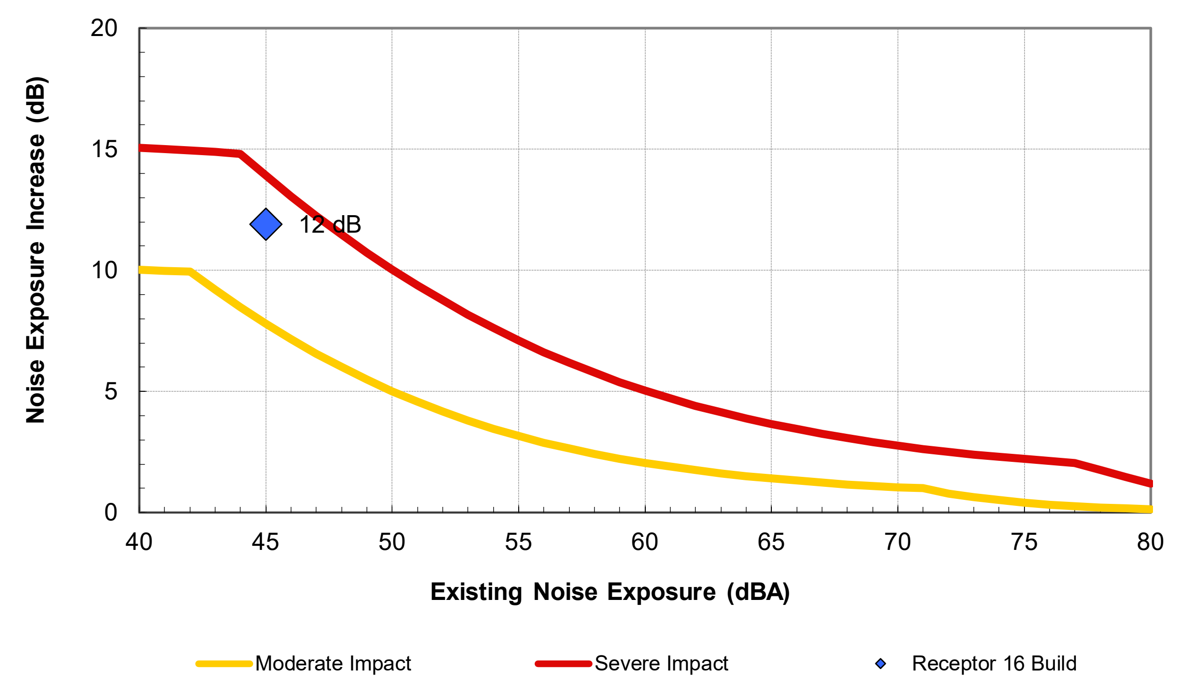
Source 3 Results

Leq(day):	47.9 dBA
Leq(night):	49.1 dBA
Ldn:	55.4 dBA
Incremental Ldn (Src 1-3):	56.6 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 17 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	45 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1108
	Number of Intervening Rows of Buildings	1
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1108
	Number of Intervening Rows of Buildings	1
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1108
	Number of Intervening Rows of Buildings	1
Adjustments		

Project Results Summary

Existing Ldn:	45 dBA
Total Project Ldn:	56 dBA
Total Noise Exposure:	57 dBA
Increase:	12 dB
Impact?:	Moderate

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

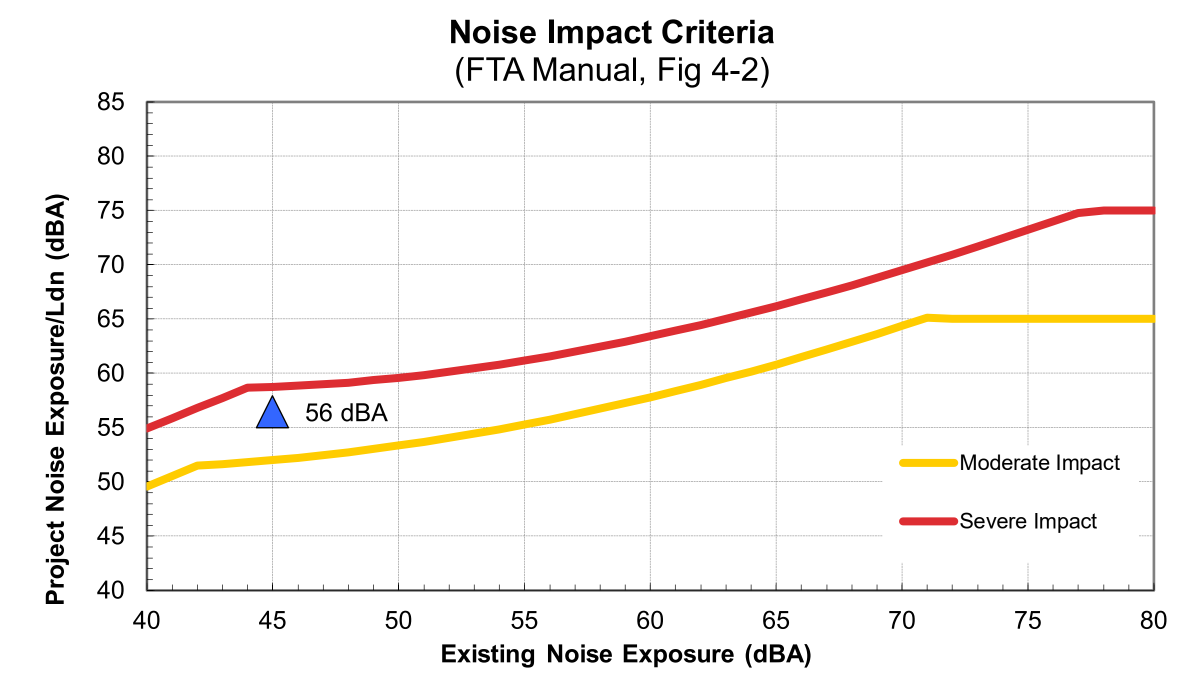
Leq(day):	0.0 dBA
Leq(night):	36.0 dBA
Ldn:	41.7 dBA

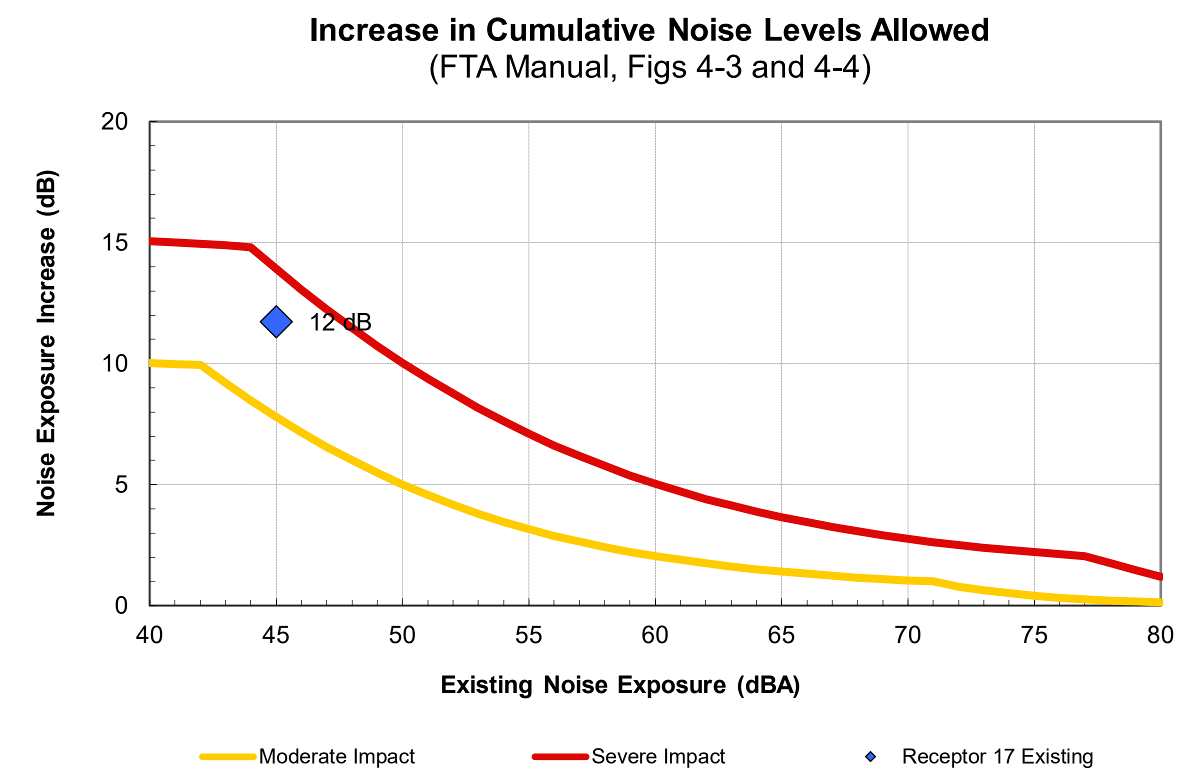
Source 2 Results

Leq(day):	41.1 dBA
Leq(night):	42.3 dBA
Ldn:	48.6 dBA
Incremental Ldn (Src 1-2):	49.4 dBA

Source 3 Results

Leq(day):	48.0 dBA
Leq(night):	49.2 dBA
Ldn:	55.5 dBA
Incremental Ldn (Src 1-3):	56.4 dBA





Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 17 Build
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	45 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1108
	Number of Intervening Rows of Buildings	1
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1108
	Number of Intervening Rows of Buildings	1
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1108
	Number of Intervening Rows of Buildings	1
Adjustments		

Project Results Summary

Existing Ldn:	45 dBA
Total Project Ldn:	57 dBA
Total Noise Exposure:	57 dBA
Increase:	12 dB
Impact?:	Moderate

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	36.0 dBA
Ldn:	41.7 dBA

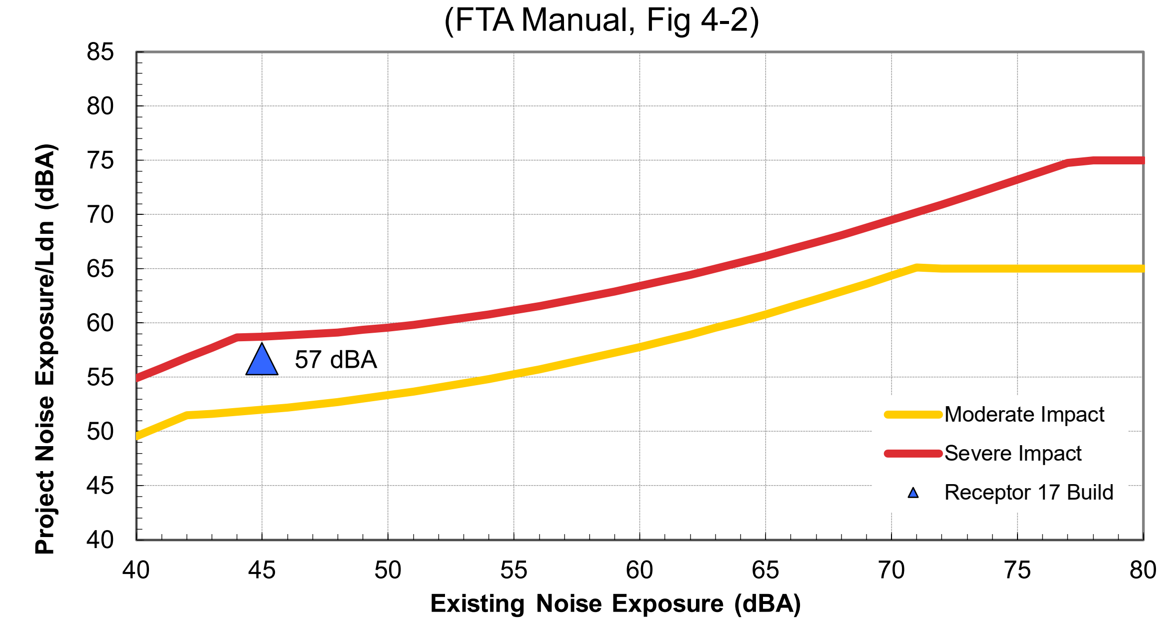
Source 2 Results

Leq(day):	42.5 dBA
Leq(night):	43.8 dBA
Ldn:	50.0 dBA
Incremental Ldn (Src 1-2):	50.6 dBA

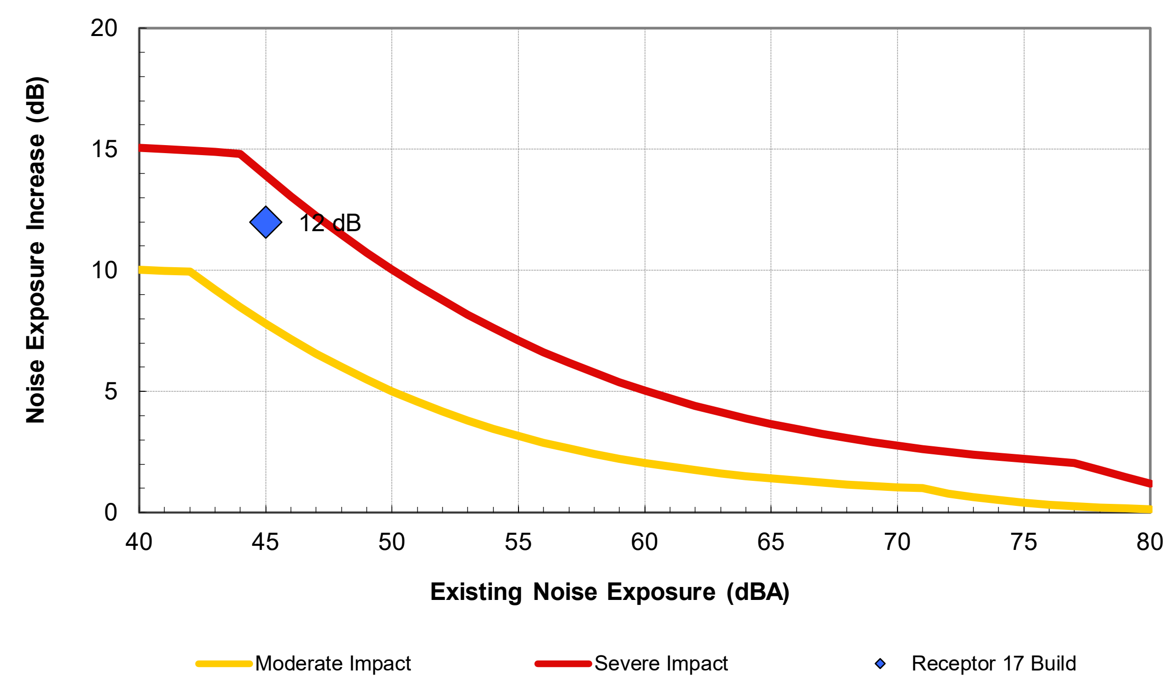
Source 3 Results

Leq(day):	48.0 dBA
Leq(night):	49.2 dBA
Ldn:	55.5 dBA
Incremental Ldn (Src 1-3):	56.7 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

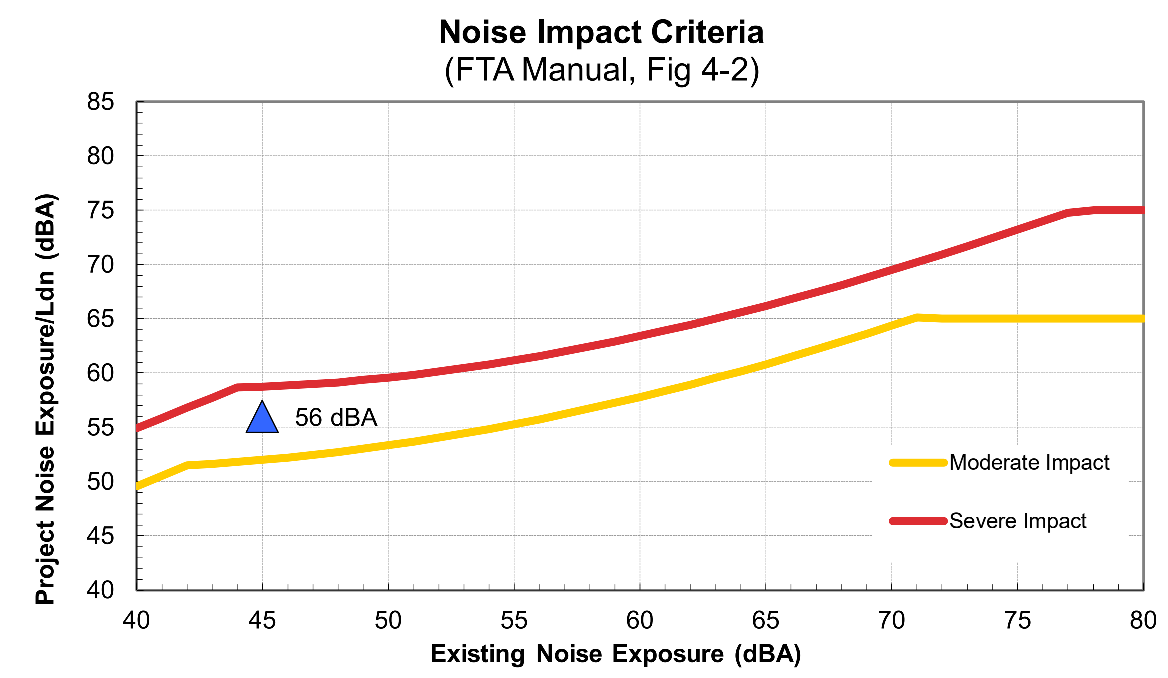
Receiver Parameters	
Receiver:	Receptor 18 Existing
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	45 dBA

Project Results Summary

Existing Ldn:	45 dBA
Total Project Ldn:	56 dBA
Total Noise Exposure:	56 dBA
Increase:	11 dB
Impact?:	Moderate

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

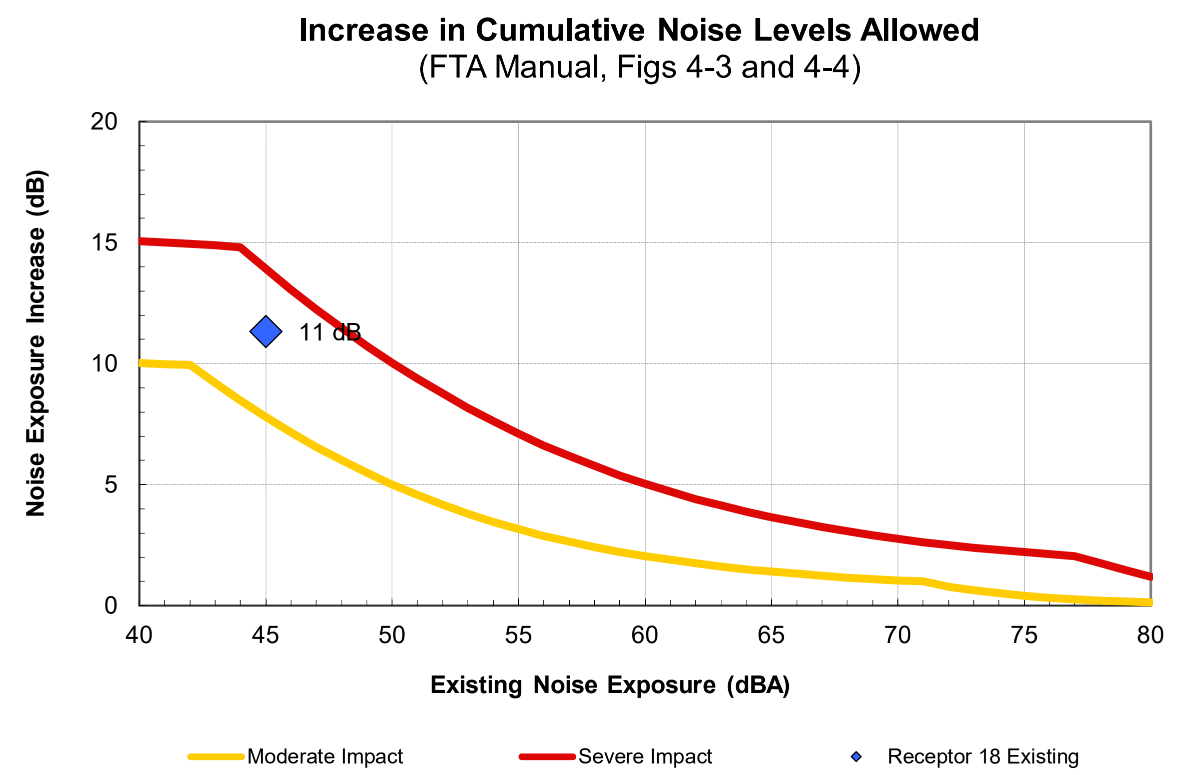


Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1187
	Number of Intervening Rows of Buildings	1
Adjustments		

Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	35.5 dBA
Ldn:	41.3 dBA



Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	130
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1187
	Number of Intervening Rows of Buildings	1
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Source 2 Results

Leq(day):	40.7 dBA
Leq(night):	41.9 dBA
Ldn:	48.2 dBA
Incremental Ldn (Src 1-2):	49.0 dBA

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1187
	Number of Intervening Rows of Buildings	1
Adjustments		

Source 3 Results

Leq(day):	47.5 dBA
Leq(night):	48.8 dBA
Ldn:	55.0 dBA
Incremental Ldn (Src 1-3):	56.0 dBA

Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Montgomery ICTF

Receiver Parameters	
Receiver:	Receptor 18 Build
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	45 dBA

Noise Source Parameters	
Number of Noise Sources:	3

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Locos/train	3
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1187
	Number of Intervening Rows of Buildings	1
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs	Avg. Number of Rail Cars/train	180
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1187
	Number of Intervening Rows of Buildings	1
Adjustments	Noise Barrier?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Locomotive Warning Horn
Daytime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.67
Nighttime hrs		
	Speed (mph)	50
	Avg. Number of Events/hr	0.89
Distance	Distance from Source to Receiver (ft)	1187
	Number of Intervening Rows of Buildings	1
Adjustments		

Project Results Summary

Existing Ldn:	45 dBA
Total Project Ldn:	56 dBA
Total Noise Exposure:	57 dBA
Increase:	12 dB
Impact?:	Moderate

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

Leq(day):	0.0 dBA
Leq(night):	35.5 dBA
Ldn:	41.3 dBA

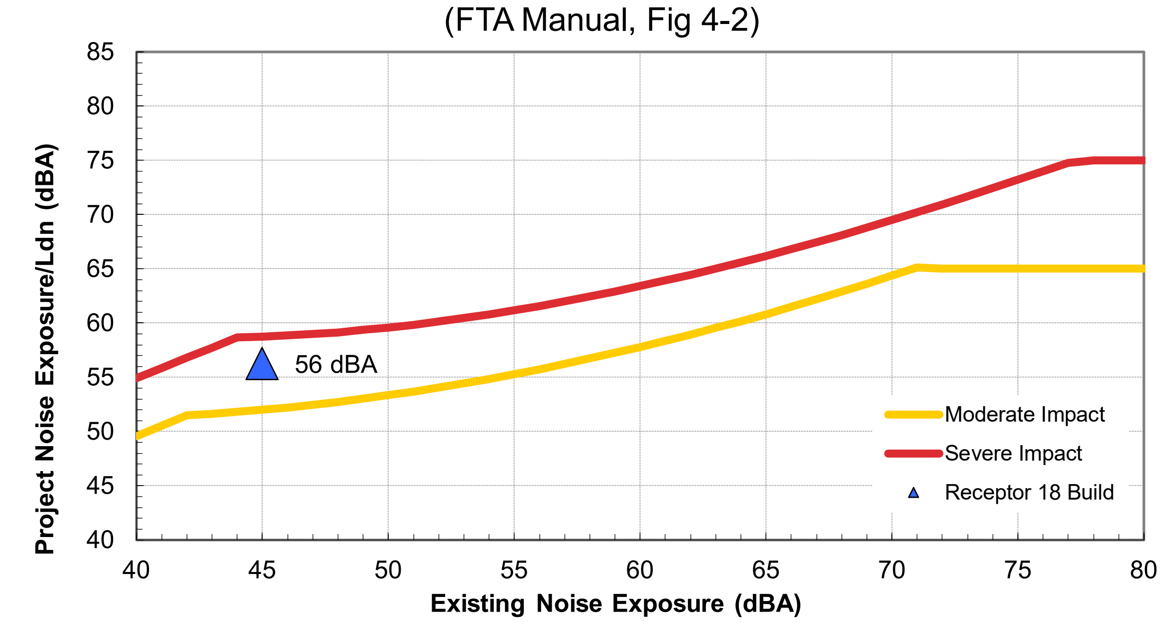
Source 2 Results

Leq(day):	42.1 dBA
Leq(night):	43.3 dBA
Ldn:	49.6 dBA
Incremental Ldn (Src 1-2):	50.2 dBA

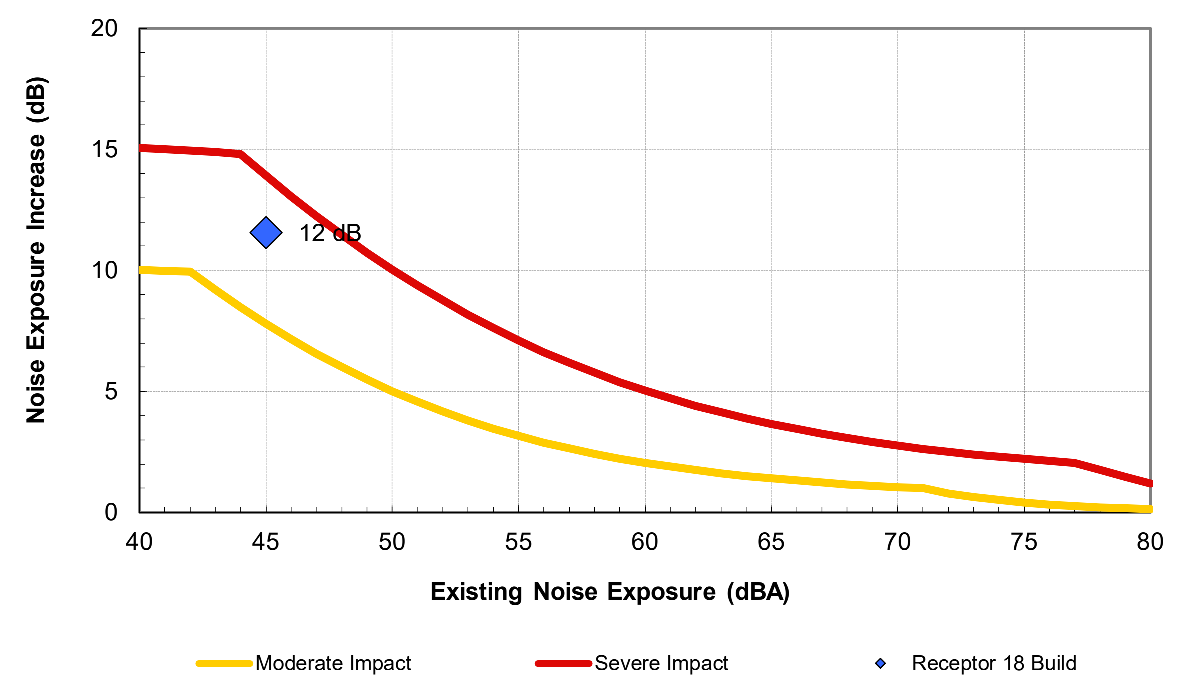
Source 3 Results

Leq(day):	47.5 dBA
Leq(night):	48.8 dBA
Ldn:	55.0 dBA
Incremental Ldn (Src 1-3):	56.2 dBA

