

# AIR QUALITY TECHNICAL MEMORANDUM

## STATE ROAD 869 / SW 10<sup>TH</sup> STREET CONNECTOR PROJECT DEVELOPMENT & ENVIRONMENT (PD&E) STUDY

SW 10<sup>th</sup> Street from Florida's Turnpike / Sawgrass Expressway to  
West of I-95 (SR 869 / Sawgrass Expressway MP 20.672 to MP 21.835  
and SW 10<sup>th</sup> Street MP 0.00 to MP 1.922)

ETDM No.: 14291  
Financial Project ID No.: 439891-1-22-02  
Broward County



Prepared For:  
FDOT District Four  
3400 W. Commercial Blvd.  
Ft. Lauderdale, FL 33309

July 2020

*The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 14, 2016 and executed by the Federal Highway Administration and FDOT.*



Date: July 27, 2020

To: Florida Department of Transportation, District Four

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Company: RS&H, Inc.

Subject: Air Quality Technical Memorandum

SW 10<sup>th</sup> Street from Florida's Turnpike / Sawgrass Expressway to West of I-95 (SR 869 / Sawgrass Expressway MP 20.672 to MP 21.835 and SW 10<sup>th</sup> Street MP 0.00 to 1.922) Project Development & Environment (PD&E) Study

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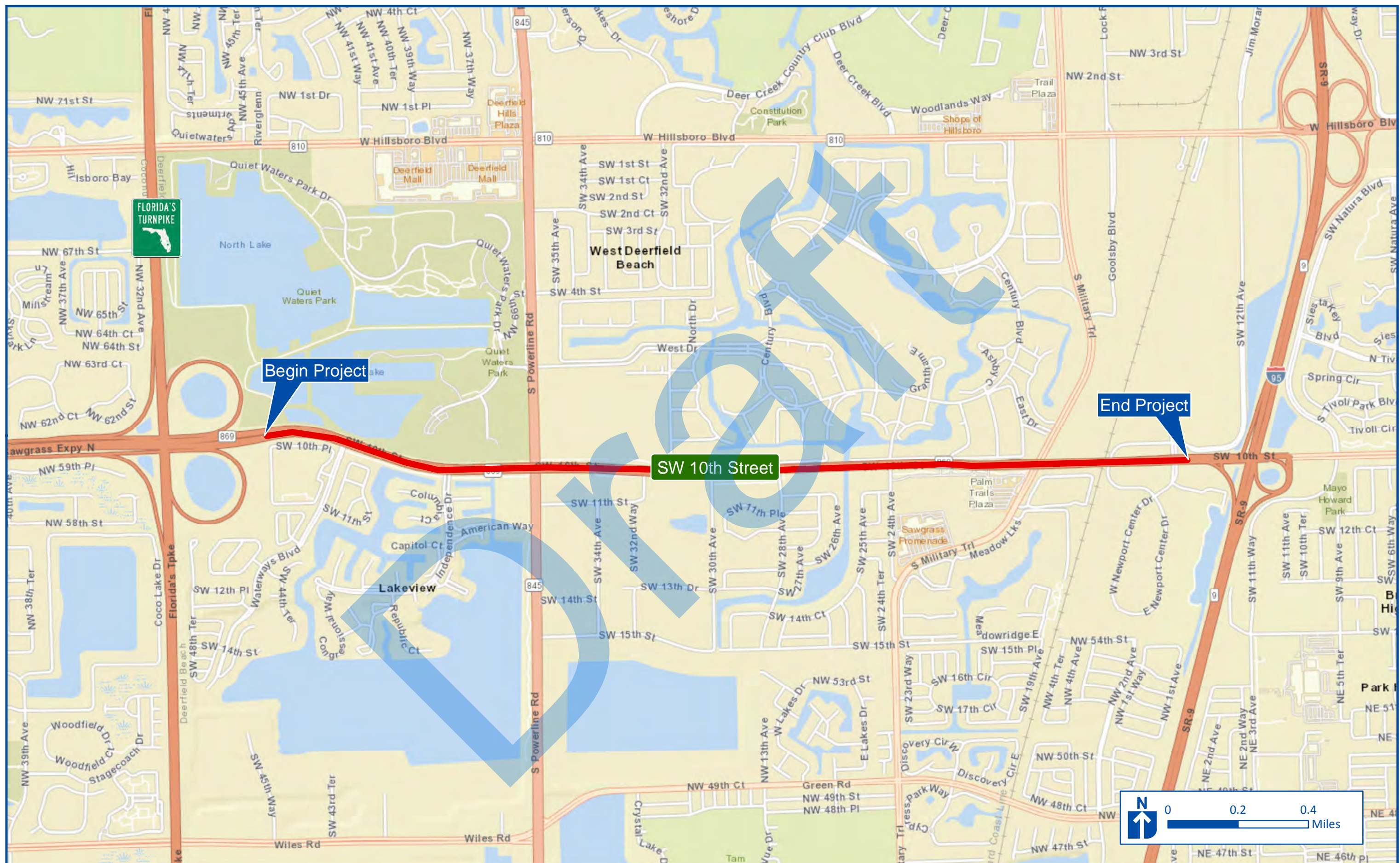
Broward County, Florida

## 1.0 Introduction

The Florida Department of Transportation (FDOT) District Four is evaluating alternatives to improve SR 869 (SW 10<sup>th</sup> Street) from Sawgrass Expressway/Florida's Turnpike to west of I-95, a distance of approximately 3.0 miles. The project is in Broward County, Florida within the municipality of Deerfield Beach. **Figure 1.1** shows the limits of the SW 10<sup>th</sup> Street Connector PD&E Study.

As part of this PD&E Study, the project has been reviewed for air quality impacts consistent with the guidance provided by Federal Highway Administration (FHWA) as described in Part 2, Chapter 19 of the FDOT PD&E Manual entitled Air Quality (dated July 1, 2020). The purpose of this Technical Memorandum is to document the findings of the air quality analysis.







## 2.0 Air Quality Analysis

The proposed project is located in Broward County, which is currently designated as being in attainment for the following criteria air pollutants: ozone, nitrogen dioxide, particulate matter (2.5 microns in size and 10 microns in size), sulfur dioxide, carbon monoxide, and lead.

The No Build and two Build Alternatives were subjected to a carbon monoxide (CO) screening model that makes various conservative worst-case assumptions related to site conditions, meteorology, and traffic. The FDOT's screening model, CO Florida 2012, uses the United States Environmental Protection Agency (USEPA) software [Motor Vehicle Emission Simulator (MOVES) version 2010a and CAL3QHC] to produce estimates of one-hour and eight-hour CO concentrations at default air quality receptor locations. The one-hour and eight-hour estimates can be directly compared to the one- and eight-hour National Ambient Air Quality Standards for CO that are 35 parts per million (ppm) and 9 ppm, respectively.

The fundamental difference between the two