Noise Impact Criteria
(FTA Manual, Fig 4-2)



Increase in Cumulative Noise Levels Allowed
(FTA Manual, Figs 4-3 and 4-4)



Construction Noise

ICTF Rail Lead Line Construction Noise Calculations

Equipment*	Typical Noise Level 50 ft from Source (dBA)*	Leq at Closest Residential Receptor (140 ft)	Leq at Closest Commerical Receptor (1,310 ft)
Air Compressor	80	71	52
Backhoe	80	71	52
Ballast Equalizer	82	73	54
Ballast Tamper	83	74	55
Compactor	82	73	54
Concrete Mixer	85	76	57
Concrete Pump	82	73	54
Concrete Vibrator	76	67	48
Crane, Mobile	83	74	55
Dozer	85	76	57
Generator	82	73	54
Grader	85	76	57
Impact Wrench	85	76	57
Loader	80	71	52
Paver	85	76	57
Pneumatic Tool	85	76	57
Pump	77	68	49
Rail Saw	90	81	62
Roller	85	76	57
Saw	76	67	48
Scraper	85	76	57
Shovel	82	73	54
Spike Driver	77	68	49
Tie Cutter	84	75	56
Tie Handler	80	71	52
Tie Inserter	85	76	57
Truck	84	75	56
	Leq 2 Piece Max (dBA)	**82**	**63**

ICTF Facility Construction Noise Calculations

Equipment*	Typical Noise Level 50 ft from Source (dBA)*	Leq at Closest Residential Receptor (3,064 ft)	Leq at Closest Commerical Receptor (762 ft)
Air Compressor	80	44	56
Backhoe	80	44	56
Ballast Equalizer	82	46	58
Ballast Tamper	83	47	59
Compactor	82	46	58
Concrete Mixer	85	49	61
Concrete Pump	82	46	58
Concrete Vibrator	76	40	52
Crane, Derrick	88	52	64
Crane, Mobile	83	47	59
Dozer	85	49	61
Generator	82	46	58
Grader	85	49	61
Impact Wrench	85	49	61
Jack Hammer	88	52	64
Loader	80	44	56
Paver	85	49	61
Pile-driver (Impact)	101	65	77
Pile-driver (Sonic)	95	59	71
Pneumatic Tool	85	49	61
Pump	77	41	53
Rail Saw	90	54	66
Rock Drill	95	59	71
Roller	85	49	61
Saw	76	40	52
Scarifier	83	47	59
Scraper	85	49	61
Shovel	82	46	58
Spike Driver	77	41	53
Tie Cutter	84	48	60
Tie Handler	80	44	56
Tie Inserter	85	49	61
Truck	84	48	60
	Leq 2 Piece Max (dBA)	**66**	**78**

ICTF New Location Access Road Construction Noise Calculations

Equipment*	Typical Noise Level 50 ft from Source (dBA)*	Leq at Closest Residential Receptor (140 ft)	Leq at Closest Commerical Receptor (1,310 ft)
Air Compressor	80	50	57
Backhoe	80	50	57
Compactor	82	52	59
Concrete Mixer	85	55	62
Concrete Pump	82	52	59
Concrete Vibrator	76	46	53
Dozer	85	55	62
Generator	82	52	59
Grader	85	55	62
Impact Wrench	85	55	62
Jack Hammer	88	58	65
Loader	80	50	57
Paver	85	55	62
Pneumatic Tool	85	55	62
Pump	77	47	54
Roller	85	55	62
Saw	76	46	53
Scraper	85	55	62
Shovel	82	52	59
Truck	84	54	61
	Leq 2 Piece Max (dBA)	**60**	**67**

Construction Vibration

ICTF Rail Lead Line Construction Vibration Calculations

Equipment*	PPV_{ref} @ 25 ft (in/sec)*	Appoximate Lv at 25 ft	PPV (in/sec) for Closest Structure (140 ft)
Vibratory Roller	0.21	94	0.016
Hoe Ram	0.089	87	0.007
Large Bulldozer	0.089	87	0.007
Caisson Drilling	0.089	87	0.007
Loaded Trucks	0.076	86	0.006
Jackhammer	0.035	79	0.003
Small Bulldozer	0.003	58	0.000
Highest Construction Equipment PPV (in/sec)			**0.016**

ICTF Facility Construction Vibration Calculations

Equipment*	PPV_{ref} @ 25 ft (in/sec)*	Appoximate Lv at 25 ft	PPV (in/sec) for Closest Structure (762 ft)
Pile Driver (impact) upper range	1.518	112	0.009
Pile Driver (impact) typical	0.644	104	0.004
Pile Driver (sonic) upper range	0.734	105	0.004
Pile Driver (sonic) typical	0.17	93	0.001
Clam Shovel Drop (slurry Wall)	0.202	94	0.001
Hydromill (slurry wall) in soil	0.008	66	0.000
Hydromill (slurry wall) in rock	0.017	75	0.000
Vibratory Roller	0.21	94	0.001
Hoe Ram	0.089	87	0.001
Large Bulldozer	0.089	87	0.001
Caisson Drilling	0.089	87	0.001
Loaded Trucks	0.076	86	0.000
Jackhammer	0.035	79	0.000
Small Bulldozer	0.003	58	0.000
Highest Construction Equipment PPV (in/sec)			**0.009**

ICTF New Location Access Road Construction Vibration Calculations

Equipment*	PPV_{ref} @ 25 ft (in/sec)*	Appoximate Lv at 25 ft	PPV (in/sec) for Closest Structure (685 ft)
Vibratory Roller	0.21	94	0.001
Hoe Ram	0.089	87	0.001
Large Bulldozer	0.089	87	0.001
Caisson Drilling	0.089	87	0.001
Loaded Trucks	0.076	86	0.000
Jackhammer	0.035	79	0.000
Small Bulldozer	0.003	58	0.000
Highest Construction Equipment PPV (in/sec)			**0.001**

Appendix D – USDA NRCS Coordination

USDA **United States Department of Agriculture**

Farm Production and Conservation

Natural Resources Conservation Service

Montgomery Field Office
4121 Carmichael Rd.
Suite 201
Montgomery, AL 36016

April 10, 2023

Volkert, Inc.
Casey Nowell, M.S., PWS
casey.nowell@volkert.com

Re: Montgomery Intermodal Container Transfer Facility

Casey Nowell,

This letter is in response to a request for comment on *Montgomery Intermodal Container Transfer Facility* project *Montgomery County, AL*. This project is *in an area designated as urban development* and is therefore exempt from the Farmland Protection Policy Act (FPPA) per activities listed below:

Activities not subject to FPPA include:

* Federal permitting and licensing
* Projects planned and completed without the assistance of a Federal agency
* Projects on land already in urban development or used for water storage
* Construction within an existing right-of-way purchased on or before August 4, 1984
* Construction for national defense purposes
* Construction of on-farm structures needed for farm operations
* Surface mining, where restoration to agricultural use is planned
* Construction of new minor secondary structures such as a garage or storage shed.

Erosion and sediment control measures should be implemented and maintained during the construction phases of this project to protect land, water, and other related resources. Plans for construction should include sediment basins/traps and other erosion control practices, including coverage of bare soil as soon as possible by temporary/permanent vegetative and/or physical structures. If you have any questions, contact me at 334-658-4145 or danielle.smith@usda.gov.

Thanks in Advance,

Danielle Smith
Resource Soil Scientist
USDA-NRCS Alabama

Appendix E – USACE Approved Jurisdictional Determination

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, MOBILE DISTRICT
600 VESTAVIA PARKWAY, SUITE 203
THE SHELBY BUILDING
VESTAVIA HILLS, AL 35216

REPLY TO
ATTENTION OF:

January 17, 2024

North Branch
Regulatory Division

SUBJECT: Department of the Army Approved Jurisdictional Determination, File Number SAM-2023-00216-AMR, Montgomery Intermodal Container Transfer Facility, Montgomery, Montgomery County, Alabama

Alabama State Port Authority
Attention: Gretchen Barrera
250 N. Water Street
Mobile, Alabama 36602
Transmitted electronically to Gretchen.Barrera@alports.com

Dear Ms. Barrera:

This is in response to your request, submitted on your behalf by your agent Casey Nowell of Volkert, Inc., for a Department of the Army (DA) Approved Jurisdictional Determination (AJD) on a 296-acre parcel in Montgomery, Montgomery County, Alabama. More specifically, the site is located in Sections 3, 4, 9, 10, 17, 18, 20, 21, Township 15 North, Range 17 East, on Burnsdale Drive and is centered at Latitude 32.29952, Longitude -86.35741 as depicted on the attached overall figure.

Based on information obtained during our site visit on May 20, 2023, our review of the information and wetland determination data forms your agent furnished, and other desktop information available to our office, we have completed an AJD for the site. Attached are AJD Memoranda for Record (MFRs) that describe the features identified on the site which are and are not subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE). Please be advised that this determination reflects current policy and regulation.

The features identified as W-5, W-6, W-7, W-9, W-16, W-18, W-28, W-29, P-1, P-2, P-3, I-1 and OW-1, as depicted on the attached exhibits entitled “Table 1 and Maps 1-10” are waters of the United States and therefore are subject to DA jurisdiction. The features identified as W-1, W-2, W-3, W-4, W-8, W-10, W-11, W-12, W-13, W-14, W-15, W-17, W-19, W-20, W-21, W-22, W-23, W-25, W-26, W-27, W-30, W-31, W-32, E-1 through E-14, as depicted on the attached exhibits entitled “Table 1 and Maps 1-10” are not waters of the United States and therefore are not subject to DA jurisdiction. The attached AJD MFRs further describes these areas. Please be advised that these AJD MFRs are based on current policy and regulation and is valid for a period of five (5) years from the date of this letter. If after the 5-year period this jurisdictional determination has not been specifically revalidated by the USACE, it shall automatically expire. If the information you have submitted, and on which the USACE has based its determination is later found to be in error, this decision may be revoked.

Your delineation site was reviewed pursuant to Section 404 of the Clean Water Act. Section 404 of the Clean Water Act requires that a DA permit be obtained for the placement or discharge of dredged and/or fill material into waters of the U.S., including streams and wetlands, prior to conducting the work (33 U.S.C. 1344). For regulatory purposes, the USACE defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Please be advised that land clearing operations involving removal of vegetation with mechanized equipment such as front-end loaders, backhoes, or bulldozers with sheer blades, rakes, or discs; windrowing vegetation; land leveling; or other soil disturbance in areas subject to USACE jurisdiction are considered a discharge of dredged and/or fill material under our permitting jurisdiction If future work proposed at this site includes a discharge or placement of dredged and/or fill material into waters of the U.S., a DA permit is required prior to initiating work.

This letter contains an AJD MFR. If you object to this determination, you may request an administrative appeal under USACE regulations at 33 CFR Part 331. Attached you will find a Notification of Administrative Appeal (NAP) Options and Process and Request for Appeal (RFA) form. If you request to appeal this determination, you must submit a completed RFA for to the USACE, South Atlantic Division Office at the following mailing address and e-mail address: Krista Sabin, Regulatory Review Officer, 60 Forsyth Street Southwest, Floor M9, Atlanta, Georgia 30303; Krista.D.Sabin@usace.army.mil.

In order for an RFA to be accepted, the USACE must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

The statements contained herein do not convey any property rights, or any exclusive privileges and do not authorize any injury to property, nor shall it be construed as excusing you from compliance with other Federal, State, or local statutes, ordinances, or regulations that may affect proposed work at this site.

The delineation included herein has been conducted to identify the location and extent of the aquatic resources for purposes of the Clean Water Act for the particular site identified in this request. This delineation may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should discuss the applicability of an NRCS Certified Wetland Determination with the local USDA service center, prior to starting work.

If you intend to sell property that is part of a project that requires DA authorization, it may be subject to the Interstate Land Sales Full Disclosure Act. The Property Report, required by Housing and Urban Development Regulation, must state whether or not a permit for the development has been applied for, issued, or denied by the USACE (Part 320.3(h) of Title 33 of the Code of Federal Regulations).

An electronic copy of this letter is being provided to your agent, Casey Nowell with Volkert, Inc., at casey.nowell@volkert.com.

We appreciate your cooperation with the Corps of Engineers' Regulatory Program. Please refer to file number **SAM-2023-00216-AMR** in all future correspondence regarding this project or if you have any questions concerning this determination.

Please contact Angela M. Rangel by telephone at 251-455-6785 or by e-mail at angela.m.rangell@usace.army.mil should you have any questions. For additional information about our Regulatory Program, visit our web site at http://www.sam.usace.army.mil/Missions/Regulatory.aspx. Please take a moment to complete our customer satisfaction survey located under the menu header on the right side of the webpage. Your responses are appreciated and will allow us to improve our services.

Sincerely,

Courtney Shea
Team Leader
North Branch

Attachments

Table 1 - Summary of Aquatic Resources in the Review Area

Map ID	Latitude	Longitude	Coward	Acres	Linear
Jurisdictional Wetlands					
W-5	32.3023872	-86.3537903	PEM1	0.20	N/A
W-6	32.3021011	-86.3527603	PEM1	0.09	N/A
W-7	32.3018990	-86.3533096	PEM1	0.27	N/A
W-9	32.3033409	-86.3508224	PEM1	0.32	N/A
W-16	32.2956238	-86.3550262	PFO1	0.27	N/A
W-18	32.2959595	-86.3572845	PFO1	0.06	N/A
W-28	32.2956467	-86.3574371	PFO1	0.10	N/A
W-29	32.2876282	-86.3663559	PFO1	0.50	N/A
		Total:		1.79	
Non-Jurisdictional Wetlands					
W-1	32.3034592	-86.3543396	PFO1	0.13	N/A
W-2	32.3035011	-86.3539734	PFO1	0.01	N/A
W-3	32.3036575	-86.3556366	PFO1	0.25	N/A
W-4	32.3030167	-86.3564072	PFO1	0.09	N/A
W-8	32.3025475	-86.3508606	PEM1	0.03	N/A
W-10	32.2999300	-86.3510200	PFO1	0.05	N/A
W-11	32.3037300	-86.3564682	PFO1	1.09	N/A
W-12	32.3053780	-86.3573303	PFO1	0.35	N/A
W-13	32.3045731	-86.3588181	PFO1	0.11	N/A
W-14	32.3005066	-86.3555374	PFO1	0.28	N/A
W-15	32.3007393	-86.3546753	PEM1	0.08	N/A
W-17	32.2965393	-86.3534012	PFO1	0.03	N/A
W-19	32.2966156	-86.3558350	PFO1	0.06	N/A
W-20	32.2963562	-86.3625031	PFO1	0.37	N/A
W-21	32.2978249	-86.3608475	PFO1	0.04	N/A
W-22	32.2979317	-86.3598404	PEM1	0.24	N/A
W-23	32.3092613	-86.3566818	PEM1	0.11	N/A
W-25	32.3089752	-86.3544693	PFO1	0.13	N/A
W-26	32.3001366	-86.3545761	PEM1	0.02	N/A
W-27	32.2997894	-86.3610001	PFO1	0.21	N/A
W-30	32.2756882	-86.3716888	PFO1	0.02	N/A
W-31	32.2701874	-86.3742142	PFO1	0.02	N/A
W-32	32.2696075	-86.3745728	PFO1	0.02	N/A
		Total:		3.72	
Jurisdictional Streams					
P-1	32.2900314	-86.36531067	R3UB	0.08	132.7
P-2	32.2945900	-86.36315155	R3UB	0.31	2214.
P-3	32.2794036	-86.37007141	R3UB	0.03	88.5
I-1	32.2956237	-86.36036682	R4UB	0.13	1295.
		Total:		0.55	3420.

Non-Jurisdictional Streams					
E-1	32.30863571	-86.35423279	R6	0.04	431.3
E-2	32.30381012	-86.35917664	R6	0.01	164.2
E-3	32.30329895	-86.35927582	R6	0.01	223.0
E-4	32.30324554	-86.35929871	R6	0.006	86.3
E-5	32.30324173	-86.35923767	R6	0.003	54.9
E-6	32.29722595	-86.36222839	R6	0.008	124.9
E-7	32.29715347	-86.36218262	R6	0.009	83.0
E-8	32.28988647	-86.36544800	R6	0.004	64.4
E-9	32.29233551	-86.36436462	R6	0.11	1578.
E-10	32.29564285	-86.35617828	R6	0.01	276.5
E-11	32.28491592	-86.36769867	R6	0.02	297.3
E-13	32.27473068	-86.37226868	R6	0.04	496.0
E-14	32.26986694	-86.37449646	R6	0.002	28.6
		Total:		0.28	3909.
Jurisdictional Open Waters					
OW-1	32.30298000	-86.35226000	L2UB	6.49	NA

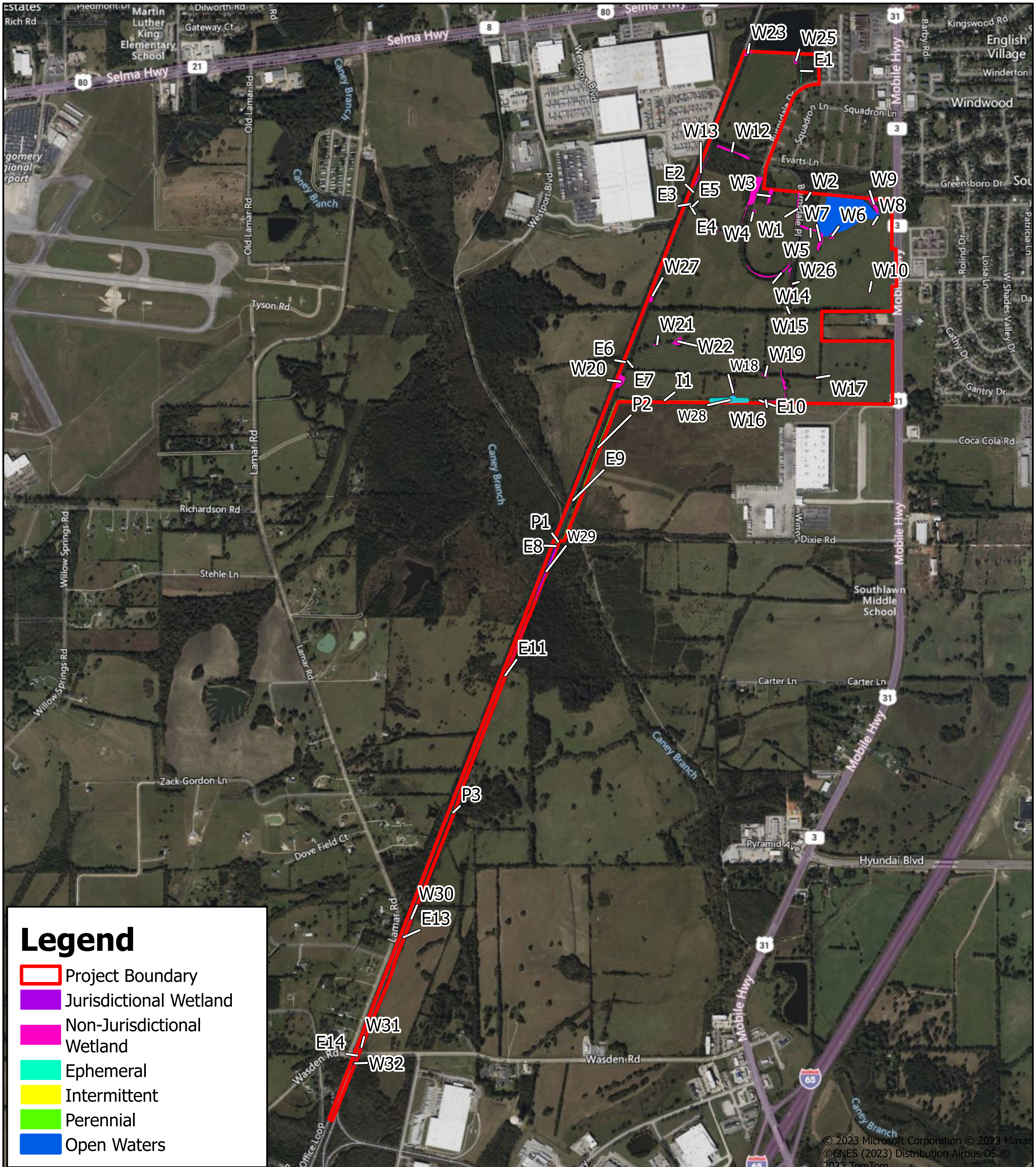
W = Wetlands

OW = Lake

E = Non-RPW

P = RPW, perennial

I = RPW, intermittent



VOLKERT

1 inch = 1,800 feet

Note: This map is not intended for construction.

Figure 3: Aerial Imagery Overview
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama

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Map 1

0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

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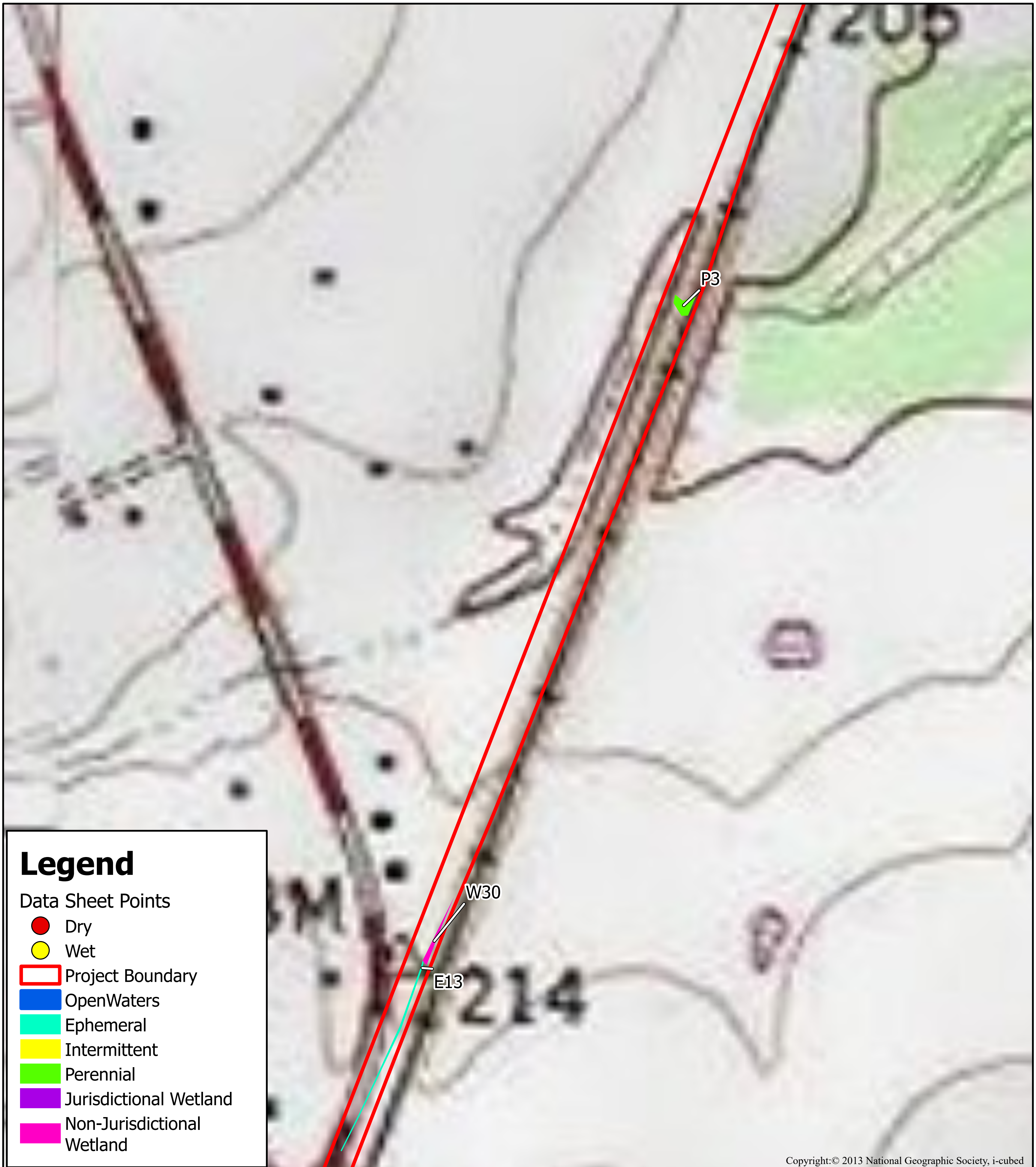
Data Collection Wetlands
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama
Page 1 of 10



0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

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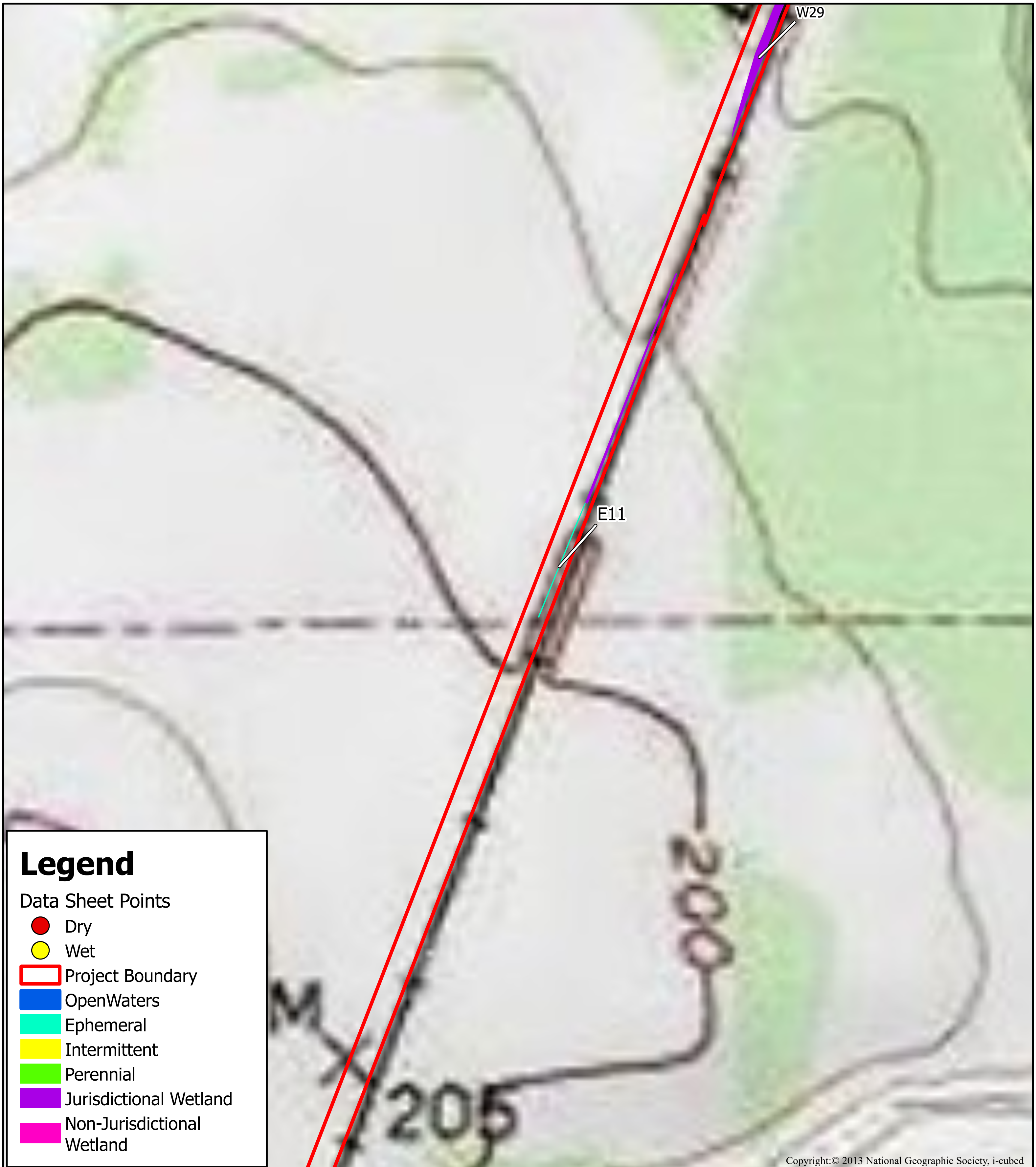
Map 2

Data Collection Wetlands
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama



VOLKERT

Map 3

0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

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Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama
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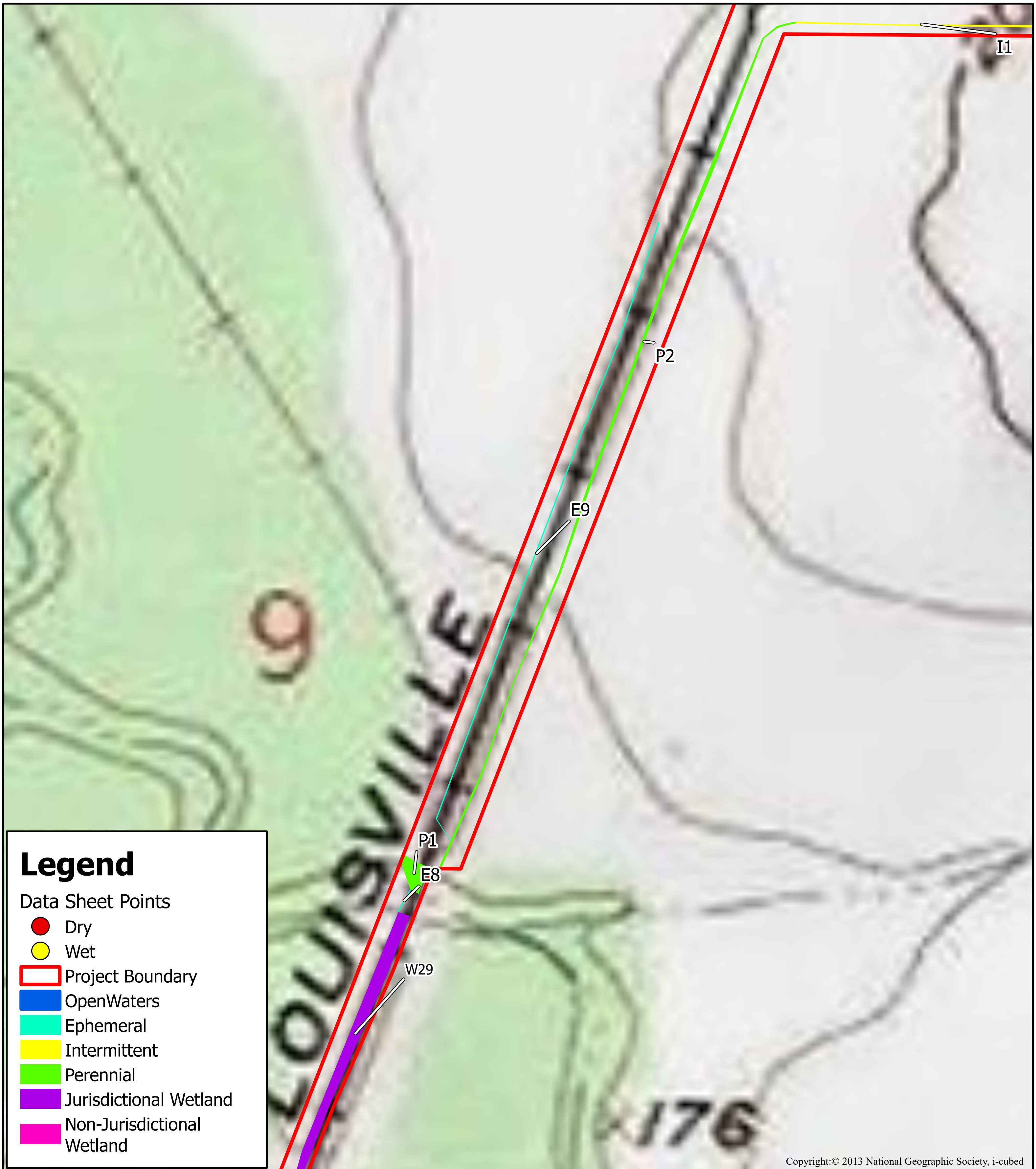

VOLKERT

1 inch = 300 feet

Note: This map is not intended for construction.

Map 4

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Intermodal Container Transfer Facility
Montgomery, Alabama
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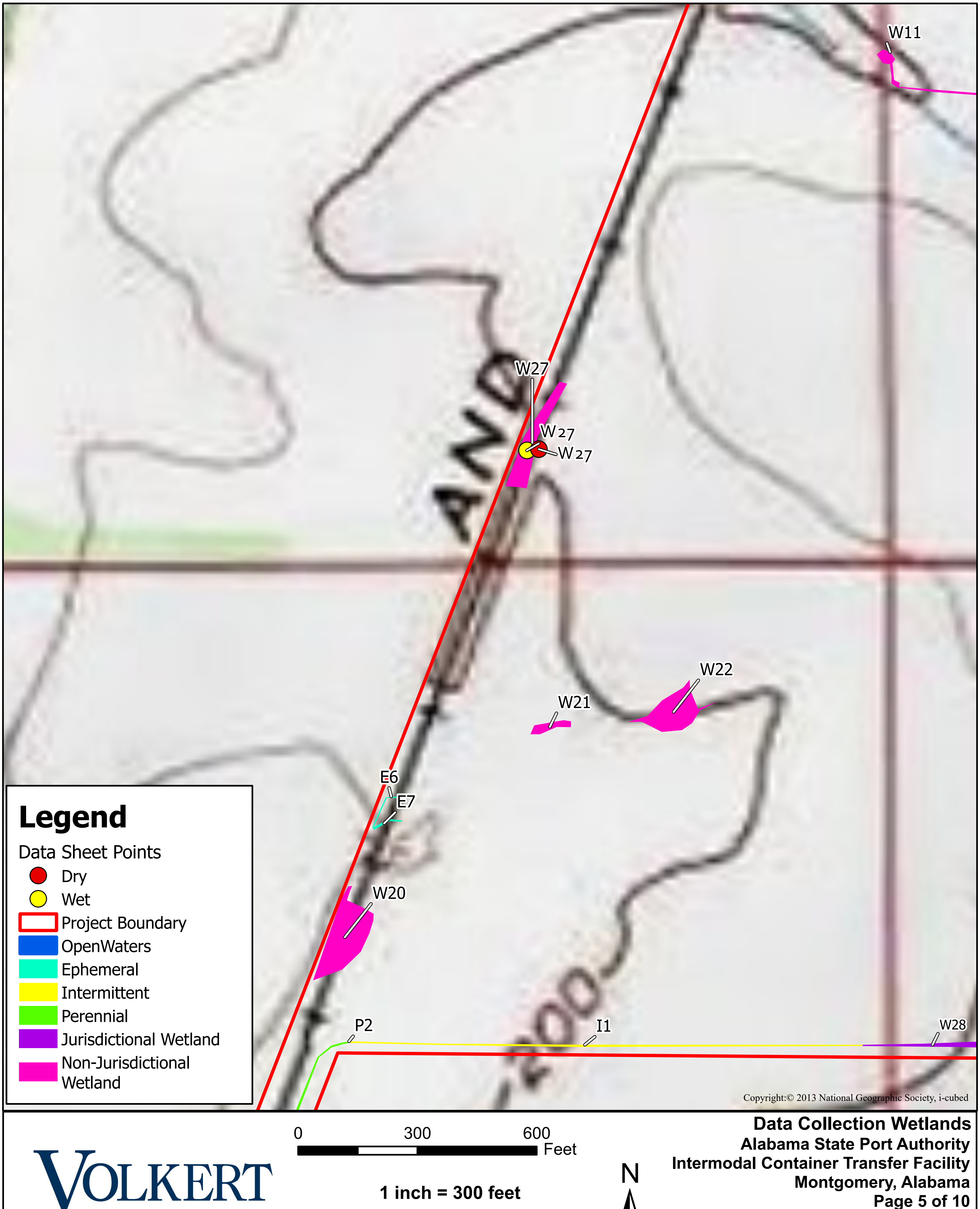

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Map 5

1 inch = 300 feet

Note: This map is not intended for construction.

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Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama
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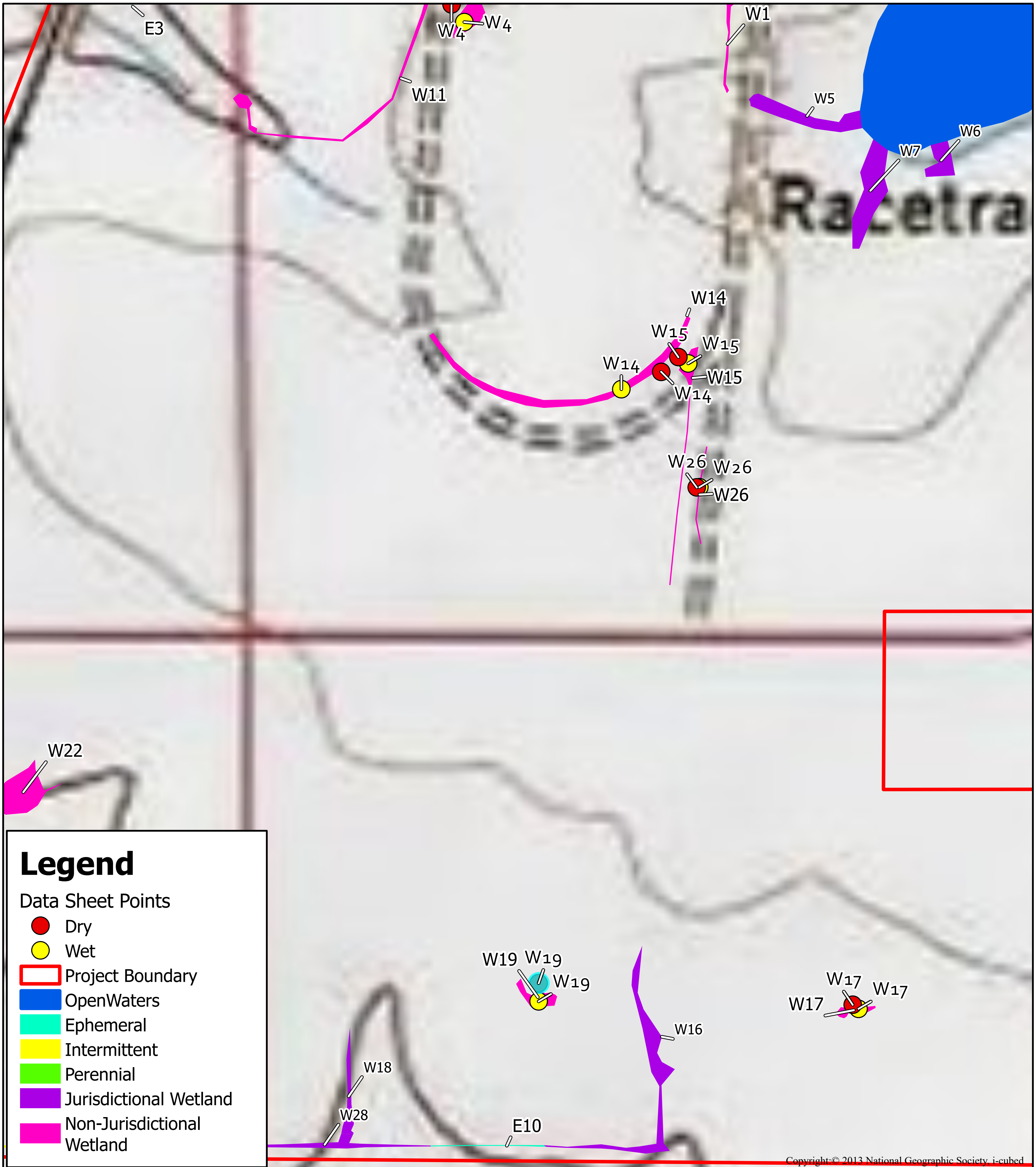

VOLKERT

0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

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Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama
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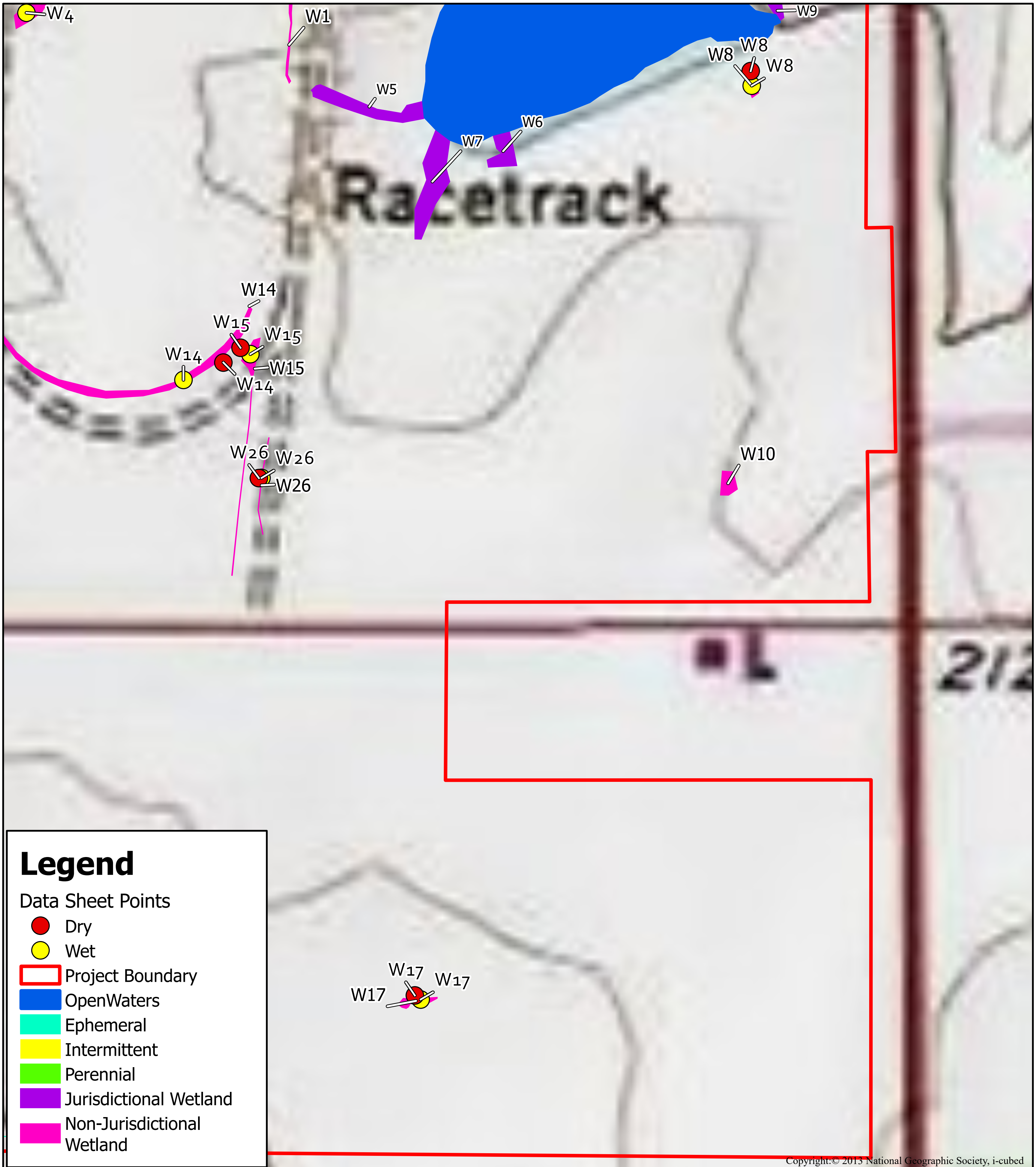
Map 6



0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

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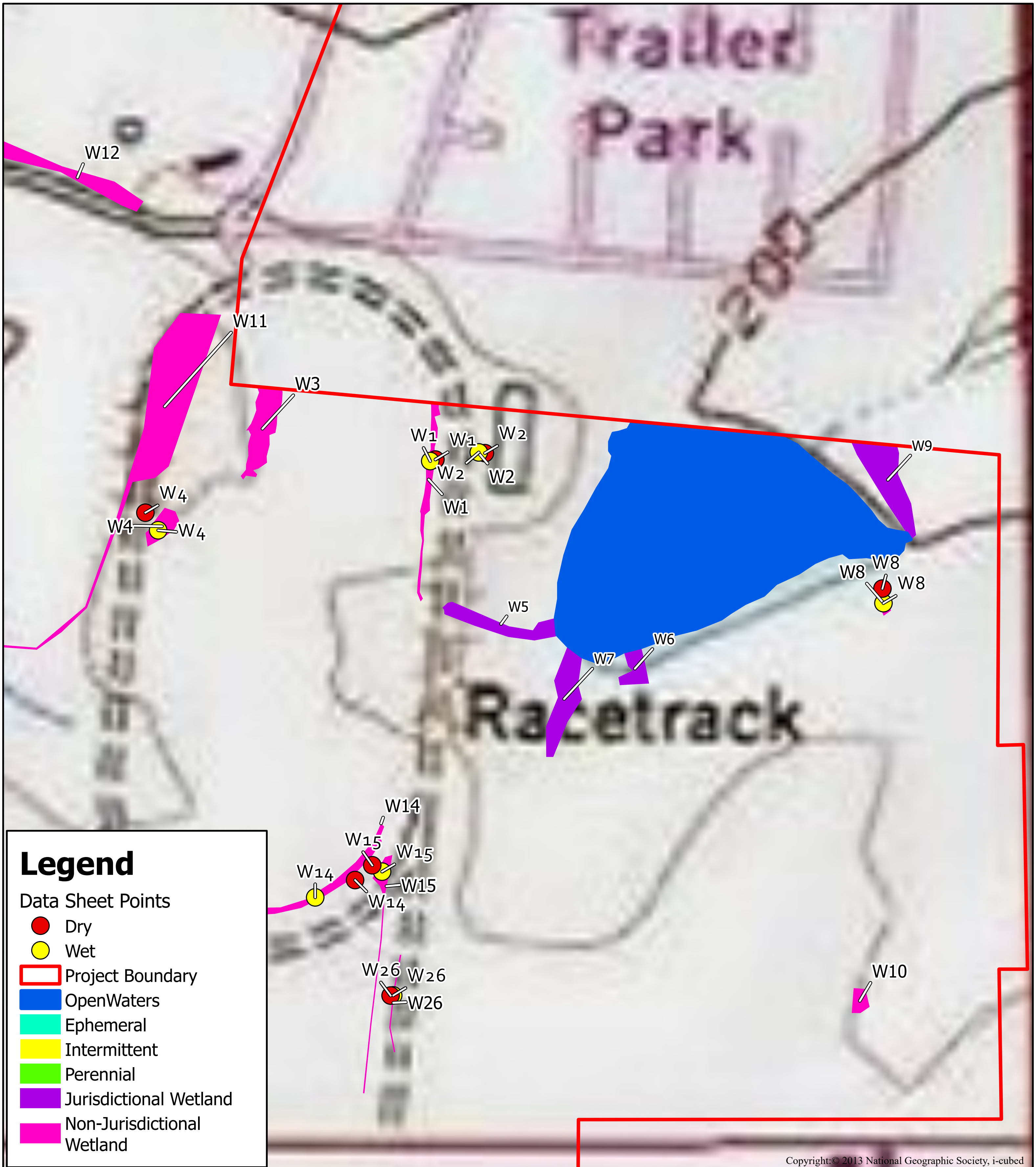
VOLKERT

Map 7

Data Collection Wetlands
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama



VOLKERT

Map 8

0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

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Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama
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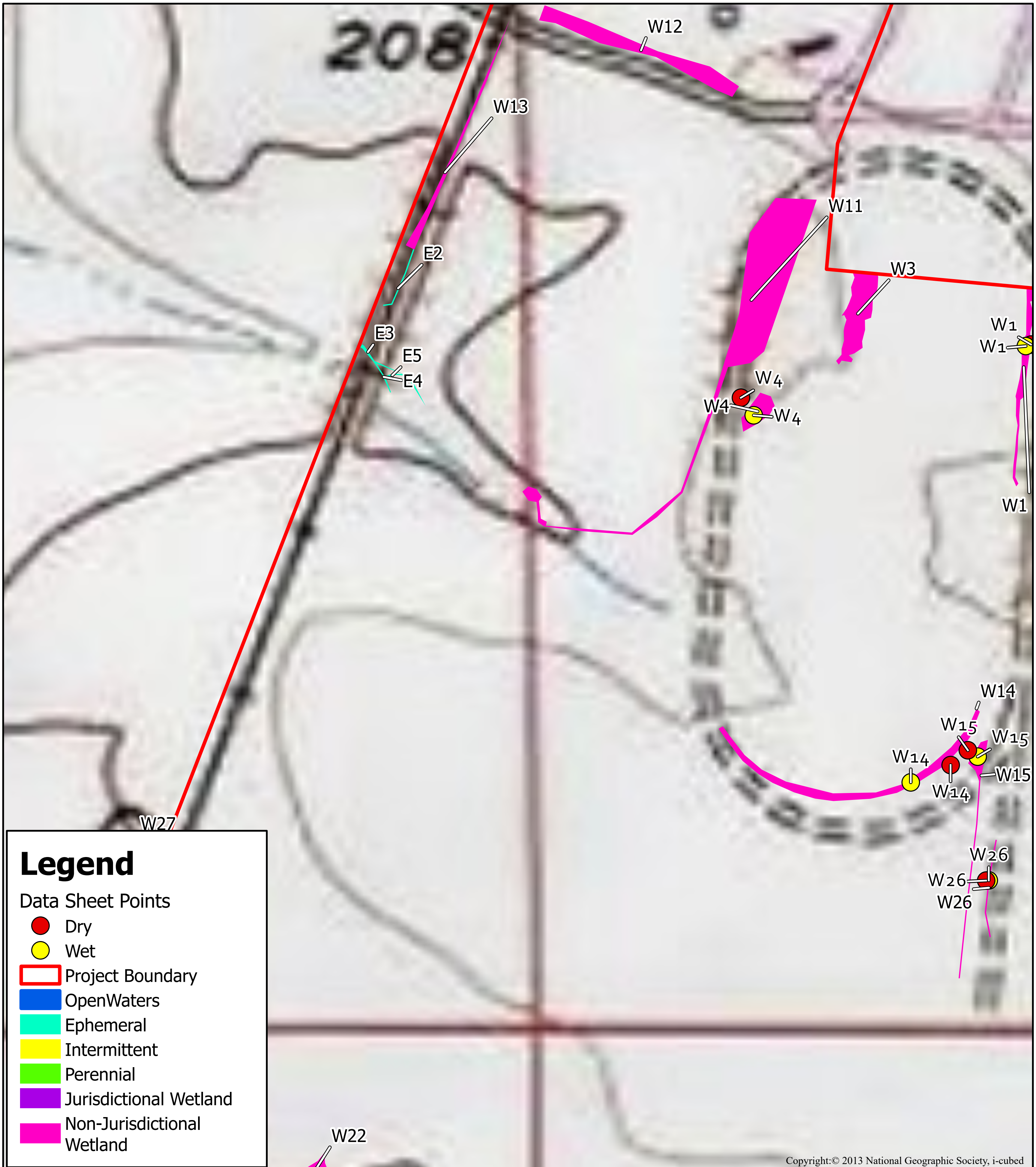

VOLKERT

Map 9

0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

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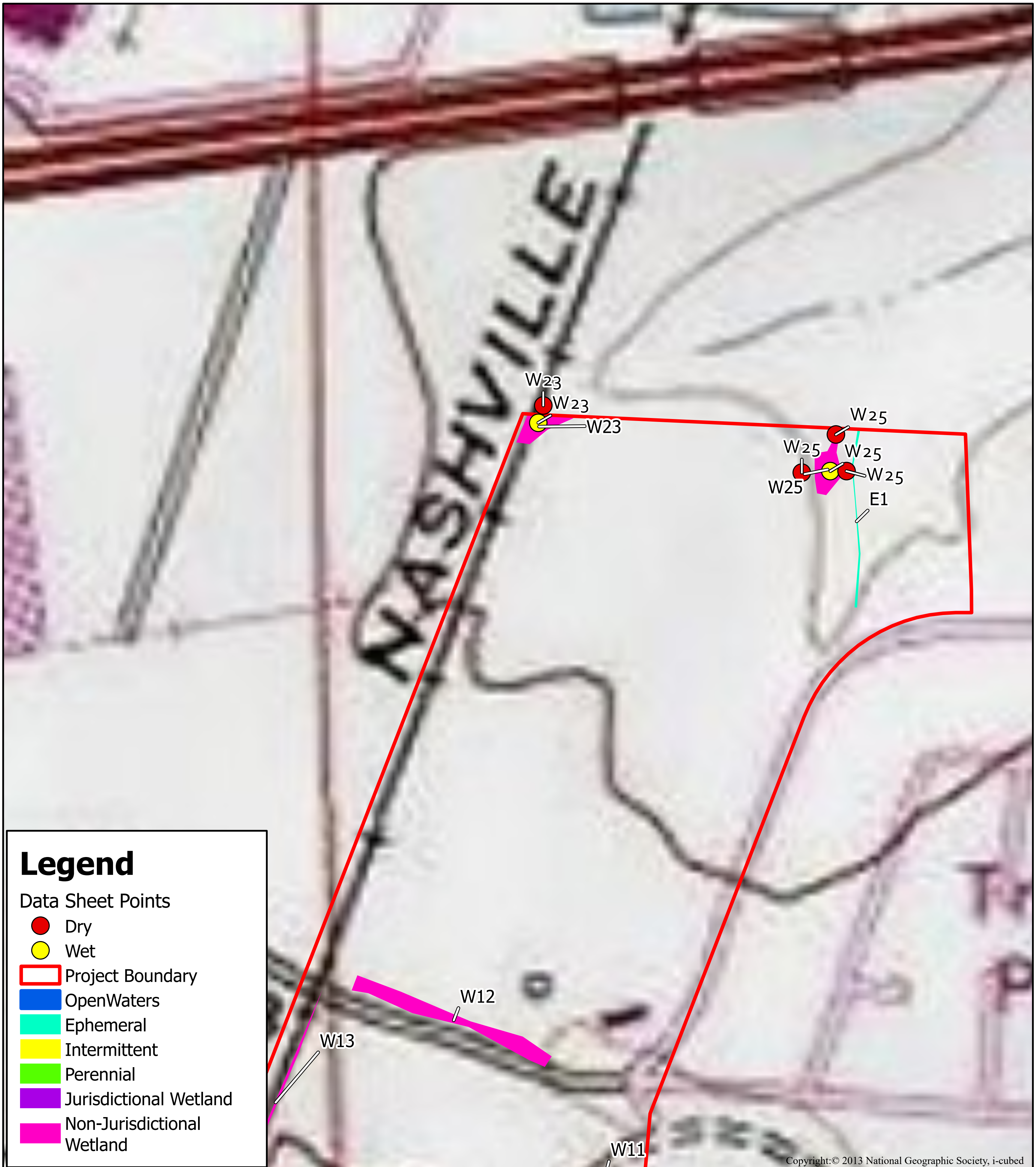
Data Collection Wetlands
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama



VOLKERT

Map 10

0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

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Data Collection Wetlands
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama
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DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, MOBILE DISTRICT
600 VESTAVIA PARKWAY, SUITE 203
VESTAVIA HILLS, ALABAMA, 35216

CESAM-RD-N January 17, 2024

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Pre-2015 Regulatory Regime Approved Jurisdictional Determination in Light of *Sackett v. EPA*, 143 S. Ct. 1322 (2023) ,[1] **SAM-2023-00216-AMR, MFR #1of 6**[2]

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.[3] AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.[4] For the purposes of this AJD, we have relied on section 10 of the Rivers and Harbors Act of 1899 (RHA),[5] the Clean Water Act (CWA) implementing regulations published by the Department of the Army in 1986 and amended in 1993 (references 2.a. and 2.b. respectively), the 2008 *Rapanos-Carabell* guidance (reference 2.c.), and other applicable guidance, relevant case law and longstanding practice, (collectively the pre-2015 regulatory regime), and the *Sackett* decision (reference 2.d.) in evaluating jurisdiction.

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. The features addressed in this AJD were evaluated consistent with the definition of "waters of the United States" found in the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. This AJD did not rely on the 2023 "Revised Definition of 'Waters of the United States,'" as

[1] While the Supreme Court's decision in *Sackett* had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.
[2] When documenting aquatic resources within the review area that are jurisdictional under the Clean Water Act (CWA), use an additional MFR and group the aquatic resources on each MFR based on the TNW, interstate water, or territorial seas that they are connected to. Be sure to provide an identifier to indicate when there are multiple MFRs associated with a single AJD request (i.e., number them 1, 2, 3, etc.).
[3] 33 CFR 331.2.
[4] Regulatory Guidance Letter 05-02.
[5] USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

amended on 8 September 2023 (Amended 2023 Rule) because, as of the date of this decision, the Amended 2023 Rule is not applicable Alabama due to litigation.

1. SUMMARY OF CONCLUSIONS.

   a. Provide a list of each individual feature within the review area and the jurisdictional status of each one (i.e., identify whether each feature is/is not a water of the United States and/or a navigable water of the United States).

	Water ID	Latitude	Longitude	Class	Acres	Geographic Authority
1.	W-5	32.3023872	-86.3537903	PEM1	0.20	Sec 404
2.	W-6	32.3021011	-86.3527603	PEM1	0.09	Sec 404
3.	W-7	32.3018990	-86.3533096	PEM1	0.27	Sec 404
4.	W-9	32.3033409	-86.3508224	PEM1	0.32	Sec 404
5.	OW-1	32.3029800	-86.3522600	L2UB	6.49	Sec 404
6.	W-1	32.3034592	-86.3543396	PFO1	0.13	Non-Jurisdictional
7.	W-2	32.3035011	-86.3539734	PFO1	0.01	Non-Jurisdictional
8.	W-8	32.3025475	-86.3508606	PEM1	0.03	Non-Jurisdictional
9.	W10	32.2999300	-86.3510200	PEM1	0.05	Non-Jurisdictional
10.	W-14	32.3005066	-86.3555374	PFO1	0.28	Non-Jurisdictional
11.	W-15	32.3007393	-86.3546753	PEM1	0.08	Non-Jurisdictional
12.	W-26	32.3001366	-86.3545761	PEM1	0.02	Non-Jurisdictional

2. REFERENCES.

   a. Final Rule for Regulatory Programs of the Corps of Engineers, 51 FR 41206 (November 13, 1986).

   b. Clean Water Act Regulatory Programs, 58 FR 45008 (August 25, 1993).

   c. U.S. EPA & U.S. Army Corps of Engineers, Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States* (December 2, 2008)

   d. *Sackett v. EPA*, 598 U.S. _, 143 S. Ct. 1322 (2023)

   e. Wetland Delineation Report, April 19, 2023 by Volkert, Inc.

   f. 1987 USACE Wetland Delineation Manual

g. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region

3. REVIEW AREA. The review area is 295 acres located at latitude 32.299, Longitude -86.3577, Montgomery, Montgomery County, Alabama.

4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), INTERSTATE WATER, OR THE TERRITORIAL SEAS TO WHICH THE AQUATIC RESOURCE IS CONNECTED. The Alabama River is the nearest TNW. It is recorded in the Corps database as a Section 10 waterway.[6]

5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, INTERSTATE WATER, OR THE TERRITORIAL SEAS. The flow goes east from the lake (OW1) into an unnamed RPW tributary, which flows 6,489 east then north to Catoma Creek (a perennial RPW), which then flows 11.3 miles west into the Alabama River, a TNW.

6. SECTION 10 JURISDICTIONAL WATERS[7]: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10.[8] N/A

7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant

[6] This MFR should not be used to complete a new stand-alone TNW determination. A stand-alone TNW determination for a water that is not subject to Section 9 or 10 of the Rivers and Harbors Act of 1899 (RHA) is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established.
[7] 33 CFR 329.9(a) A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in § 329.8(b) of this part) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions.
[8] This MFR is not to be used to make a report of findings to support a determination that the water is a navigable water of the United States. The district must follow the procedures outlined in 33 CFR part 329.14 to make a determination that water is a navigable water of the United States subject to Section 10 of the RHA.

category of “waters of the United States” in the pre-2015 regulatory regime. The rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource, including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.

a. TNWs (a)(1): N/A

b. Interstate Waters (a)(2): N/A

c. Other Waters (a)(3): N/A

d. Impoundments (a)(4): 6.5-acre lake (OW 1) is an impoundment of an RPW. The RPW discharges from OW 1 and flows east, and then north outside of the review area for 6,489 linear feet to Catoma Creek. Catoma Creek, an RPW, flows west for 11.3 miles to the Alabama River (a TNW).

e. Tributaries (a)(5): N/A

f. The territorial seas (a)(6): N/A

g. Adjacent wetlands (a)(7): Wetlands W5 (0.20 ac), W6 (0.09 ac), W7 (0.27 ac), and W9 (0.32 ac). These wetlands have a continuous surface connection to OW 1 (impoundment), which flows east to an unnamed RPW tributary located east of the project site and flows east and then north for 6,489 linear feet to Catoma Creek. Catoma Creek, an RPW, flows west for 11.3 linear feet or miles to the Alabama River (a TNW).

8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

a. Describe aquatic resources and other features within the review area identified as “generally non-jurisdictional” in the preamble to the 1986 regulations (referred to as “preamble waters”).[9] Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA as a preamble water. N/A.

b. Describe aquatic resources and features within the review area identified as “generally not jurisdictional” in the *Rapanos* guidance. Include size of the aquatic resource or feature within the review area and describe how it was determined to

[9] 51 FR 41217, November 13, 1986.

be non-jurisdictional under the CWA based on the criteria listed in the guidance. N/A.

c. Describe aquatic resources and features identified within the review area as waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA. Include the size of the waste treatment system within the review area and describe how it was determined to be a waste treatment system. N/A.

d. Describe aquatic resources and features within the review area determined to be prior converted cropland in accordance with the 1993 regulations (reference 2.b.). Include the size of the aquatic resource or feature within the review area and describe how it was determined to be prior converted cropland. N/A.

e. Describe aquatic resources (i.e. lakes and ponds) within the review area, which do not have a nexus to interstate or foreign commerce, and prior to the January 2001 Supreme Court decision in "*SWANCC*," would have been jurisdictional based solely on the "Migratory Bird Rule." Include the size of the aquatic resource or feature, and how it was determined to be an "isolated water" in accordance with *SWANCC*. N/A.

f. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the pre-2015 regulatory regime consistent with the Supreme Court's decision in *Sackett* (e.g., tributaries that are non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water).
W1 (0.13 ac), W2 (0.01 ac), W8 (0.03 ac), W10 (0.05 ac), W14 (0.28 ac), W15 (0.08 ac), W26 (0.02 ac). These wetlands are in the vicinity of the Lake (OW1) however, there is no continuous surface connection to the lake, or nearby tributaries. These wetlands are physically separated from OW1 by uplands. .

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

a. The USACE staff conducted a site visit on May 30, 2023.

b. Data used to make determinations included on-site inspection of soils, hydrology and vegetation utilizing the 1987 USACE Wetland Delineation manual, USGS topographic maps, and recent aerials, and review of the applicant's wetland datasheets.

c. National Regulatory Viewer (NRV) May-12-29, 2023, LIDAR.

d. NRV, NHD May 12-28, 2023.

10. OTHER SUPPORTING INFORMATION. National Wetlands Inventory via NRV.

11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR's structure and format may be subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, MOBILE DISTRICT
600 VESTAVIA PARKWAY, SUITE 203
VESTAVIA HILLS, ALABAMA, 35216

CESAM-RD-N January 17, 2024

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Pre-2015 Regulatory Regime Approved Jurisdictional Determination in Light of *Sackett v. EPA*, 143 S. Ct. 1322 (2023) ,[1] **SAM-2023-00216-AMR, MFR #2 of 6**[2]

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.[3] AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.[4] For the purposes of this AJD, we have relied on section 10 of the Rivers and Harbors Act of 1899 (RHA),[5] the Clean Water Act (CWA) implementing regulations published by the Department of the Army in 1986 and amended in 1993 (references 2.a. and 2.b. respectively), the 2008 *Rapanos-Carabell* guidance (reference 2.c.), and other applicable guidance, relevant case law and longstanding practice, (collectively the pre-2015 regulatory regime), and the *Sackett* decision (reference 2.d.) in evaluating jurisdiction.

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. The features addressed in this AJD were evaluated consistent with the definition of "waters of the United States" found in the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. This AJD did not rely on the 2023 "Revised Definition of 'Waters of the United States,'" as

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[1] While the Supreme Court's decision in *Sackett* had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.

[2] When documenting aquatic resources within the review area that are jurisdictional under the Clean Water Act (CWA), use an additional MFR and group the aquatic resources on each MFR based on the TNW, interstate water, or territorial seas that they are connected to. Be sure to provide an identifier to indicate when there are multiple MFRs associated with a single AJD request (i.e., number them 1, 2, 3, etc.).

[3] 33 CFR 331.2.

[4] Regulatory Guidance Letter 05-02.

[5] USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

amended on 8 September 2023 (Amended 2023 Rule) because, as of the date of this decision, the Amended 2023 Rule is not applicable Alabama due to litigation.

1. SUMMARY OF CONCLUSIONS.

   a. Provide a list of each individual feature within the review area and the jurisdictional status of each one (i.e., identify whether each feature is/is not a water of the United States and/or a navigable water of the United States).

	ID	Latitude	Longitude	Class	Acres	LF	Geographic Authority
1.	W-3	32.3036575	-86.3556366	PFO1	0.25	-	Non-Jurisdictional
2.	W-4	32.3030167	-86.3564072	PFO1	0.09	-	Non-Jurisdictional
3.	W-11	32.3037300	-86.3564682	PFO1	1.09	-	Non-Jurisdictional
4.	W-12	32.3053780	-86.3573303	PFO1	0.35	-	Non-Jurisdictional
5.	W-13	32.3045731	-86.3588181	PFO1	0.11	-	Non-Jurisdictional
6.	E-2	32.30381012	-86.35917664	R6	0.01	164.2	Non-Jurisdictional
7.	E-3	32.30329895	-86.35927582	R6	0.01	223.0	Non-Jurisdictional
8.	E-4	32.30324554	-86.35929871	R6	0.006	86.3	Non-Jurisdictional
9.	E-5	32.30324173	-86.35923767	R6	0.003	54.9	Non-Jurisdictional

W = Wetland   E = Non-RPW

2. REFERENCES.

   a. Final Rule for Regulatory Programs of the Corps of Engineers, 51 FR 41206 (November 13, 1986).

   b. Clean Water Act Regulatory Programs, 58 FR 45008 (August 25, 1993).

   c. U.S. EPA & U.S. Army Corps of Engineers, Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States* (December 2, 2008)

   d. *Sackett v. EPA*, 598 U.S. _, 143 S. Ct. 1322 (2023)

   e. Wetland Delineation Report, April 9, 2023 by Volkert, Inc.

   f. 1987 USACE Wetland Delineation Manual

Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region

3. REVIEW AREA. The review area is 295 acres located at latitude 32.299, Longitude -86.3577, Montgomery, Montgomery County, Alabama.

4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), INTERSTATE WATER, OR THE TERRITORIAL SEAS TO WHICH THE AQUATIC RESOURCE IS CONNECTED. The Alabama River is the nearest TNW. It is recorded in the Corps database as a Section 10 waterway.[6]

5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, INTERSTATE WATER, OR THE TERRITORIAL SEAS. N/A.

6. SECTION 10 JURISDICTIONAL WATERS[7]: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10.[8] N/A

7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant category of "waters of the United States" in the pre-2015 regulatory regime. The rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource, including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.

[6] This MFR should not be used to complete a new stand-alone TNW determination. A stand-alone TNW determination for a water that is not subject to Section 9 or 10 of the Rivers and Harbors Act of 1899 (RHA) is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established.
[7] 33 CFR 329.9(a) A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in § 329.8(b) of this part) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions.
[8] This MFR is not to be used to make a report of findings to support a determination that the water is a navigable water of the United States. The district must follow the procedures outlined in 33 CFR part 329.14 to make a determination that water is a navigable water of the United States subject to Section 10 of the RHA.

a. TNWs (a)(1): N/A

b. Interstate Waters (a)(2): N/A

c. Other Waters (a)(3): N/A

d. Impoundments (a)(4): N/A

e. Tributaries (a)(5): N/A.

f. The territorial seas (a)(6): N/A.

g. Adjacent wetlands (a)(7): N/A.

8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

a. Describe aquatic resources and other features within the review area identified as "generally non-jurisdictional" in the preamble to the 1986 regulations (referred to as "preamble waters").[9] Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA as a preamble water. N/A.

b. Describe aquatic resources and features within the review area identified as "generally not jurisdictional" in the *Rapanos* guidance. Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA based on the criteria listed in the guidance. N/A.

c. Describe aquatic resources and features identified within the review area as waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA. Include the size of the waste treatment system within the review area and describe how it was determined to be a waste treatment system. N/A.

d. Describe aquatic resources and features within the review area determined to be prior converted cropland in accordance with the 1993 regulations (reference 2.b.). Include the size of the aquatic resource or feature within the review area and describe how it was determined to be prior converted cropland. N/A.

[9] 51 FR 41217, November 13, 1986.

e. Describe aquatic resources (i.e. lakes and ponds) within the review area, which do not have a nexus to interstate or foreign commerce, and prior to the January 2001 Supreme Court decision in "*SWANCC*," would have been jurisdictional based solely on the "Migratory Bird Rule." Include the size of the aquatic resource or feature, and how it was determined to be an "isolated water" in accordance with *SWANCC*. N/A.

f. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the pre-2015 regulatory regime consistent with the Supreme Court's decision in *Sackett* (e.g., tributaries that are non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water).
Wetlands: W3 (0.25 ac), W4 (0.09 ac), W11 (1.09 ac), W12 (0.35 ac), W13 (0.11 ac). Non-RPWs: E-2 (164 LF), E-3 (223 LF), E4 (86 LF), and E5 (54.9 LF). These wetlands and non-RPWs are located in the mid-west section of the project site. The non-RPWS flow into an un-named RPW located west of the project boundary, and flows west. The wetlands do not have a continuous surface into the RPWs west of the project site. Wetland and upland data collection determined that these wetlands are surrounded by uplands and do not have a discrete feature providing a continuous surface connection to a downstream RPW.

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

a. The USACE staff conducted a site visit on May 30, 2023.

b. Data used to make determinations included on-site inspection of soils, hydrology and vegetation utilizing the 1987 USACE Wetland Delineation manual, USGS topographic maps, NRCS Soils, recent aerials, and review of the applicant's wetland datasheets.

c. National Regulatory Viewer (NRV) May-12-29, 2023, LIDAR.

d. NRV, NHD May 12-28, 2023.

10. OTHER SUPPORTING INFORMATION. National Wetland Inventory via NRV

11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR's structure and format may be

subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, MOBILE DISTRICT
600 VESTAVIA PARKWAY, SUITE 203
VESTAVIA HILLS, ALABAMA, 35216

CESAM-RD-N January 17, 2024

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Pre-2015 Regulatory Regime Approved Jurisdictional Determination in Light of *Sackett v. EPA*, 143 S. Ct. 1322 (2023) ,[1] **SAM-2023-00216-AMR, MFR #3 of 6**[2]

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.[3] AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.[4] For the purposes of this AJD, we have relied on section 10 of the Rivers and Harbors Act of 1899 (RHA),[5] the Clean Water Act (CWA) implementing regulations published by the Department of the Army in 1986 and amended in 1993 (references 2.a. and 2.b. respectively), the 2008 *Rapanos-Carabell* guidance (reference 2.c.), and other applicable guidance, relevant case law and longstanding practice, (collectively the pre-2015 regulatory regime), and the *Sackett* decision (reference 2.d.) in evaluating jurisdiction.

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. The features addressed in this AJD were evaluated consistent with the definition of “waters of the United States” found in the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. This AJD did not rely on the 2023 “Revised Definition of ‘Waters of the United States,’” as

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[1] While the Supreme Court’s decision in *Sackett* had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.
[2] When documenting aquatic resources within the review area that are jurisdictional under the Clean Water Act (CWA), use an additional MFR and group the aquatic resources on each MFR based on the TNW, interstate water, or territorial seas that they are connected to. Be sure to provide an identifier to indicate when there are multiple MFRs associated with a single AJD request (i.e., number them 1, 2, 3, etc.).
[3] 33 CFR 331.2.
[4] Regulatory Guidance Letter 05-02.
[5] USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

amended on 8 September 2023 (Amended 2023 Rule) because, as of the date of this decision, the Amended 2023 Rule is not applicable in Alabama due to litigation.

1. SUMMARY OF CONCLUSIONS.

    a. Provide a list of each individual feature within the review area and the jurisdictional status of each one (i.e., identify whether each feature is/is not a water of the United States and/or a navigable water of the United States).

	ID	Latitude	Longitude	Class	Acres	LF	Geographic Authority
1.	W-23	32.3092613	-86.3566818	PEM1	0.11	-	Non-Jurisdictional
2.	W-25	32.3089752	-86.3544693	PFO1	0.13	-	Non-Jurisdictional
3.	E-1	32.3086357	-86.35423279	R6	0.04	431.3	Non-Jurisdictional

W = Wetland E = Non-RPW

2. REFERENCES.

    a. Final Rule for Regulatory Programs of the Corps of Engineers, 51 FR 41206 (November 13, 1986).

    b. Clean Water Act Regulatory Programs, 58 FR 45008 (August 25, 1993).

    c. U.S. EPA & U.S. Army Corps of Engineers, Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States* (December 2, 2008)

    d. *Sackett v. EPA*, 598 U.S. _, 143 S. Ct. 1322 (2023)

    e. Wetland Delineation Report, April 19, 2023 by Volkert, Inc.

    f. 1987 USACE Wetland Delineation Manual]

    g. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region

3. REVIEW AREA. The review area is 295 acres located at latitude 32.299, Longitude -86.3577, Montgomery, Montgomery County, Alabama

4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), INTERSTATE WATER, OR THE TERRITORIAL SEAS TO WHICH THE AQUATIC RESOURCE IS

CONNECTED. The Alabama River is the nearest TNW. It is recorded in the Corps database as a Section 10 waterway.[6]

5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, INTERSTATE WATER, OR THE TERRITORIAL SEAS N/A.

6. SECTION 10 JURISDICTIONAL WATERS[7]: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10.[8] N/A

7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant category of "waters of the United States" in the pre-2015 regulatory regime. The rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource, including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.

    a. TNWs (a)(1): N/A

    b. Interstate Waters (a)(2): N/A

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[6] This MFR should not be used to complete a new stand-alone TNW determination. A stand-alone TNW determination for a water that is not subject to Section 9 or 10 of the Rivers and Harbors Act of 1899 (RHA) is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established.

[7] 33 CFR 329.9(a) A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in § 329.8(b) of this part) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions.

[8] This MFR is not to be used to make a report of findings to support a determination that the water is a navigable water of the United States. The district must follow the procedures outlined in 33 CFR part 329.14 to make a determination that water is a navigable water of the United States subject to Section 10 of the RHA.

c. Other Waters (a)(3): N/A

d. Impoundments (a)(4): N/A

e. Tributaries (a)(5): N/A

f. The territorial seas (a)(6): N/A

g. Adjacent wetlands (a)(7): N/A

8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

a. Describe aquatic resources and other features within the review area identified as “generally non-jurisdictional” in the preamble to the 1986 regulations (referred to as “preamble waters”).[9] Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA as a preamble water. N/A

b. Describe aquatic resources and features within the review area identified as “generally not jurisdictional” in the *Rapanos* guidance. Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA based on the criteria listed in the guidance. N/A

c. Describe aquatic resources and features identified within the review area as waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA. Include the size of the waste treatment system within the review area and describe how it was determined to be a waste treatment system. N/A

d. Describe aquatic resources and features within the review area determined to be prior converted cropland in accordance with the 1993 regulations (reference 2.b.). Include the size of the aquatic resource or feature within the review area and describe how it was determined to be prior converted cropland. N/A

e. Describe aquatic resources (i.e. lakes and ponds) within the review area, which do not have a nexus to interstate or foreign commerce, and prior to the January 2001 Supreme Court decision in “*SWANCC*,” would have been jurisdictional based solely on the “Migratory Bird Rule.” Include the size of the aquatic

[9] 51 FR 41217, November 13, 1986.

resource or feature, and how it was determined to be an "isolated water" in accordance with *SWANCC*. N/A

f. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the pre-2015 regulatory regime consistent with the Supreme Court's decision in *Sackett* (e.g., tributaries that are non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water).
Wetlands: W23 (0.11 ac), W25(0.13 ac), and non-RPW E1 (431 LF). These wetlands and non-RPW are located in the Northwest section of the project site near a pond off-site that flows east to an RPW. Wetland and upland data collected determined that W23 and W25 are surrounded by uplands and do not have a continuous surface connection to an RPW or TNW. E1 does not exhibit flow or standing water at least seasonally and is therefore classified as a non-jurisdictional non-RPW.

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

a. The USACE staff conducted a site visit on May 30, 2023.

b. Data used to make determinations included on-site inspection of soils, hydrology and vegetation utilizing the 1987 USACE Wetland Delineation manual, USGS topographic maps, NRCS Soils Survey, recent aerials, and review of the applicant's wetland datasheets.

c. National Regulatory Viewer (NRV) May-12-29, 2023, LIDAR.

d. NRV, NHD May 12-28, 2023.

10. OTHER SUPPORTING INFORMATION. National Wetlands Inventory via NRV

11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR's structure and format may be subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, MOBILE DISTRICT
600 VESTAVIA PARKWAY, SUITE 203
VESTAVIA HILLS, ALABAMA, 35216

CESAM-RD-N January 17, 2024

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Pre-2015 Regulatory Regime Approved Jurisdictional Determination in Light of *Sackett v. EPA*, 143 S. Ct. 1322 (2023) ,[1] **SAM-2023-00216-AMR, MFR #4 of 6**[2]

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.[3] AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.[4] For the purposes of this AJD, we have relied on section 10 of the Rivers and Harbors Act of 1899 (RHA),[5] the Clean Water Act (CWA) implementing regulations published by the Department of the Army in 1986 and amended in 1993 (references 2.a. and 2.b. respectively), the 2008 *Rapanos-Carabell* guidance (reference 2.c.), and other applicable guidance, relevant case law and longstanding practice, (collectively the pre-2015 regulatory regime), and the *Sackett* decision (reference 2.d.) in evaluating jurisdiction.

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. The features addressed in this AJD were evaluated consistent with the definition of “waters of the United States” found in the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. This AJD did not rely on the 2023 “Revised Definition of ‘Waters of the United States,’” as

[1] While the Supreme Court’s decision in *Sackett* had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.
[2] When documenting aquatic resources within the review area that are jurisdictional under the Clean Water Act (CWA), use an additional MFR and group the aquatic resources on each MFR based on the TNW, interstate water, or territorial seas that they are connected to. Be sure to provide an identifier to indicate when there are multiple MFRs associated with a single AJD request (i.e., number them 1, 2, 3, etc.).
[3] 33 CFR 331.2.
[4] Regulatory Guidance Letter 05-02.
[5] USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

amended on 8 September 2023 (Amended 2023 Rule) because, as of the date of this decision, the Amended 2023 Rule is not applicable Alabama due to litigation.

1. SUMMARY OF CONCLUSIONS.

   a. Provide a list of each individual feature within the review area and the jurisdictional status of each one (i.e., identify whether each feature is/is not a water of the United States and/or a navigable water of the United States).

	Water ID	Latitude	Longitude	Class	Acres	Length	Geographic Authority
1.	W-16	32.2956238	-86.3550262	PFO1	0.27	-	Sec 404
2.	W-18	32.2959595	-86.3572845	PFO1	0.06	-	Sec 404
3.	W-28	32.2956467	-86.3574371	PFO1	0.10	-	Sec 404
4.	W-29	32.2876282	-86.3663559	PFO1	0.50	-	Sec 404
5.	W-17	32.2965393	-86.3534012	PFO1	0.03	-	Non-Jurisdictional
6.	W-19	32.2966156	-86.3558350	PFO1	0.06	-	Non-Jurisdictional
7.	W-20	32.2963562	-86.3625031	PFO1	0.37	-	Non-Jurisdictional
8.	W-21	32.2978249	-86.3608475	PFO1	0.04	-	Non-Jurisdictional
9.	W-22	32.2979317	-86.3598404	PEM1	0.24	-	Non-Jurisdictional
10.	W-27	32.2997894	-86.3610001	PFO1	0.21	-	Non-Jurisdictional
11.	P-1	32.29003143	-86.3653107	R3UB	0.08	132.7	Sec 404
12.	P-2	32.29459000	-86.3631516	R3UB	0.31	2214.0	Sec 404
13.	I-1	32.29562378	-86.3603668	R4UB	0.13	1295.1	Sec 404
14.	E-6	32.29722595	-86.3622284	R6	0.008	124.9	Non-Jurisdictional
15.	E-7	32.29715347	-86.3621826	R6	0.009	83.0	Non-Jurisdictional
16.	E-8	32.28988647	-86.3654480	R6	0.004	64.4	Non-Jurisdictional
17.	E-9	32.29233551	-86.3643646	R6	0.11	1578.8	Non-Jurisdictional
18.	E-10	32.29564285	-86.3561783	R6	0.01	276.5	Non-Jurisdictional
19.	E-11	32.28491592	-86.3676987	R6	0.02	297.3	Non-Jurisdictional

W = Wetland E = non-RPW P = Perennial (RPW) I – Intermittent (RPW)

2. REFERENCES.

   a. Final Rule for Regulatory Programs of the Corps of Engineers, 51 FR 41206 (November 13, 1986).

   b. Clean Water Act Regulatory Programs, 58 FR 45008 (August 25, 1993).

c. U.S. EPA & U.S. Army Corps of Engineers, Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States* (December 2, 2008)

d. *Sackett v. EPA*, 598 U.S. _, 143 S. Ct. 1322 (2023)

e. Wetland Delineation Report, April 19, 2023 by Volkert, Inc.

f. 1987 USACE Wetland Delineation Manual

g. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region

3. REVIEW AREA. The review area is 295 acres located at latitude 32.299, Longitude -86.3577, Montgomery, Montgomery County, Alabama.

4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), INTERSTATE WATER, OR THE TERRITORIAL SEAS TO WHICH THE AQUATIC RESOURCE IS CONNECTED. The Alabama River is the nearest TNW. It is recorded in the Corps database as a Section 10 waterway.[6]

5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, INTERSTATE WATER, OR THE TERRITORIAL SEAS The I-1 flows 1,300 linear feet west into P2 (both RPWs). P2 flows 2,214 linear feet south into P1(Caney Branch). Caney Branch (RPW) flows 3.36 miles northwest into Catoma Creek. Catoma Creek (RPW) which flows 8.27 miles northwest into the Alabama River, a TNW.

6. SECTION 10 JURISDICTIONAL WATERS[7]: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic

[6] This MFR should not be used to complete a new stand-alone TNW determination. A stand-alone TNW determination for a water that is not subject to Section 9 or 10 of the Rivers and Harbors Act of 1899 (RHA) is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established.

[7] 33 CFR 329.9(a) A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in § 329.8(b) of this part) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions.

resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10.[8] N/A

7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant category of "waters of the United States" in the pre-2015 regulatory regime. The rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource, including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.

   a. TNWs (a)(1): N/A

   b. Interstate Waters (a)(2): N/A

   c. Other Waters (a)(3): N/A

   d. Impoundments (a)(4): N/A.

   e. Tributaries (a)(5): P1 (132 LF), P2 (2,214 LF) and I1 (1,295 LF) are all relatively permanent tributaries that are located in the north part of the southern linear section of the project area. P1 flows north into Caney Branch. I1 flows west into the P2 which flows south into Caney Branch.

   f. The territorial seas (a)(6): N/A

   g. Adjacent wetlands (a)(7): Wetlands W-16 (0.27 ac), W-18 (0.06 ac), W-28 (0.10 ac), W-29 (0.50 ac) are located in the north part of the southern linear section of the project area. Wetlands 16, 18 and 28 have a continuous surface connection by abutting I1, an intermittent RPW. Wetland 29 has a continuous surface connection by abutting P1, a perennial RPW. These wetlands and tributaries flow into Caney Branch (an RPW) which flows 3.36 miles northwest into Catoma

[8] This MFR is not to be used to make a report of findings to support a determination that the water is a navigable water of the United States. The district must follow the procedures outlined in 33 CFR part 329.14 to make a determination that water is a navigable water of the United States subject to Section 10 of the RHA.

Creek, an RPW. Catoma Creek flows 8.27 miles west into Alabama River (a TNW).

8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

a. Describe aquatic resources and other features within the review area identified as "generally non-jurisdictional" in the preamble to the 1986 regulations (referred to as "preamble waters").[9] Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA as a preamble water. N/A.

b. Describe aquatic resources and features within the review area identified as "generally not jurisdictional" in the *Rapanos* guidance. Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA based on the criteria listed in the guidance. N/A.

c. Describe aquatic resources and features identified within the review area as waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA. Include the size of the waste treatment system within the review area and describe how it was determined to be a waste treatment system. N/A.

d. Describe aquatic resources and features within the review area determined to be prior converted cropland in accordance with the 1993 regulations (reference 2.b.). Include the size of the aquatic resource or feature within the review area and describe how it was determined to be prior converted cropland. N/A.

e. Describe aquatic resources (i.e. lakes and ponds) within the review area, which do not have a nexus to interstate or foreign commerce, and prior to the January 2001 Supreme Court decision in "*SWANCC*," would have been jurisdictional based solely on the "Migratory Bird Rule." Include the size of the aquatic resource or feature, and how it was determined to be an "isolated water" in accordance with *SWANCC*. N/A

f. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the pre-2015 regulatory regime consistent with the Supreme Court's decision in *Sackett* (e.g., tributaries that are

[9] 51 FR 41217, November 13, 1986.

non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water).
Wetlands :W-17 (0.03 ac), W-19 (0.06 ac), W-20 (0.37 ac), W-21 (0.04 ac), W-22 (0.24 ac), W-27 (0.21 ac). Non-RPWs : E-6 (125 LF) , E-7 (83 LF), E-8 (64 LF), E-9 (1579 LF), E-10 (277 LF), E-11 (297 LF). The listed wetlands are in the vicinity of P2 and I1 (RPWs); however, they do not have a continuous surface connection to P2 or I1, or other RPWs or TNWs. These wetlands are physically separated from P1, P2, and I1 by uplands. E-6, E-7, E-8, E-9, E-10, and E-11 are all non-RPWs because they do not have flow or standing water at least seasonally.

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

   a. The USACE staff conducted a site visit on May 30, 2023.

   b. Data used to make determinations included on-site inspection of soils, hydrology and vegetation utilizing the 1987 USACE Wetland Delineation manual, USGS topographic maps, and recent aerials, and review of the applicant's wetland datasheets.

   c. National Regulatory Viewer (NRV) May-12-29, 2023, LIDAR.

   d. NRV, NHD May 12-28, 2023.

10. OTHER SUPPORTING INFORMATION. National Wetlands Inventory via NRV.

11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR's structure and format may be subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, MOBILE DISTRICT
600 VESTAVIA PARKWAY, SUITE 203
VESTAVIA HILLS, ALABAMA, 35216

CESAM-RD-N January 17, 2024

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Pre-2015 Regulatory Regime Approved Jurisdictional Determination in Light of *Sackett v. EPA*, 143 S. Ct. 1322 (2023) ,[1] **SAM-2023-00216-AMR, MFR #5 of 6**[2]

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.[3] AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.[4] For the purposes of this AJD, we have relied on section 10 of the Rivers and Harbors Act of 1899 (RHA),[5] the Clean Water Act (CWA) implementing regulations published by the Department of the Army in 1986 and amended in 1993 (references 2.a. and 2.b. respectively), the 2008 *Rapanos-Carabell* guidance (reference 2.c.), and other applicable guidance, relevant case law and longstanding practice, (collectively the pre-2015 regulatory regime), and the *Sackett* decision (reference 2.d.) in evaluating jurisdiction.

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. The features addressed in this AJD were evaluated consistent with the definition of "waters of the United States" found in the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. This AJD did not rely on the 2023 "Revised Definition of 'Waters of the United States,'" as

[1] While the Supreme Court's decision in *Sackett* had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.
[2] When documenting aquatic resources within the review area that are jurisdictional under the Clean Water Act (CWA), use an additional MFR and group the aquatic resources on each MFR based on the TNW, interstate water, or territorial seas that they are connected to. Be sure to provide an identifier to indicate when there are multiple MFRs associated with a single AJD request (i.e., number them 1, 2, 3, etc.).
[3] 33 CFR 331.2.
[4] Regulatory Guidance Letter 05-02.
[5] USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

amended on 8 September 2023 (Amended 2023 Rule) because, as of the date of this decision, the Amended 2023 Rule is not applicable Alabama due to litigation.

1. SUMMARY OF CONCLUSIONS.

   a. Provide a list of each individual feature within the review area and the jurisdictional status of each one (i.e., identify whether each feature is/is not a water of the United States and/or a navigable water of the United States).

	Water ID	Latitude	Longitude	Class	Acres	Length	Geographic Authority
1.	W-30	32.2756882	-86.3716888	PFO1	0.02	-	Non-Jurisdictional
2.	P-3	32.2794037	-86.3700714	R3UB	0.03	88.5	Sec 404
3.	E-13	32.2747307	-86.3722687	R6	0.04	496.0	Non-Jurisdictional

W = Wetland P = RPW E = Non-RPW

2. REFERENCES.

   a. Final Rule for Regulatory Programs of the Corps of Engineers, 51 FR 41206 (November 13, 1986).

   b. Clean Water Act Regulatory Programs, 58 FR 45008 (August 25, 1993).

   c. U.S. EPA & U.S. Army Corps of Engineers, Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States* (December 2, 2008)

   d. *Sackett v. EPA*, 598 U.S. _, 143 S. Ct. 1322 (2023)

   e. Wetland Delineation Report, April 19, 2023 by Volkert, Inc.

   f. 1987 USACE Wetland Delineation Manual

   g. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region

3. REVIEW AREA. The review area is 295 acres located at latitude 32.299, Longitude -86.3577, Montgomery, Montgomery County, Alabama.

4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), INTERSTATE WATER, OR THE TERRITORIAL SEAS TO WHICH THE AQUATIC RESOURCE IS CONNECTED. The Alabama River is the nearest TNW. It is recorded in the Corps database as a Section 10 waterway.[6]

5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, INTERSTATE WATER, OR THE TERRITORIAL SEAS. P3 is an un-named tributary that flows 3,000 linear feet northeast (outside of the review area) into Caney Branch (a perennial RPW), which flows 3.97 miles northwest to Catoma Creek (a perennial RPW), which then flows 8.67 northwest into the Alabama River, a TNW.

6. SECTION 10 JURISDICTIONAL WATERS[7]: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10.[8] N/A

7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant category of "waters of the United States" in the pre-2015 regulatory regime. The rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource, including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.

[6] This MFR should not be used to complete a new stand-alone TNW determination. A stand-alone TNW determination for a water that is not subject to Section 9 or 10 of the Rivers and Harbors Act of 1899 (RHA) is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established.
[7] 33 CFR 329.9(a) A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in § 329.8(b) of this part) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions.
[8] This MFR is not to be used to make a report of findings to support a determination that the water is a navigable water of the United States. The district must follow the procedures outlined in 33 CFR part 329.14 to make a determination that water is a navigable water of the United States subject to Section 10 of the RHA.

a. TNWs (a)(1): N/A

b. Interstate Waters (a)(2): N/A

c. Other Waters (a)(3): N/A

d. Impoundments (a)(4): N/A.

e. Tributaries (a)(5): P-3 (88.5 lf), an RPW, is an un-named tributary to Caney Branch located in the south part of the south linear section of the project area. P3 flows outside of the review area for 3000 lf northeast into Caney Branch (a perennial RPW), which flows 3.97 miles northwest to Catoma Creek (a perennial RPW), which then flows 8.67 northwest into the Alabama River, a TNW.

f. The territorial seas (a)(6): N/A

g. Adjacent wetlands (a)(7): N/A.

8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

a. Describe aquatic resources and other features within the review area identified as “generally non-jurisdictional” in the preamble to the 1986 regulations (referred to as “preamble waters”).[9] Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA as a preamble water. N/A.

b. Describe aquatic resources and features within the review area identified as “generally not jurisdictional” in the *Rapanos* guidance. Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA based on the criteria listed in the guidance. N/A.

c. Describe aquatic resources and features identified within the review area as waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA. Include the size of the waste treatment system within the review area and describe how it was determined to be a waste treatment system. N/A.

d. Describe aquatic resources and features within the review area determined to be prior converted cropland in accordance with the 1993 regulations (reference

[9] 51 FR 41217, November 13, 1986.

2.b.). Include the size of the aquatic resource or feature within the review area and describe how it was determined to be prior converted cropland. N/A.

e. Describe aquatic resources (i.e. lakes and ponds) within the review area, which do not have a nexus to interstate or foreign commerce, and prior to the January 2001 Supreme Court decision in "*SWANCC*," would have been jurisdictional based solely on the "Migratory Bird Rule." Include the size of the aquatic resource or feature, and how it was determined to be an "isolated water" in accordance with *SWANCC*. N/A.

f. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the pre-2015 regulatory regime consistent with the Supreme Court's decision in *Sackett* (e.g., tributaries that are non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water).
Wetland W-30(0.02 ac) and non-RPW E-13 (496 LF), are located in the south part of the southern linear section of the project area. W-30 does not have continuous surface connection to RPW (P3), an un-named tributary to Caney Branch. W-30 is physically separated from P3 by uplands. E-13 does not exhibit flow or standing water at least seasonally, and is therefore a non-jurisdictional non-RPW.

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

a. The USACE staff conducted a site visit on May 30, 2023.

b. Data used to make determinations included on-site inspection of soils, hydrology and vegetation utilizing the 1987 USACE Wetland Delineation manual, USGS topographic maps, and recent aerials, and review of the applicant's wetland datasheets.

c. National Regulatory Viewer (NRV) May-12-29, 2023, LIDAR.

d. NRV, NHD May 12-28, 2023.

10. OTHER SUPPORTING INFORMATION. National Wetlands Inventory via NRV.

11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR's structure and format may be

subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, MOBILE DISTRICT
600 VESTAVIA PARKWAY, SUITE 203
VESTAVIA HILLS, ALABAMA, 35216

CESAM-RD-N January 17, 2024

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Pre-2015 Regulatory Regime Approved Jurisdictional Determination in Light of *Sackett v. EPA*, 143 S. Ct. 1322 (2023) ,[1] **SAM-2023-00216-AMR, MFR #6 of 6**[2]

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.[3] AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.[4] For the purposes of this AJD, we have relied on section 10 of the Rivers and Harbors Act of 1899 (RHA),[5] the Clean Water Act (CWA) implementing regulations published by the Department of the Army in 1986 and amended in 1993 (references 2.a. and 2.b. respectively), the 2008 *Rapanos-Carabell* guidance (reference 2.c.), and other applicable guidance, relevant case law and longstanding practice, (collectively the pre-2015 regulatory regime), and the *Sackett* decision (reference 2.d.) in evaluating jurisdiction.

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. The features addressed in this AJD were evaluated consistent with the definition of “waters of the United States” found in the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. This AJD did not rely on the 2023 “Revised Definition of ‘Waters of the United States,’” as

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[1] While the Supreme Court’s decision in *Sackett* had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.

[2] When documenting aquatic resources within the review area that are jurisdictional under the Clean Water Act (CWA), use an additional MFR and group the aquatic resources on each MFR based on the TNW, interstate water, or territorial seas that they are connected to. Be sure to provide an identifier to indicate when there are multiple MFRs associated with a single AJD request (i.e., number them 1, 2, 3, etc.).

[3] 33 CFR 331.2.

[4] Regulatory Guidance Letter 05-02.

[5] USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

amended on 8 September 2023 (Amended 2023 Rule) because, as of the date of this decision, the Amended 2023 Rule is not applicable Alabama due to litigation.

1. SUMMARY OF CONCLUSIONS.

   a. Provide a list of each individual feature within the review area and the jurisdictional status of each one (i.e., identify whether each feature is/is not a water of the United States and/or a navigable water of the United States).

	Water ID	Latitude	Longitude	Class	Acres	Length	Geographic Authority
1.	W-31	32.2701874	-86.3742142	PFO1	0.02	-	Non-Jurisdictional
2.	W-32	32.2696075	-86.3745728	PFO1	0.02	-	Non-Jurisdictional
3.	E-14	32.2698669	-86.3744965	R6	0.002	28.6	Non-Jurisdictional

W = Wetland   E = Non-RPW

2. REFERENCES.

   a. Final Rule for Regulatory Programs of the Corps of Engineers, 51 FR 41206 (November 13, 1986).

   b. Clean Water Act Regulatory Programs, 58 FR 45008 (August 25, 1993).

   c. U.S. EPA & U.S. Army Corps of Engineers, Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States* (December 2, 2008)

   d. *Sackett v. EPA*, 598 U.S. _, 143 S. Ct. 1322 (2023)

   e. Wetland Delineation Report, April 19, 2023 by Volkert, Inc.

   f. 1987 USACE Wetland Delineation Manual

   g. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region

3. REVIEW AREA. The review area is 295 acres located at latitude 32.299, Longitude -86.3577, Montgomery, Montgomery County, Alabama.

4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), INTERSTATE WATER, OR THE TERRITORIAL SEAS TO WHICH THE AQUATIC RESOURCE IS CONNECTED. The Alabama River is the nearest TNW. It is recorded in the Corps database as a TNW.[6]

5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, INTERSTATE WATER, OR THE TERRITORIAL SEAS N/A.

6. SECTION 10 JURISDICTIONAL WATERS[7]: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10.[8] N/A

7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant category of "waters of the United States" in the pre-2015 regulatory regime. The rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource, including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.

    a. TNWs (a)(1): N/A

[6] This MFR should not be used to complete a new stand-alone TNW determination. A stand-alone TNW determination for a water that is not subject to Section 9 or 10 of the Rivers and Harbors Act of 1899 (RHA) is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established.

[7] 33 CFR 329.9(a) A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in § 329.8(b) of this part) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions.

[8] This MFR is not to be used to make a report of findings to support a determination that the water is a navigable water of the United States. The district must follow the procedures outlined in 33 CFR part 329.14 to make a determination that water is a navigable water of the United States subject to Section 10 of the RHA.

b. Interstate Waters (a)(2): N/A.

c. Other Waters (a)(3): N/A.

d. Impoundments (a)(4): N/A.

e. Tributaries (a)(5): N/A.

f. The territorial seas (a)(6): N/A.

g. Adjacent wetlands (a)(7): N/A.

8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

a. Describe aquatic resources and other features within the review area identified as “generally non-jurisdictional” in the preamble to the 1986 regulations (referred to as “preamble waters”).[9] Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA as a preamble water. N/A.

b. Describe aquatic resources and features within the review area identified as “generally not jurisdictional” in the *Rapanos* guidance. Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA based on the criteria listed in the guidance. N/A.

c. Describe aquatic resources and features identified within the review area as waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA. Include the size of the waste treatment system within the review area and describe how it was determined to be a waste treatment system. N/A.

d. Describe aquatic resources and features within the review area determined to be prior converted cropland in accordance with the 1993 regulations (reference 2.b.). Include the size of the aquatic resource or feature within the review area and describe how it was determined to be prior converted cropland. N/A.

e. Describe aquatic resources (i.e. lakes and ponds) within the review area, which do not have a nexus to interstate or foreign commerce, and prior to the January 2001 Supreme Court decision in “*SWANCC*,” would have been jurisdictional

[9] 51 FR 41217, November 13, 1986.

based solely on the “Migratory Bird Rule.” Include the size of the aquatic resource or feature, and how it was determined to be an “isolated water” in accordance with *SWANCC*. N/A.

f. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the pre-2015 regulatory regime consistent with the Supreme Court’s decision in *Sackett* (e.g., tributaries that are non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water).
Wetland W-31(0.02 ac), W-32 (0.02) and non-RPW E-14 (28 LF), are located at the terminal end of the southern linear section of the project area. W-31 and W-31 and are separated physically from RPWs or TNWs by uplands, thereby lacking a continuous surface connection to an RPW or TNW. E-14 does not exhibit standing or flowing water at least seasonally and is therefore a non-jurisdictional non-RPW.

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

a. The USACE staff conducted a site visit on May 30, 2023.

b. Data used to make determinations included on-site inspection of soils, hydrology and vegetation utilizing the 1987 USACE Wetland Delineation manual, USGS topographic maps, and recent aerials, and review of the applicant’s wetland datasheets.

c. National Regulatory Viewer (NRV) May-12-29, 2023, LIDAR.

d. NRV, NHD May 12-28, 2023.

10. OTHER SUPPORTING INFORMATION. National Wetlands Inventory via NRV.

11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR’s structure and format may be subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Alabama State Port Authority	File Number: SAM-2023-216	Date: 1/17/2024

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL WITHOUT PREJUDICE	C
	PERMIT DENIAL WITH PREJUDICE	D
XX	APPROVED JURISDICTIONAL DETERMINATION	E
	PRELIMINARY JURISDICTIONAL DETERMINATION	F

SECTION I

The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/appeals/ or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C. PERMIT DENIAL WITHOUT PREJUDICE: Not appealable
You received a permit denial without prejudice because a required Federal, state, and/or local authorization and/or certification has been denied for activities which also require a Department of the Army permit before final action has been taken on the Army permit application. The permit denial without prejudice is not appealable. There is no prejudice to the right of the applicant to reinstate processing of the Army permit application if subsequent approval is received from the appropriate Federal, state, and/or local agency on a previously denied authorization and/or certification.

D: PERMIT DENIAL WITH PREJUDICE: You may appeal the permit denial
You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information for reconsideration

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

- RECONSIDERATION: You may request that the district engineer reconsider the approved JD by submitting new information or data to the district engineer within 60 days of the date of this notice. The district will determine whether the information submitted qualifies as new information or data that justifies reconsideration of the approved JD. A reconsideration request does not initiate the appeal process. You may submit a request for appeal to the division engineer to preserve your appeal rights while the district is determining whether the submitted information qualifies for a reconsideration.

F: PRELIMINARY JURISDICTIONAL DETERMINATION: Not appealable
You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision you may contact:	If you have questions regarding the appeal process, or to submit your request for appeal, you may contact:
Angela M. Rangel, Senior PM USACE Mobile District Regulatory Division 109 St. Joseph Street Mobile, Alabama 36602 251-455-6785 Angela.m.rangel@usace.army.mil	Krista Sabin Regulatory Review Officer South Atlantic Division 60 Forsyth St SW, Floor M9 Atlanta, Georgia 30303-8801 Krista.D.Sabin@usace.army.mil 904-314-9631

SECTION II – REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT	
REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. Use additional pages as necessary. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)	
ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.	
RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation and will have the opportunity to participate in all site investigations.	
____________________________ Signature of appellant or agent.	Date:
Email address of appellant and/or agent:	Telephone number:

Appendix F – Threatened and Endangered Species

U.S. Department
of Transportation

Federal Railroad
Administration

1200 New Jersey Avenue, SE
Washington, DC 20590

May 21, 2024

William Pearson
Field Supervisor
U.S. Fish and Wildlife Service
Alabama Ecological Services Field Office
1208 Main Street
Daphne, AL 36526

RE: Montgomery Intermodal Container Transfer Facility
Montgomery, Montgomery County, Alabama
Project Reference Code 2023-0030683

Dear Mr. Pearson:

The Federal Railroad Administration (FRA) is providing Fiscal Year 2022 Consolidated Rail Infrastructure and Safety Improvements (CRISI) funding to the Alabama State Port Authority (ASPA) for the proposed Montgomery Intermodal Container Transfer Facility (ICTF) (Project). The ASPA is proposing to construct an ICTF on an approximately 272-acre property owned by the ASPA in Montgomery, Alabama. The facility will consist of two 3,500 linear feet process rail tracks, one 3,500 linear foot support rail track, a maintenance building, and an administration building. Container stacking areas will be provided adjacent to the process tracks. Rubber tired gantry cranes will be employed to load and unload trains and trucks at the facility. Ten thousand (10,000) linear feet of lead track will also be constructed parallel to the existing CSXT main line to provide rail access into the ICTF. Truck access into the facility will be provided through intersection improvements within the Alabama Department of Transportation (ALDOT) right of way (ROW) at U.S. Highway 31 (US 31) and Green Leaf Drive. Approximately 0.97 acre of permanent ROW and 0.21 acre of temporary construction easement will be acquired from two property owners to construct the parallel lead track. No building acquisition or demolition would be required for the proposed Project.

The proposed Project is in T-15-N, R-17-E, Sections 3, 4, 9, 10, 17, 18, 20, and 21 of the Montgomery South, AL U.S. Geological Survey quadrangle map in Montgomery, Montgomery County, Alabama. Surrounding land uses include the Montgomery Regional Airport, Southlawn Baptist Church, Kingdom Hall of Jehovah Witness, Cathedral of Restoration, Southlawn Middle School, light industrial, commercial, and medium density residential and pastureland. See **Attachment A** for figures.

A Biological Study of aquatic and terrestrial species listed under Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.) has been prepared by Volkert on behalf of the FRA for the proposed Project and is included in **Attachment B**. The Biological Study found that the proposed Project *May Affect but is Not Likely to Adversely Affect* the tricolored bat (*perimyotis subflavus*). No tree or vegetation clearing will be conducted between December 15 - February 15 and May 1 - July 15 to avoid removal of suitable roosting trees during pup season. If this tree clearing timing is not achievable, a mist-netting survey will be conducted to determine presence or absence of this species prior to any clearing activities.

U.S. Department
of Transportation

Federal Railroad
Administration

1200 New Jersey Avenue, SE
Washington, DC 20590

In addition, the proposed Project would have *No Effect* on the alligator snapping turtle (*Macrochelys temminckii*), southern clubshell (*Pleurobema decisum*), northern long-eared bat (*Myotis septentrionalis*), and monarch butterfly (*Danaus plexippus*).

FRA requests USFWS review and concurrence with these findings and the attached Biological Study within 30 days of receipt of this letter. Thank you in advance for your assistance with this Project. If you have additional questions or comments, please contact me at (202) 868-2628 or kevin.wright@dot.gov.

Sincerely,

Kevin Wright

Kevin Wright
Environmental Protection Specialist

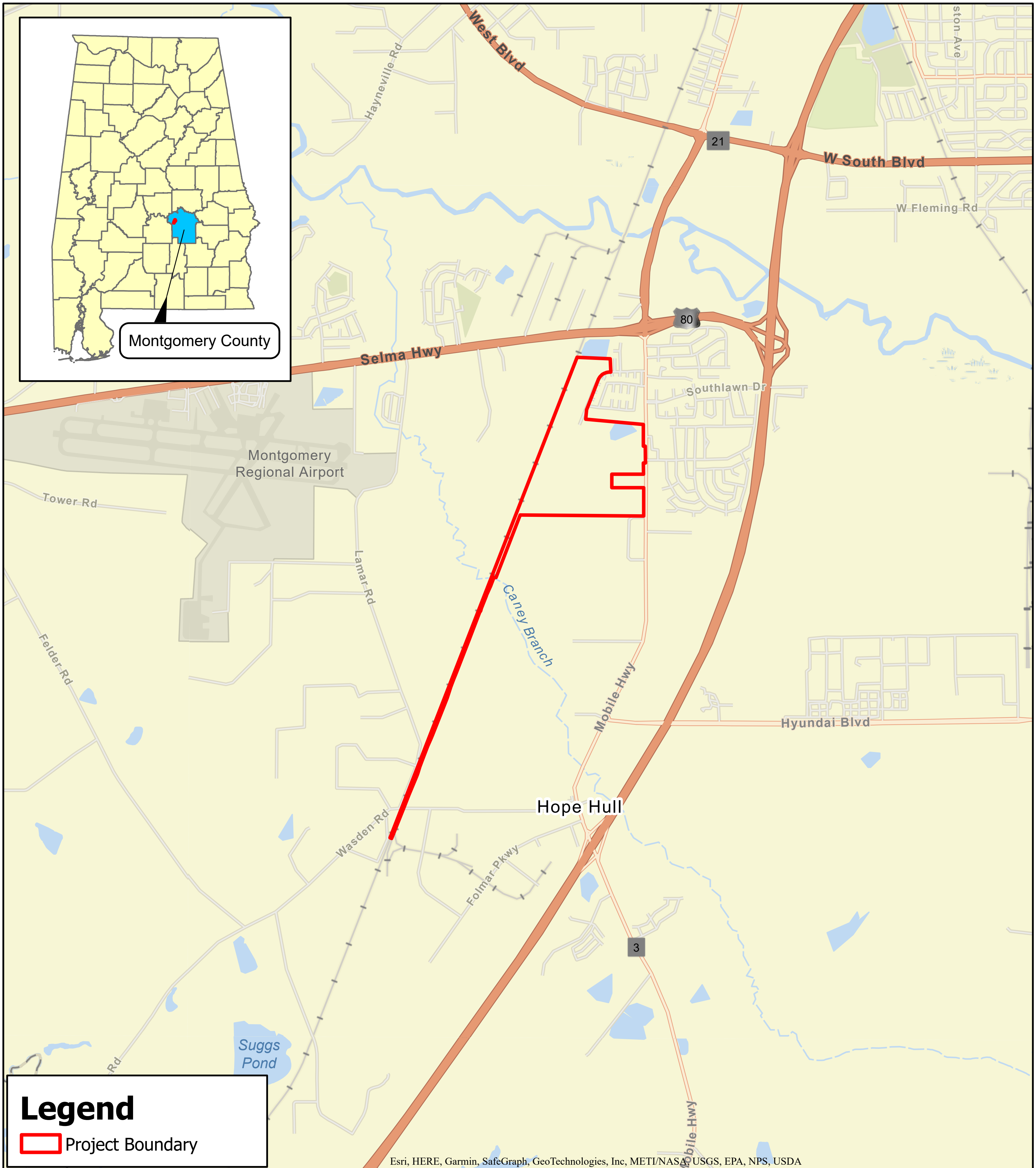
cc: Gretchen Barrera, Environmental Director, ASPA

Enclosures:

Attachment A – Figures
Attachment B – Biological Study

ATTACHMENT A

FIGURES



VOLKERT

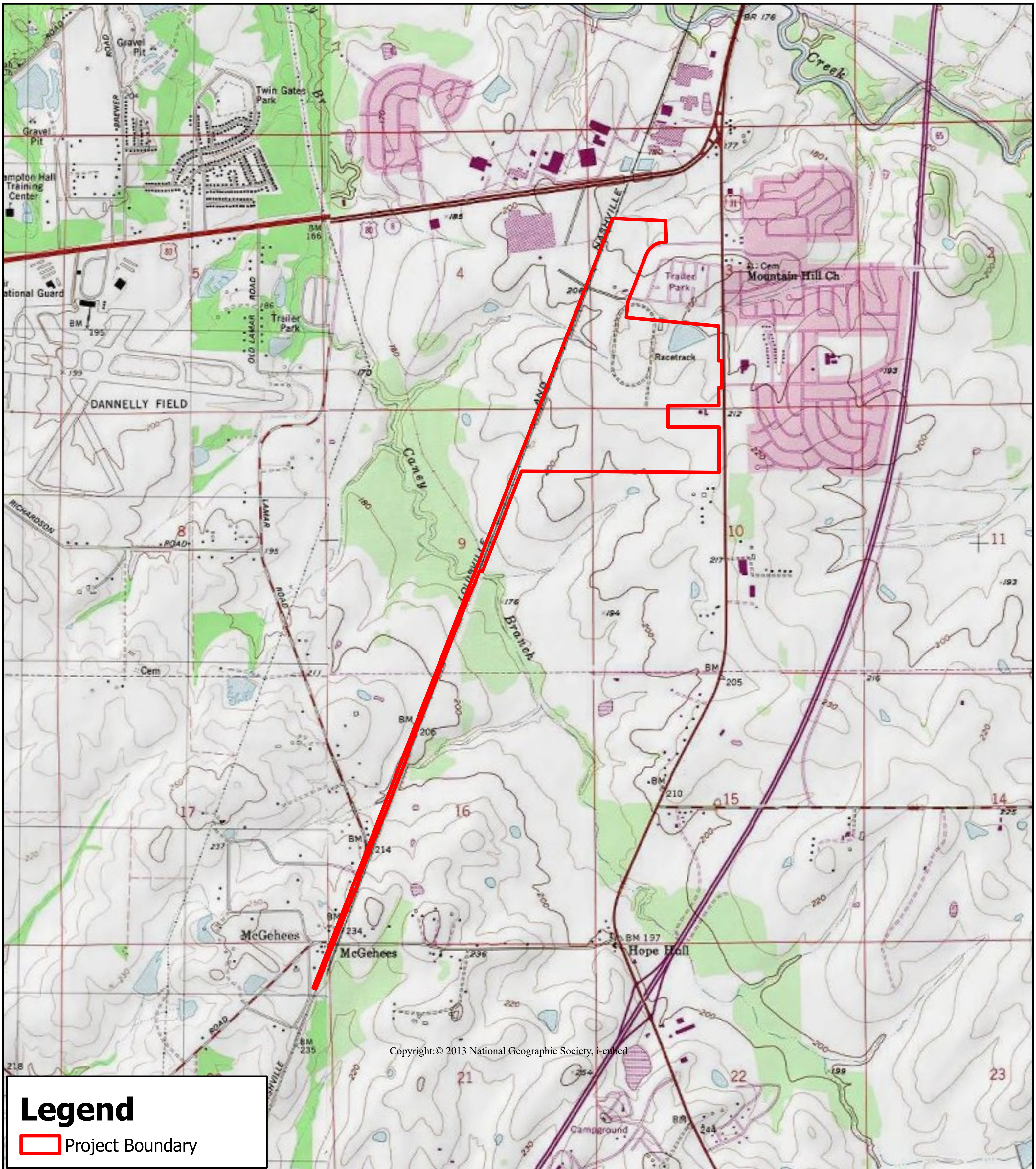
0 2,000 4,000 6,000 8,000 Feet

1 inch = 4,000 feet

Note: This map is not intended for construction.

N

Figure 1: Project Location
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama



Legend

Project Boundary

VOLKERT

0 2,500 5,000 Feet

1 inch = 2,500 feet

Note: This map is not intended for construction.

N

Figure 2: USGS Topo
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama

ATTACHMENT B

BIOLOGICAL STUDY

BIOLOGICAL STUDY

Alabama State Port Authority

Montgomery Intermodal Container Transfer Facility
Montgomery, Montgomery County, Alabama

Prepared for:

U.S. Department of Transportation
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

Prepared by:

1680 West Second Street, Suite B
Gulf Shores, Alabama 36542

On behalf of:

Alabama State Port Authority
250 North Water Street
Mobile, Alabama 36602

Table of Contents

Tables

Attachments

1.0 INTRODUCTION

Volkert, Inc. (Volkert) conducted this Biological Study to identify the potential for presence of protected species, including threatened and endangered species and migratory birds, for the Alabama State Port Authority's (ASPA) proposed Montgomery Intermodal Container Transfer Facility (ICTF). The proposed project is located in south Montgomery, Montgomery County, Alabama. The project study area consists of approximately 305 acres and is illustrated on **Figure 1**.

The Project study area consists of approximately 305-acres and includes the construction of an ICTF on an approximately 272-acre property owned by the ASPA in Montgomery, Alabama. The facility will consist of two 3,500 linear feet process rail tracks, one 3,500 linear foot support rail track, a maintenance building, and an administration building. Container stacking areas will be provided adjacent to the process tracks. Rubber tired gantry cranes will be employed to load and unload trains and trucks at the facility. Ten thousand (10,000) linear feet of lead track will also be constructed parallel to the existing CSXT main line to provide rail access into the ICTF. Truck access into the facility will be provided through intersection improvements within the Alabama Department of Transportation (ALDOT) right of way (ROW) at U.S. Highway 31 (US 31) and Green Leaf Drive.

This Biological Study presents Volkert's review and assessment of federally listed threatened and endangered species that potentially occur within the project study area. Information from the U.S. Fish and Wildlife Service (USFWS) official species lists for the project area was reviewed and can be found in **Attachment A**.

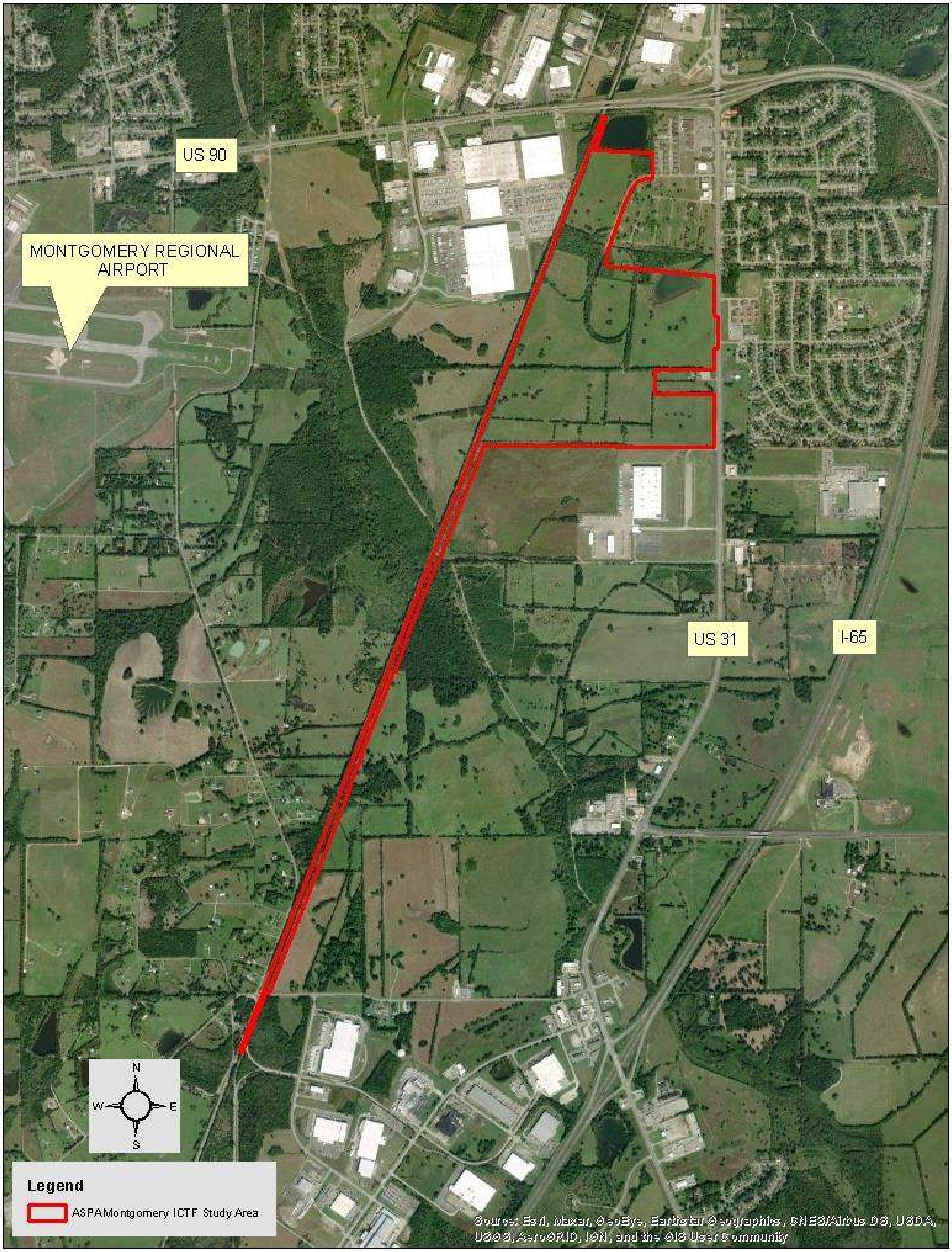
Volkert's background research also included a review of environmental datasets including aerial photography, topographic imagery, Federal Emergency Management Agency (FEMA) floodplain maps, USFWS National Wetland Inventory maps, and Natural Resources Conservation Services (NRCS) soils maps of the project area. These maps can be found in **Attachment B**. Site investigations were conducted the week of January 30, 2023, by Volkert's qualified biologists to identify potential habitats within the approximately 305-acre projects study area and to survey for the potential presence of protected species.

2.0 OVERVIEW OF ESA COMPLIANCE

The purpose of the Endangered Species Act (ESA) is to conserve threatened and endangered species and the ecosystems upon which they depend. When Congress passed the ESA in 1973, they recognized that the natural heritage of the U.S. was of "esthetic, ecological, educational, recreational, and scientific value to our Nation and its people." Congress understood that, without protection, many of our Nation's living resources would become extinct. Species at risk of extinction are considered endangered, whereas species that are likely to become endangered in the foreseeable future are considered threatened. The USFWS known as "the Service" has the responsibility for implementing the ESA.

Under Section 7 of the ESA Federal agencies must review their actions to determine if the Proposed Action may affect endangered or threatened species or their habitat(s). If one or more listed species may be present in the Proposed Action area or if it is to occur within critical habitat

Figure 1: Project Study Area



for a listed species, the federal agencies must evaluate the potential effects of their action and determine if consultation with the USFWS is required.

3.0 SITE DESCRIPTION

The project study area is located within a mixed agricultural, residential, commercial and industrial area of Montgomery. The project study area consists mainly of unimproved pasture with some forested areas containing bottom land hardwood wetlands and CSXT railroad ROW. Caney Branch, a perennial stream, two perennial unnamed tributaries to Caney Branch, two intermittent streams and numerous ephemeral drains were also identified with the project study area.

The proposed subject site ranges from 190 to 250 feet above Mean Sea Level (MSL). The subject site consists of a gentle southward gradient, with slight topographic relief south to north. Rainfall within the project boundary sheds east and west off of the existing railbed and then east off of the proposed project area through a combination of man-made drainage areas, culverts, and natural topography before discharging into Caney Branch. According to the Geological Survey of Alabama, the subject site is in the Cretaceous system and is subdivided into the upper series. These sediment deposits are then specified by the Mooreville chalk province of the Selma group.

Upland vegetation was dominated by mixed hardwoods in the tree and sapling stratum. Species included various oak species (*Quercus sp.*), loblolly pine (*Pinus taeda*) red cedar (*Juniperus virginiana*), southern magnolia (*Magnolia grandiflora*) as well as invasive Chinese popcorn (*Triadica sebifera*). The herb and shrub layers were mostly dominated by dense stands of invasive Chinese privet (*Ligustrum sinense*), and muscadine (*Vitis rotundifolia*). The non-forested upland areas consisted of maintained grasses, such as bahia (*Paspalum notatum*), and dallis grass (*Paspalum dilatatum*).

Distinct wetland vegetation was mostly observed in the shrub and herbaceous layers and were indicative of forested wetlands for the area. The tree and sapling stratum species identified in the wetlands throughout the site were relative to the species found within the uplands, with a denser concentration of Hackberry trees (*Celtis occidentalis*) and Chinese popcorn trees (*Triadica sebifera*) along with other invasive species. The wetlands were noted as having dense stands of cat tail, (*Typha sp.*), bushy bluestem (*Andropogon glomeratus*), and a few common rushes (*Juncus effusus*). Photographs of the project area habitats are found in **ATTACHMENT C**.

A review of the Web Soil Survey for the project area revealed nine (9) soil types exist within the project area. The soils found in the project area are mapped as Catalpa clay (Cb), Faunsdale clay loam (FuB), Houston clay (HaB2), Leeper silty clay loam (Lc), Oktibbeha clay (ObB2), Sumter clay (SmB2), Sucarnoochee silty clay (SuA), and Vaiden silty clay (VbB, VnA). Five (5) of the nine (9) soil types, Cb, HaB2, Lc, SuA and VbB, are classified as hydric soils by the USDA NRCS. In Montgomery County, the average winter temperature is 52 degrees Fahrenheit (F), and, in the summer, the average temperature is 78 degrees F. Precipitation in this area averages about 49 inches per year. Most of the precipitation within this area occurs in the winter and spring months.

4.0 THREATENED AND ENDANGERED SPECIES

Federally listed species and their habitats are protected under the ESA of 1973 (16 U.S.C§ 1531-1544, 87 Stat. 884), as amended. Section 7 of the ESA requires coordination with the USFWS for Proposed Actions that have a federal nexus. The project area was evaluated for the potential occurrence of federally listed threatened and endangered species.

On May 9, 2024, a project specific USFWS species list was generated through the IPaC system in order to determine species of potential occurrence and if critical habitats existed within the project area (**ATTACHMENT A**). Five (5) species with federal-listing status of endangered, proposed endangered, proposed threatened, and candidate were identified on the USFWS official species list obtained for the project area. Based on the official species list, no critical habitats were identified within the project area. **Table 1** contains a list of these species along with their listing status, preferred habitat, whether appropriate habitat for the species was found within the project area, and an effect determination of whether the project would affect or impact each species.

Table 1: U.S. Fish and Wildlife Official Species List					
Species	**Federal Status**	**Habitat Description**	**Preferred Habitat Present in Project Area?**	**Species Effect/ Impact**	**Pertinent Project Information**
Reptiles					
Alligator Snapping Turtle (*Macrochelys temminckii*)	Proposed Threatened	The alligator snapping turtle is almost exclusively aquatic and tends to stay submerged and motionless for so long that algae begins to grow on their shells. Except for egg-laying females, these turtles almost never come on land. River systems, lakes, and wetlands comprise their preferred habitats.	No	No Effect	Potential habitat for the alligator snapping turtle is not present in the study area. The shallow isolated farm pond found within the proposed project boundaries is an abandoned low quality farm pond. Based on field visits, it is estimated that the pond is approximately 1 foot deep at the center. As the alligator snapping turtle is an aquatic species and prefers a habitat of large ponds, rivers and lakes, it is believed that sufficient habitat does not exist. Therefore, the proposed project is anticipated to have *No Effect* on this species.
Clams					
Southern clubshell *(Macrochelys temminckii)*	Endangered	This mussel prefers clean, loose sand and gravel in medium to small rivers and streams. This mussel will bury itself in the bottom substrate to depths of up to four inches. Reproduction requires a stable, undisturbed habitat and a sufficient population of fish hosts to complete the mussel's larval development.	No	No Effect	Potential habitat for the southern clubshell is not present in the study area. The substrate of the streams on site were observed as being composed of dense clay with very little to no sand substrate. Therefore, the proposed project is anticipated to have *No Effect* on this species.
Insects					
Monarch butterfly (*Danaus plexippus*)	Candidate	Individual monarchs in temperate climates, such as eastern and western North America, undergo long-distance migration, and live for an extended period of time. In the fall, in both eastern and western North America, monarchs begin migrating to their respective overwintering sites. The monarch requires undisturbed fields to reproduce.	No	No Effect	Potential habitat for the monarch butterfly is not present in the study area. The grassed fields that occur onsite were observed to be subject to regular mowing and chemical spraying. Therefore, the proposed project is anticipated to have *No Effect* on this species.

Table 1: U.S. Fish and Wildlife Official Species List					
Species	**Federal Status**	**Habitat Description**	**Preferred Habitat Present in Project Area?**	**Species Effect/ Impact**	**Pertinent Project Information**
Mammals					
Northern Long-eared Bat *(Myotis septentrionalis)*	Endangered	The northern long eared bat habitat includes forested wooded habitats and some adjacent non forested habitats such as emergent wetlands and agricultural fields. Potential roosts consist of live trees or snags with greater than 3 inches dbh and have exfoliating bark, cracks, or crevices.	Yes	No Effect	Several live trees with crevices were identified within the project study area. No individuals of this species were observed during the site visit. However, according to the site-specific species list, the northern long-eared Bat only needs to be considered if the project includes wind turbine operations. The proposed Chickasaw Lead Line project does not involve wind turbine operations; therefore, the proposed project is anticipated to have *No Effect* on this species.
Tricolored Bat *(Perimyotis subflavus)*	Proposed Endangered	During the winter, tri-colored bats are found in caves and mines, although in the southern United States, where caves are sparse, tricolored bats are often found roosting in road-associated culverts. During the spring, summer and fall, tricolored bats are found in forested habitats where they roost in trees, primarily among leaves.	Yes	May affect but not likely to adversely affect	Several live trees with crevices were identified within the project study area. No individuals of this species were observed during the site visit. No tree or vegetation clearing should be conducted between December 15 - February 15 and May 1 - July 15 to avoid removal of suitable roosting trees and pup season. If the tree clearing timing is not achievable, the USFWS recommended that a mist-netting survey be conducted to determine presence or absence of these bat species.

5.0 SUMMARY OF THREATENED AND ENDANGERED SPECIES FINDINGS

5.1 U.S. Fish and Wildlife Listed Species

The proposed project activities are anticipated to have a designation of *No Effect* on the alligator snapping turtle, southern clubshell, northern long eared bat or monarch butterfly. Several live trees with crevices were identified within the project study area that could potentially provide roosting habitat for tricolored bat; however, no species were identified during the field survey. It is anticipated that the proposed project *May Affect but is Not Likely to Adversely Affect* this species. No tree or vegetation clearing should be conducted between December 15 - February 15 and May 1 - July 15 to avoid removal of suitable roosting trees and pup season. If the tree clearing timing is not achievable, the USFWS recommended that a mist-netting survey be conducted to determine presence or absence of this species.

5.2 The Bald Eagle and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940 prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, (any bald eagle or golden eagle), alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

The Act defines "disturb" as: “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.” The Act also provides protection for impacts that resulted from human-induced alterations initiated around a previously used nest site during a time when eagles were not present.

No habitat for eagles, eagle nests, or other raptor nests were observed during the field survey. Furthermore, no bald eagles or golden eagles were observed in the project area.

6.0 MIGRATORY BIRDS

For projects that may affect migratory birds, the Migratory Bird Treaty Act (MBTA) implements various treaties and conventions for the protection of these species. Under the MBTA, taking, killing, or possessing migratory birds is unlawful. Migratory birds may nest in trees, brushy areas, or other areas of suitable habitat. The USFWS recommends activities requiring vegetation removal or disturbance to avoid the peak nesting period of March 15 through September 15 to avoid destruction of individuals, nests, or eggs. If project activities, including vegetation clearing, must be conducted during this time, it is recommended that a qualified biologist conduct a survey for nests prior to conducting work. If nesting birds are found, USFWS recommends a buffer of vegetation remain around the nest until the young have fledged or the nest is abandoned.

No nesting migratory birds were observed within the project area during the field survey. The project study area is within a mixed agricultural, residential, commercial and industrial area of Montgomery that lacks suitable nesting habitat.an existing, mostly developed industrial facility that lacks suitable nesting habitat. Migratory birds are possible within the area but are considered unlikely.

7.0 CONCLUSION

Volkert completed a Biological Study for ASPA's proposed ICTF in Montgomery, Montgomery County, Alabama. This assessment included a background review of environmental datasets including aerial photography, topographic imagery, FEMA floodplain maps, USFWS National Wetland Inventory maps, and USFWS list of federally listed species of potential occurrence in the project area.

Volkert biologists conducted field surveys the week of January 30, 2023, within the 305-acre project study area. No federally threatened or endangered species or their preferred habitat were observed in the project study area during the field investigations; however, potential roosting habitat does exist for the tricolored bat. There is no designated critical habitat for any listed species in the project study area. The proposed project is anticipated to have *No Effect* on the alligator snapping turtle, southern clubshell, northern long eared bat or monarch butterfly. The tricolored bat is anticipated to have a *May Affect but is Not Likely to Adversely Affect* designation. No tree or vegetation clearing should be conducted between December 15 - February 15 and May 1 - July 15 to avoid removal of suitable roosting trees and pup season. If the tree clearing timing is not achievable, the USFWS recommended that a mist-netting survey be conducted to determine presence or absence of this species.

No bald eagles, golden eagles, or raptor nests, nor any nesting migratory birds were observed within the project area during the field surveys. The project study area is within a mixed agricultural, residential, commercial and industrial area of Montgomery that lacks suitable nesting habitat. Therefore, the proposed project may affect, but is not likely to adversely affect migratory birds.

LITERATURE CITED

Blakeney Gillet, Dorothy E. Raymond, James D. Moore, Berry H. Tew "Hydrogeology and Vulnerability to contamination of Major Aquifers in Alabama: Area 13 "Geological Survey of Alabama, 2000.

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[NRCS] SSURGO: Soil Survey Geographic Database, Source: Department of Agriculture, Natural Resources Conservation Services (NRCS).

US Department of Commerce, N. O. A. A. (2022, March 3). Climate. Retrieved February 16, 2023, from https://www.weather.gov/wrh/climate

[USFWS] U.S. Fish and Wildlife Service. 2021. "Information for Planning and Conservation (IPaC)" Endangered Species Program Environmental Conservation Online System (ECOS). Accessed January 27, 2023. https://ecos.fws.gov/ipac/

ATTACHMENT A

USFWS Official Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
Phone: (251) 441-5181 Fax: (251) 441-6222
Email Address: alabama@fws.gov

In Reply Refer To: 05/09/2024 20:47:18 UTC
Project Code: 2023-0030683
Project Name: ASPA Intermodal Container Transfer Facility

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Project consultation requests may be submitted by mail or email (Alabama@fws.gov). **Ensure that the Project Code in the header of this letter is clearly referenced in any request for consultation or correspondence submitted to our office.**

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. **Ensure that the Project Code in the header of this letter is clearly referenced with any request for consultation or correspondence about your project that you submit to our office.**

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
(251) 441-5181

PROJECT SUMMARY

Project Code:	2023-0030683
Project Name:	ASPA Intermodal Container Transfer Facility
Project Type:	Railroad - New Construction
Project Description:	The Alabama State Port Authority (ASPA) in partnership with the city of Montgomery and CSX Transportation (CSXT) intends to develop an inland intermodal container transfer facility (ICTF) to be located in south Montgomery, Montgomery County, Alabama. The proposed project area incorporates approximately 350 acres. The purpose of the Project is to support the freight transportation needs of manufacturing, including notably growing motor vehicle production, agricultural and retail markets in the central region of the state of Alabama and to a lesser extent the Southeast, Midwest and beyond. It will be owned and be operated by, or its operation overseen by, ASPA.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@32.28916035,-86.36582295537889,14z

Counties: Montgomery County, Alabama

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: ▪ This species only needs to be considered if the project includes wind turbine operations. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

REPTILES

NAME	STATUS
Alligator Snapping Turtle *Macrochelys temminckii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4658	Proposed Threatened

CLAMS

NAME	STATUS
Southern Clubshell *Pleurobema decisum* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6113	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

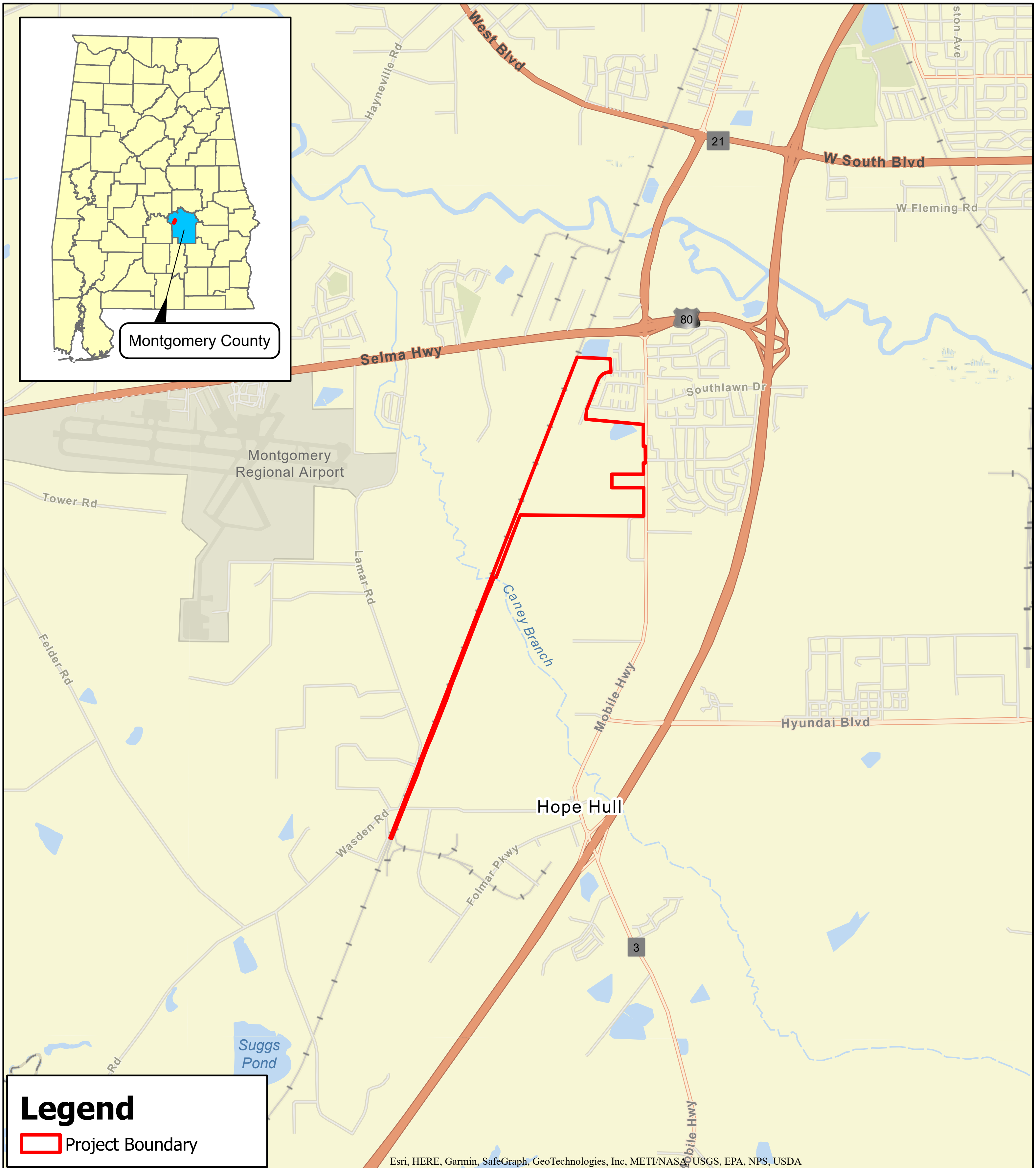
Agency: State of Alabama
Name: Casey Nowell
Address: 1616 second avenue s
City: Birmingham
State: AL
Zip: 35233
Email casey.nowell@volkert.com
Phone: 2055155755

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Railroad Administration
Name: Casey Nowell
Email: cjnowell21@gmail.com
Phone: 2055155755

ATTACHMENT B

Figures



VOLKERT

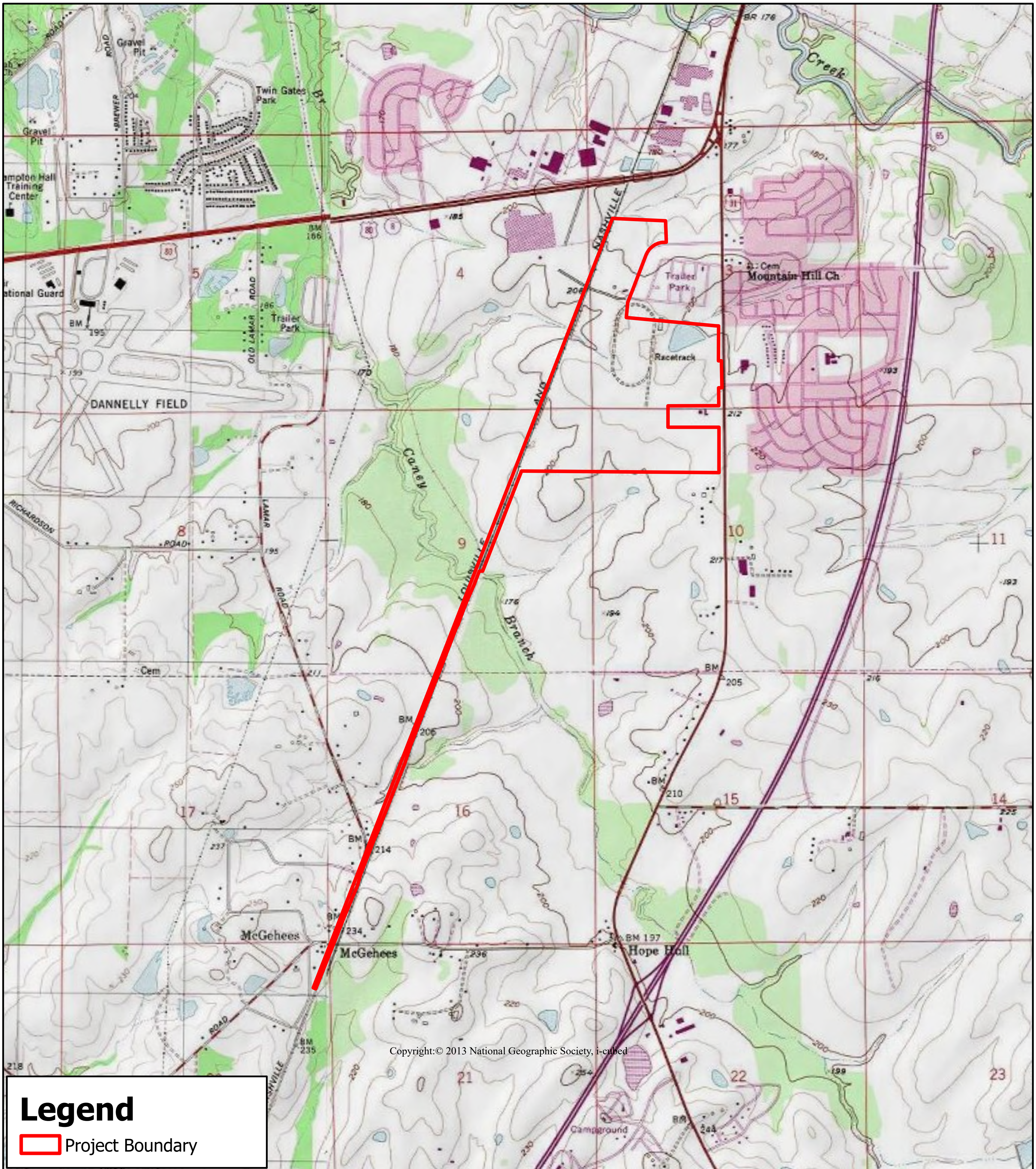
0 2,000 4,000 6,000 8,000 Feet

1 inch = 4,000 feet

Note: This map is not intended for construction.

N

Figure 1: Project Location
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama



VOLKERT

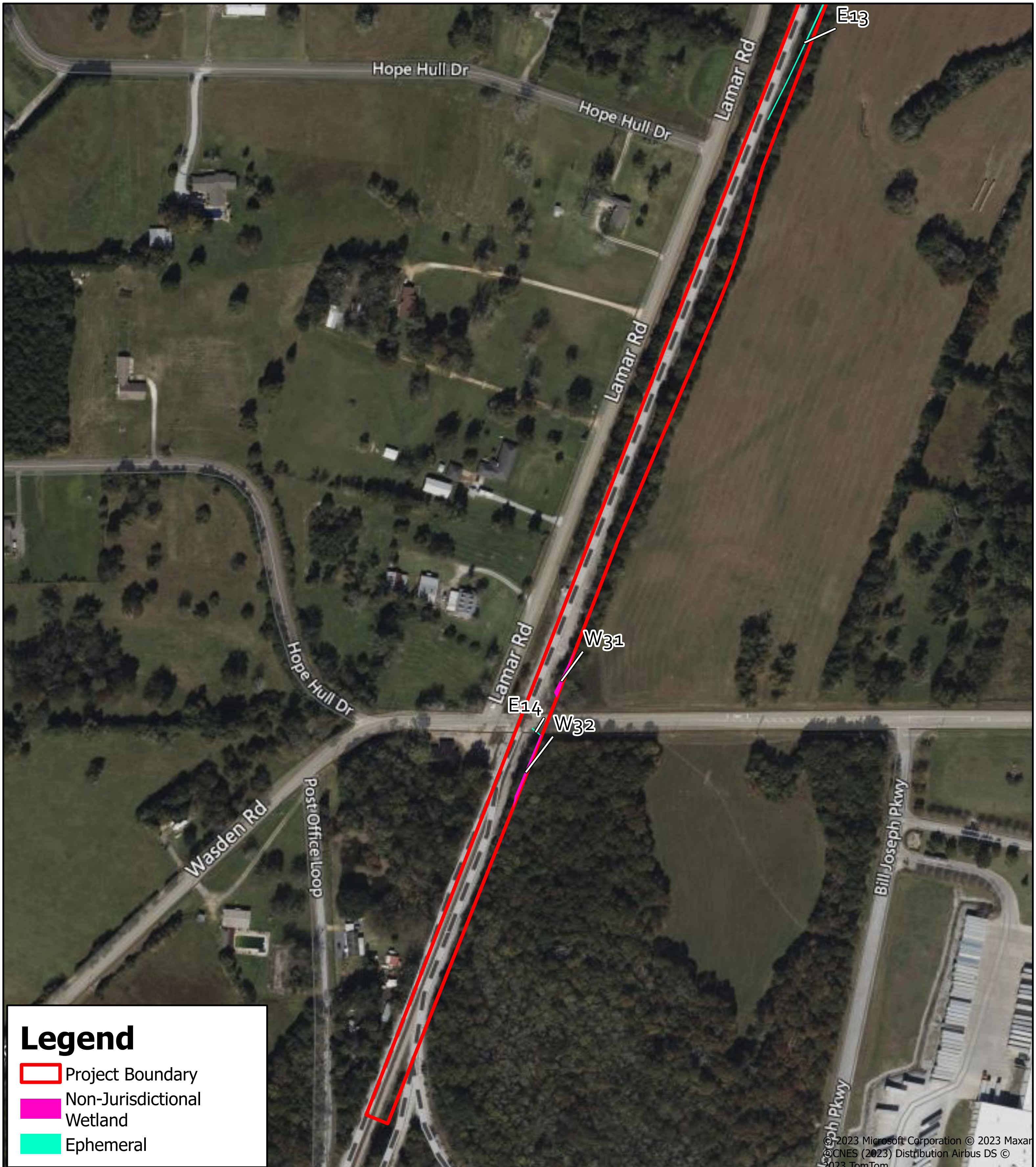
0 2,500 5,000 Feet

1 inch = 2,500 feet

Note: This map is not intended for construction.

N

Figure 2: USGS Topo
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama



VOLKERT

0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

N

Figure 3-1: Aerial Imagery
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama

VOLKERT

0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

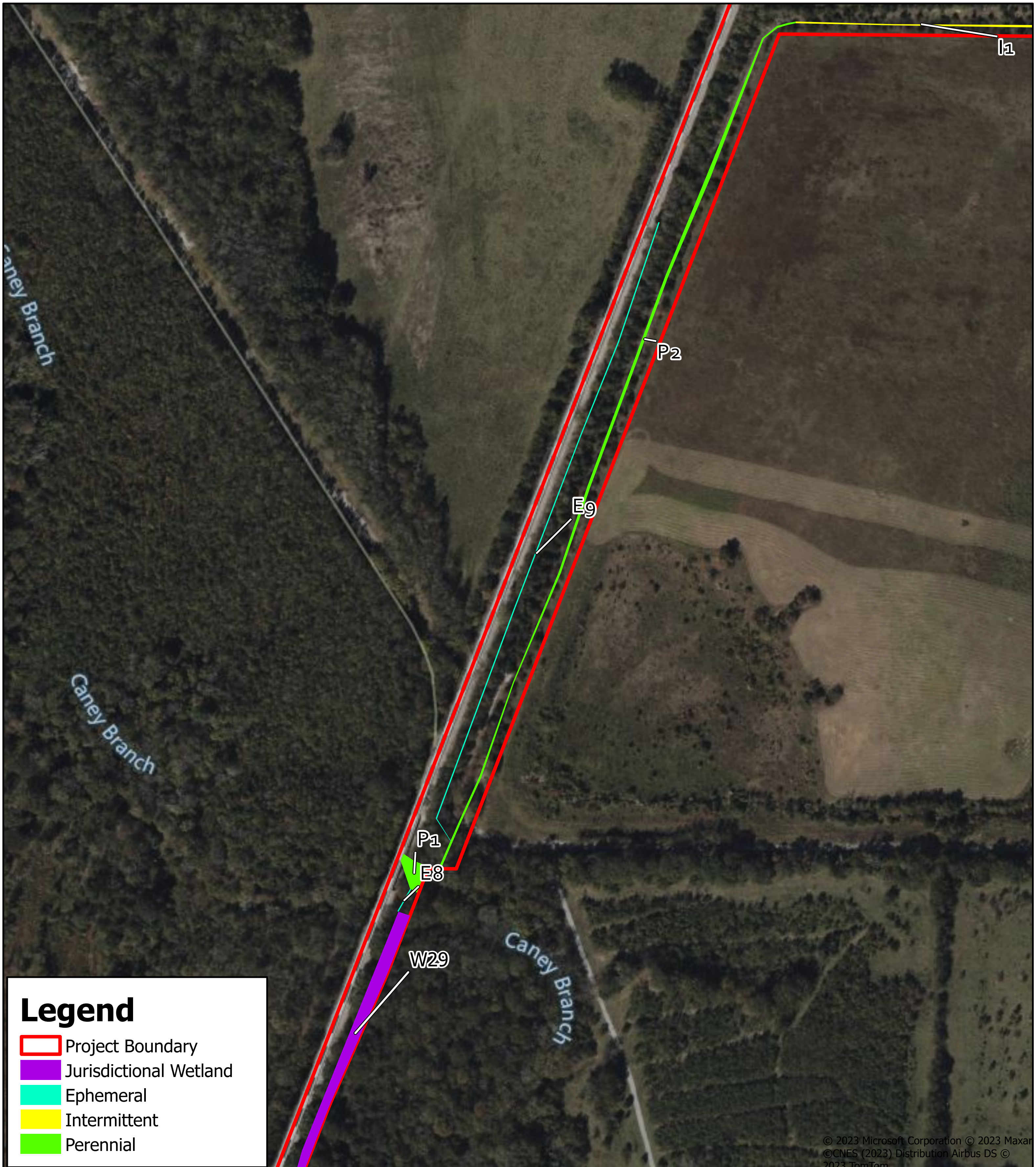
N

Figure 3-2: Aerial Imagery
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama

VOLKERT

Note: This map is not intended for construction.

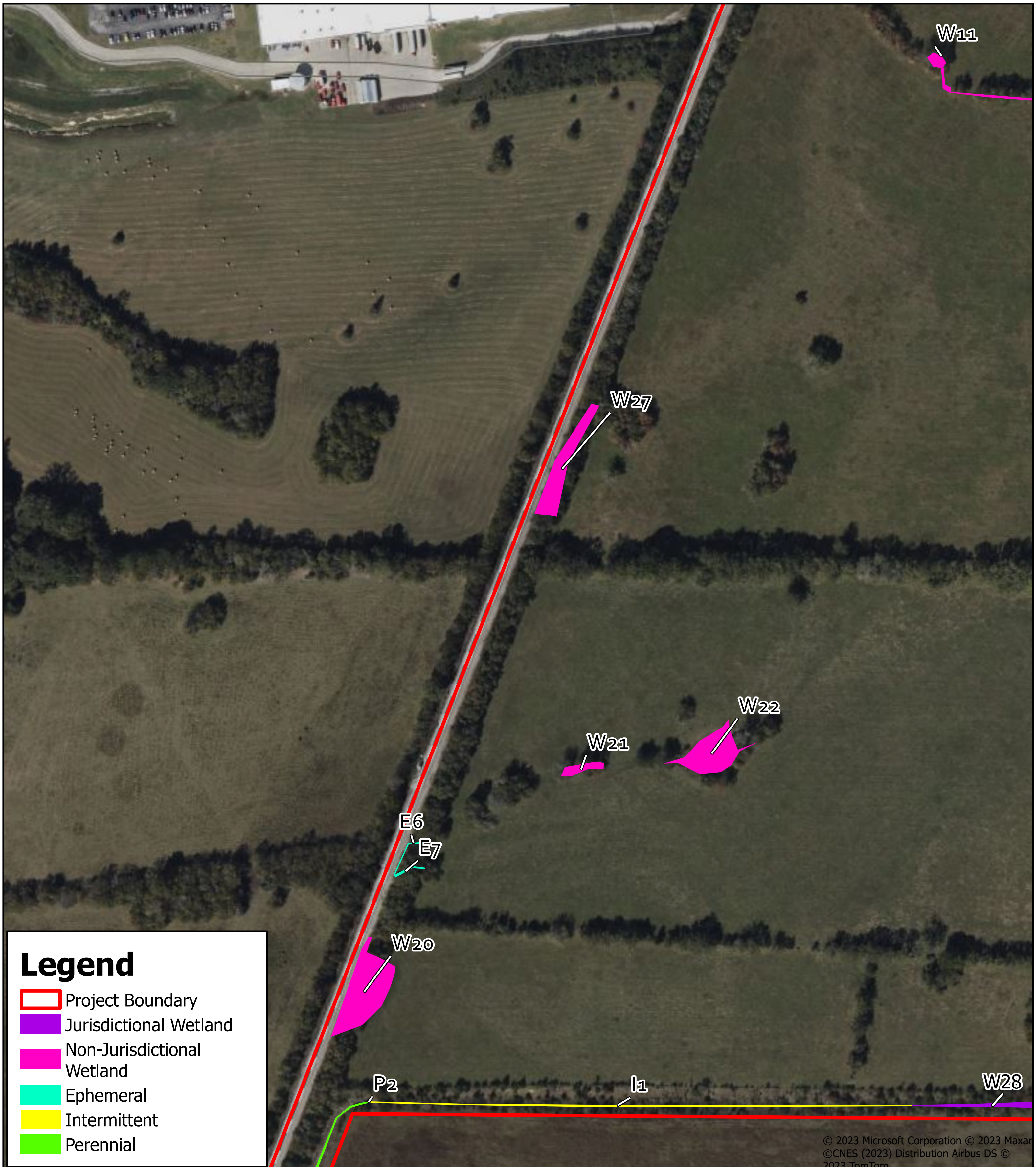
Figure 3-3: Aerial Imagery
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama



VOLKERT

Note: This map is not intended for construction.

Figure 3-4: Aerial Imagery
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama



VOLKERT

0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

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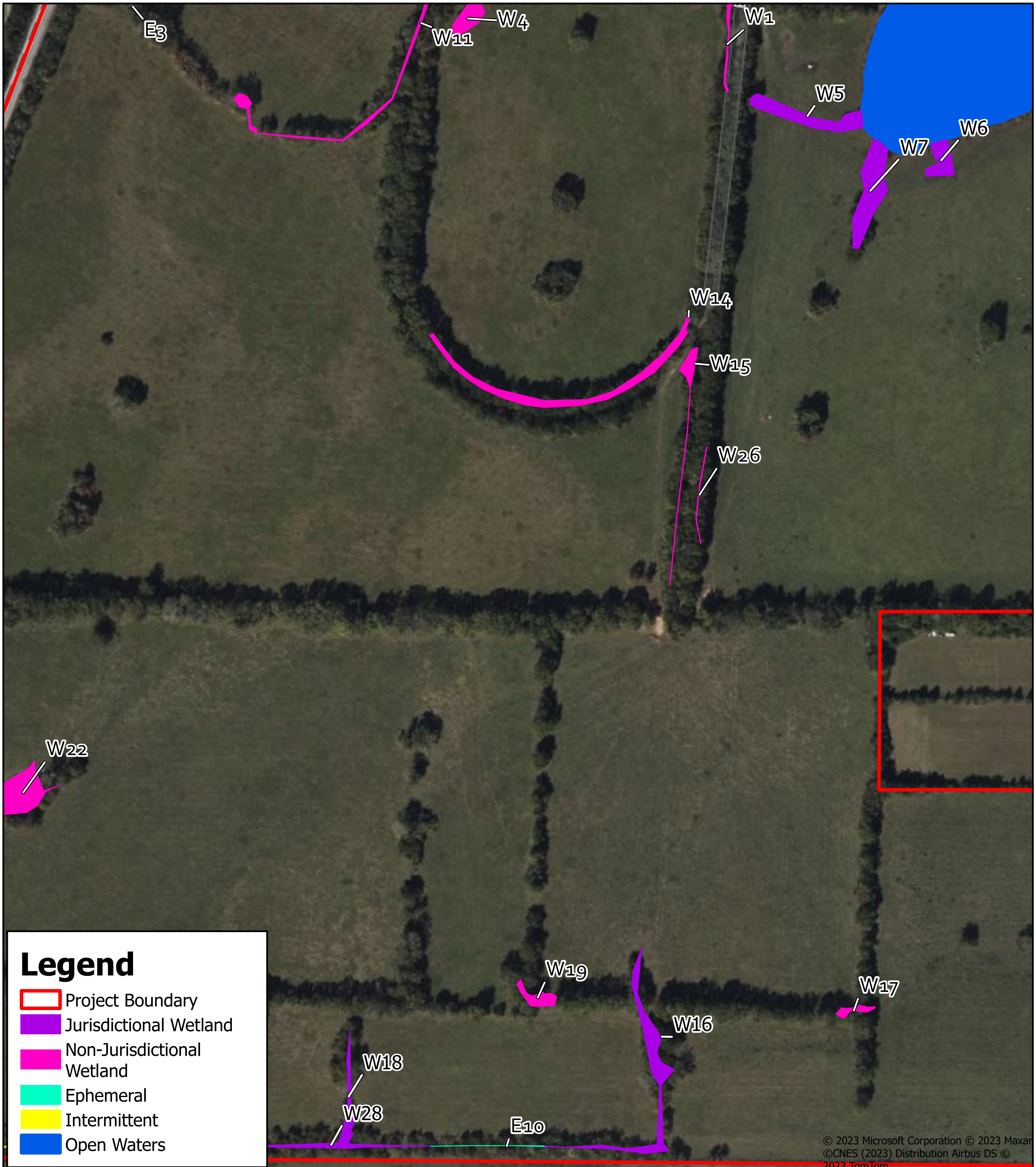
Figure 3-5: Aerial Imagery
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama



VOLKERT

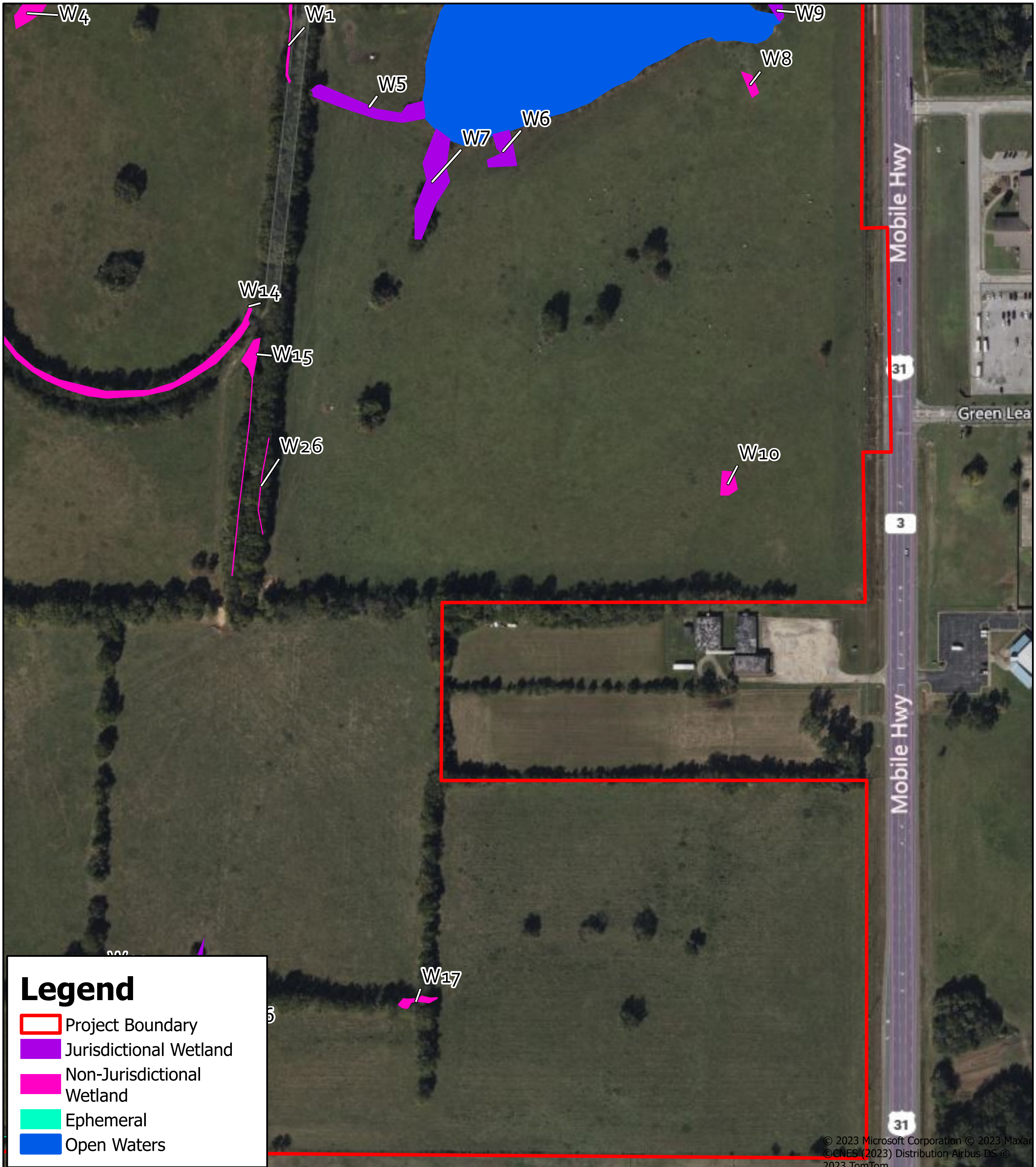
0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

N

Figure 3-6: Aerial Imagery
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama



VOLKERT

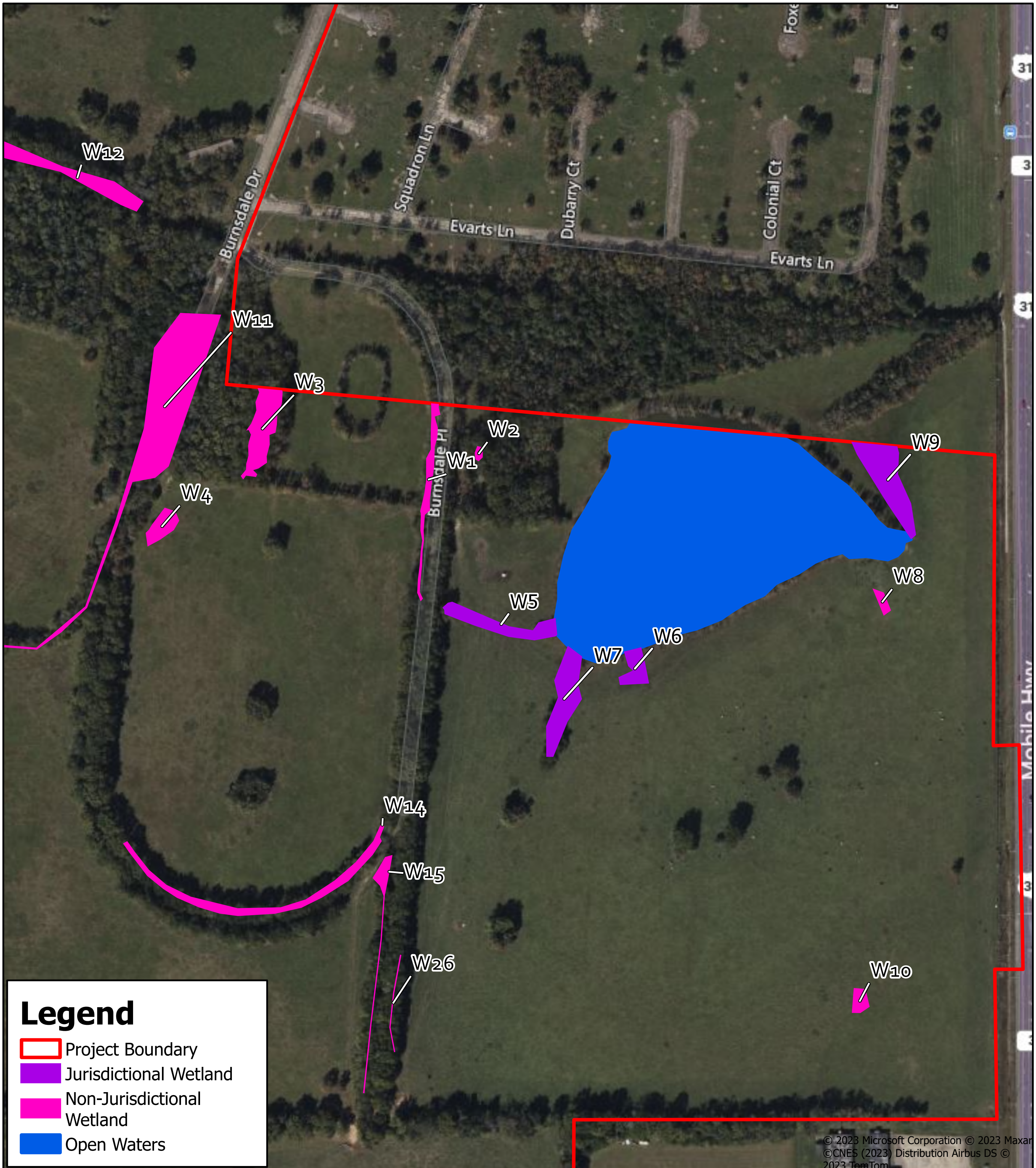
0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

N

Figure 3-7: Aerial Imagery
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama



VOLKERT

0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

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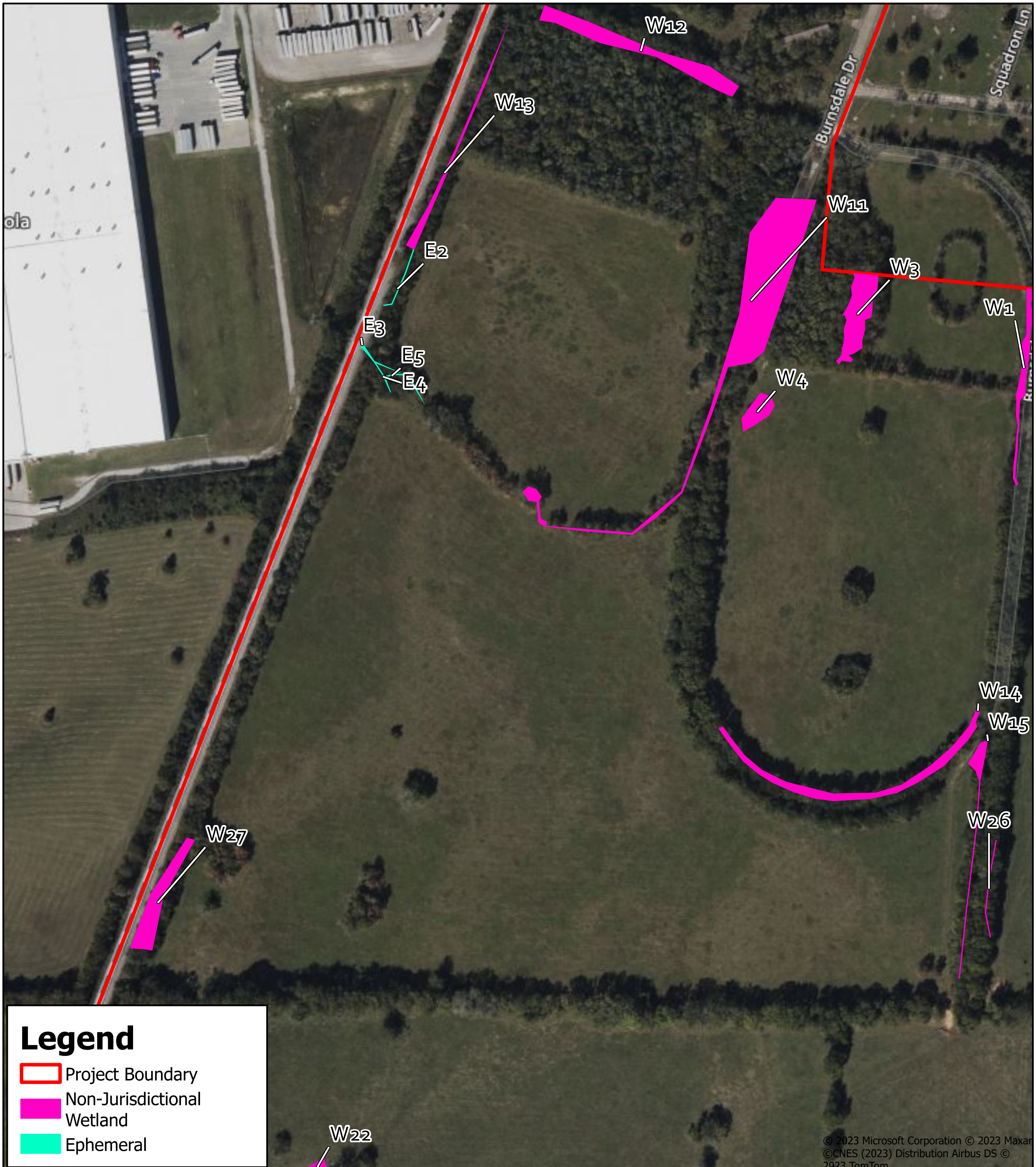
Figure 3-8: Aerial Imagery
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama



VOLKERT

0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

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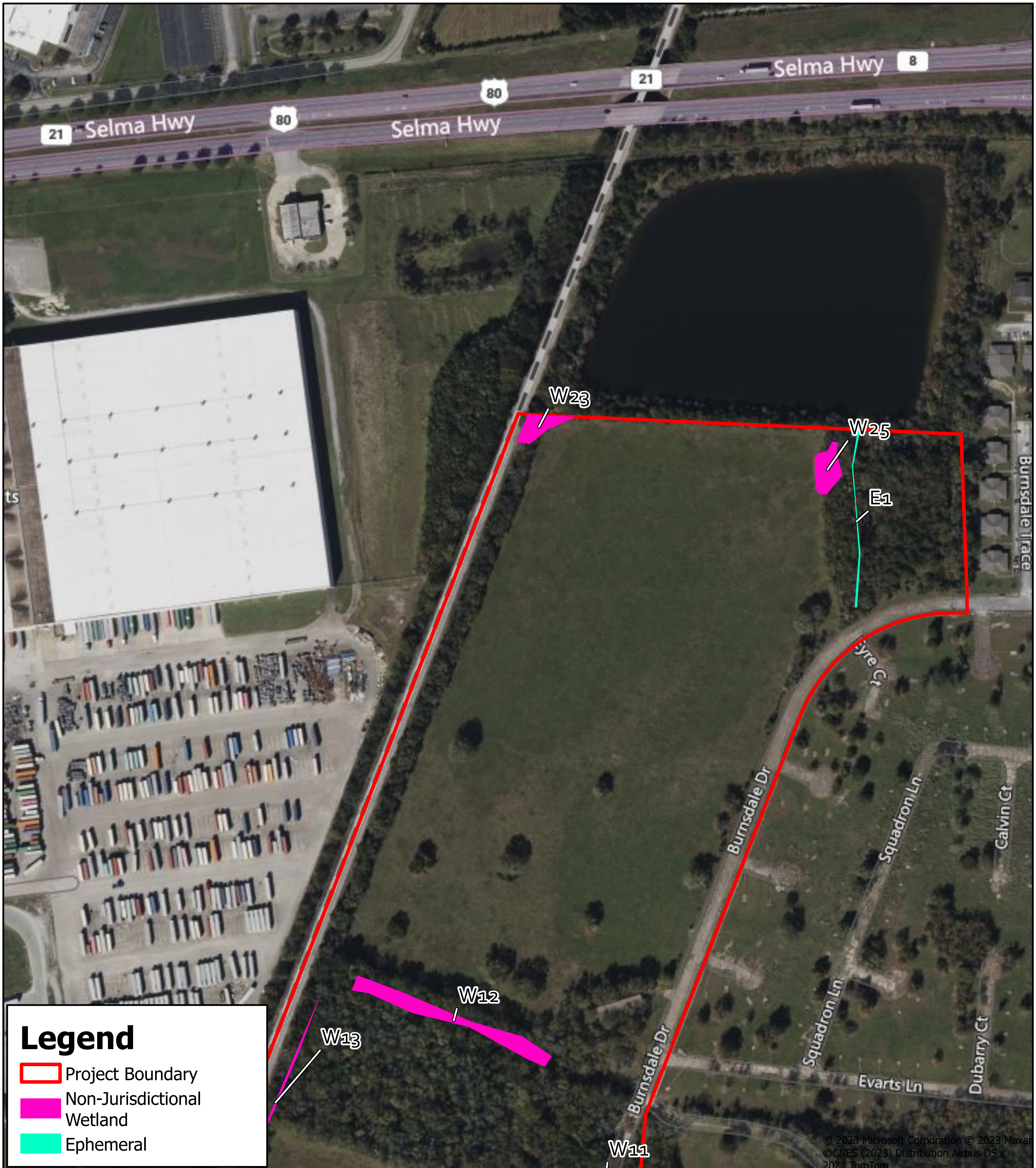
Figure 3-9: Aerial Imagery
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama



VOLKERT

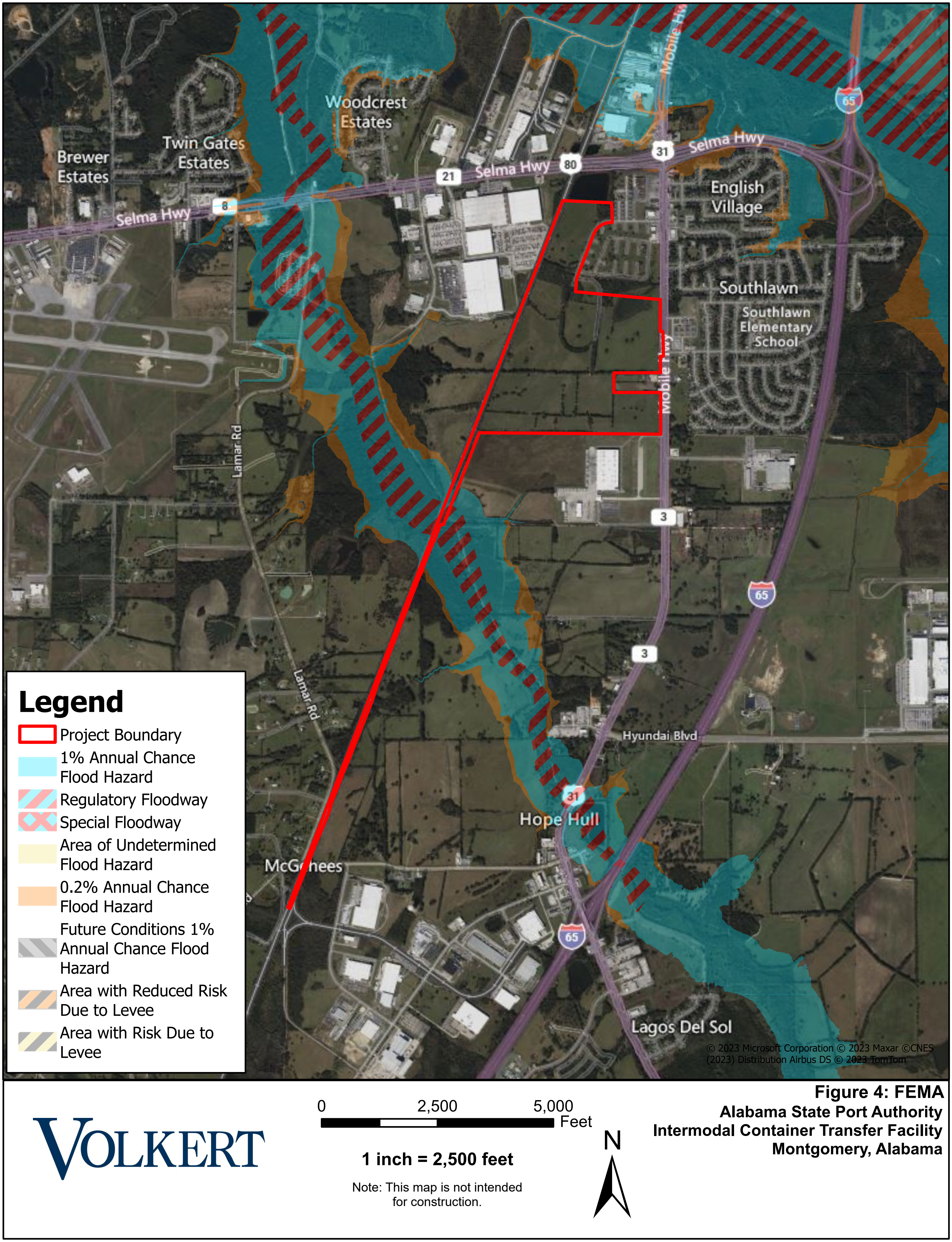
0 300 600 Feet

1 inch = 300 feet

Note: This map is not intended for construction.

N

Figure 3-10: Aerial Imagery
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama



Note: This map is not intended for construction.

Figure 4: FEMA
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama

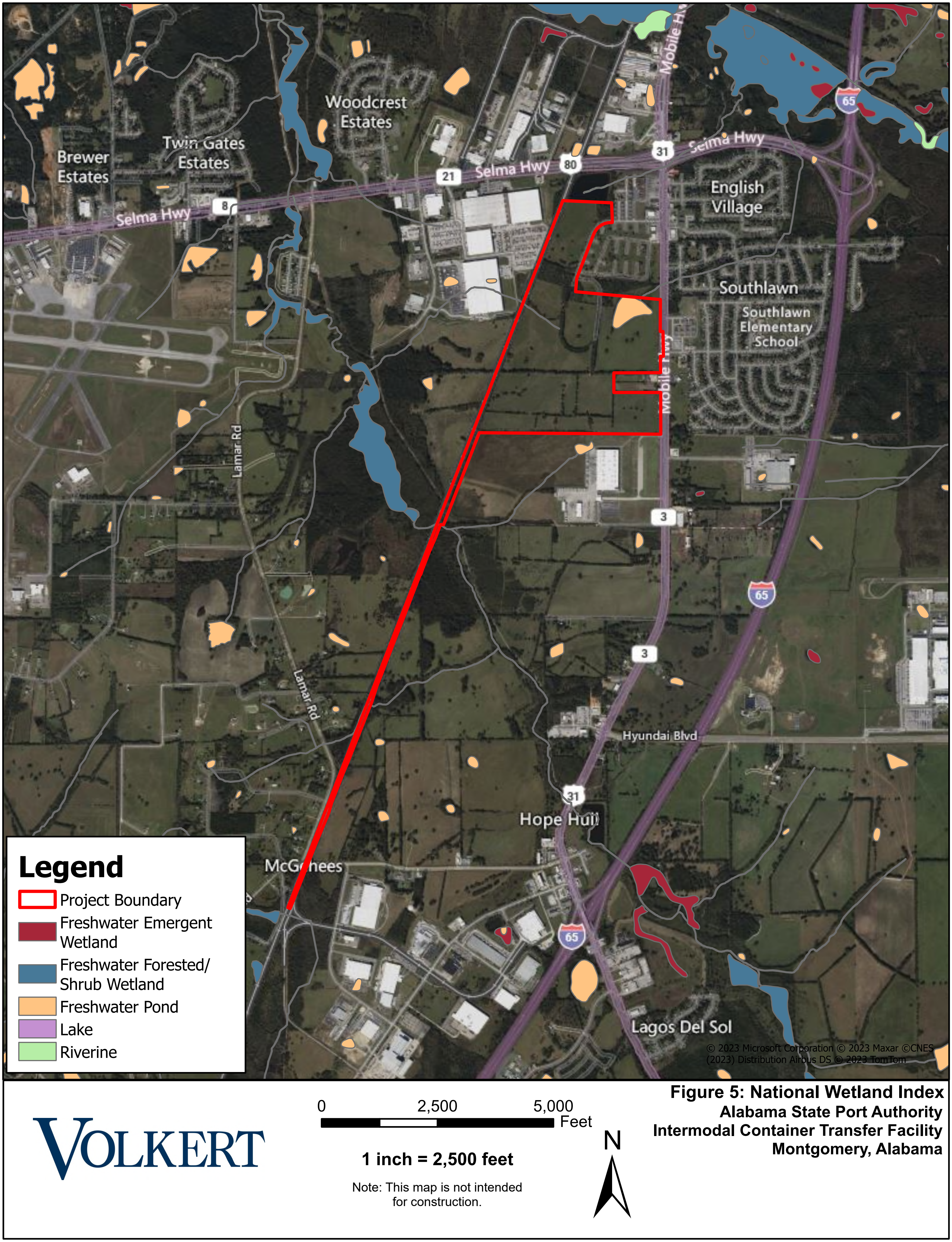
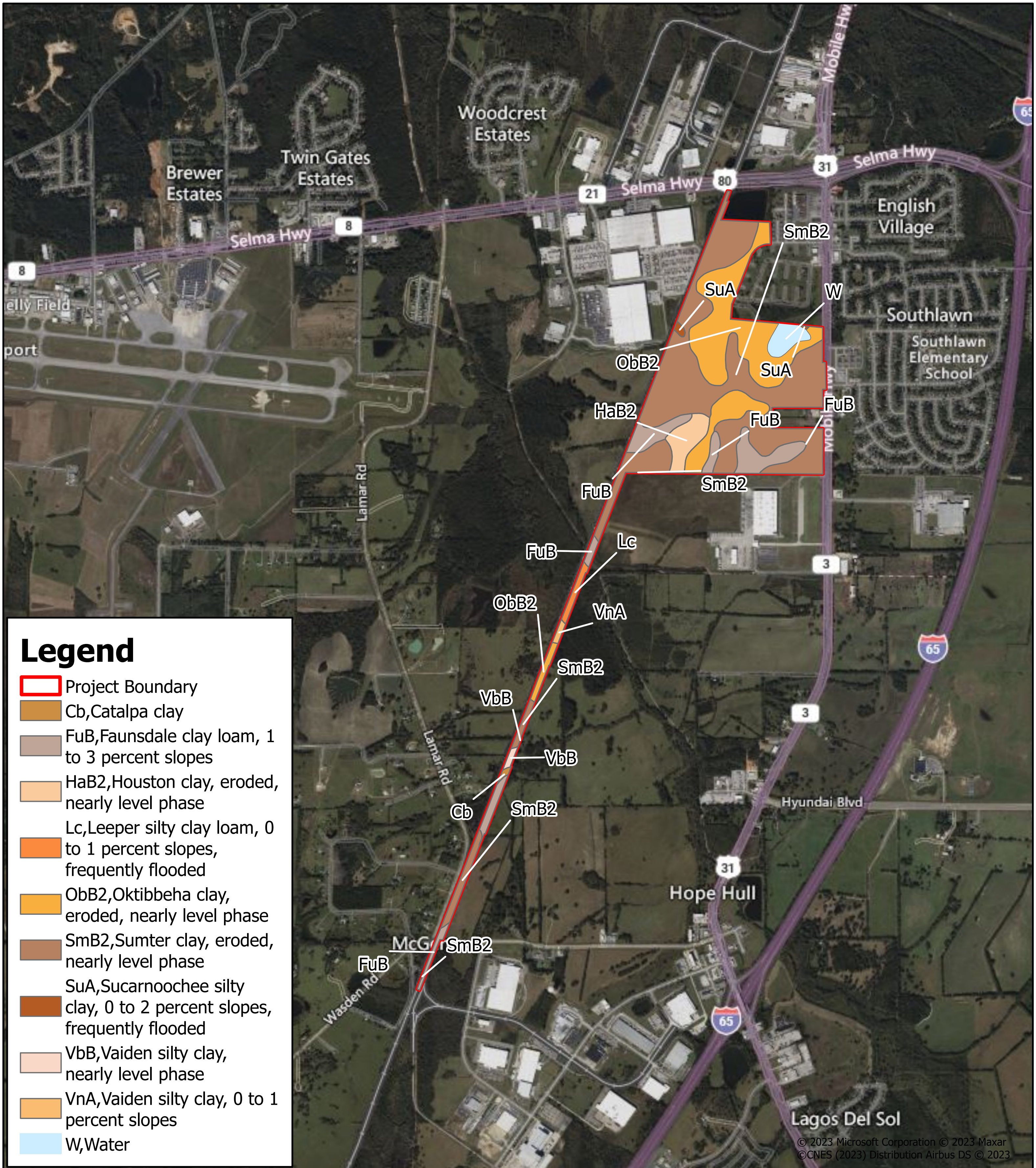


Figure 5: National Wetland Index
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama

VOLKERT



VOLKERT

0 2,500 5,000 Feet

1 inch = 2,500 feet

Note: This map is not intended for construction.

N

Figure 6: NRCS Soils
Alabama State Port Authority
Intermodal Container Transfer Facility
Montgomery, Alabama

ATTACHMENT C

Photographic Log

Picture 1: Viewlooking north west of invasives in upland area

Picture 2: View looking north east of Dallis Grass along stream bank

Picture 3: View looking east of hackberry, red cedar and ash trees

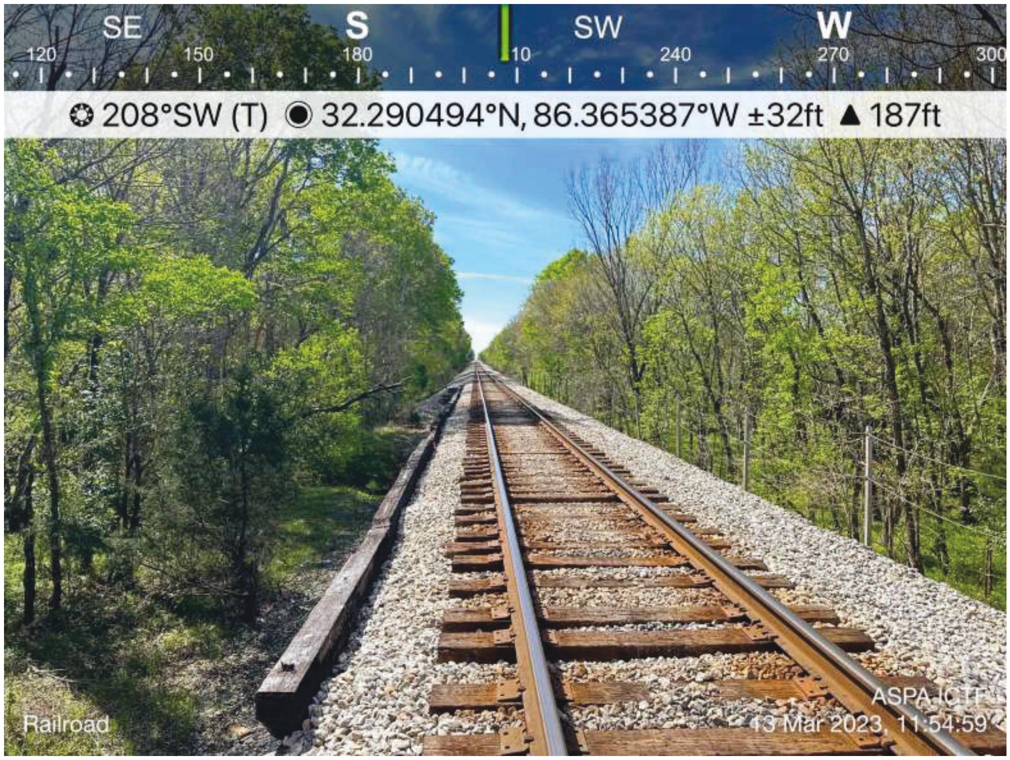
Picture 4: View looking north east of red cedar thicket

Picture 5: View looking east of field and pond

Picture 6: View looking southwest of field containing various grass species

Picture 7: View looking south of abandoned race track

Picture 8: View looking northwest of abandoned race track field



Picture 9: View looking southwest of railroad tracks at Caney Branch

Picture 10: View looking north of railroad tracks at Wasden Road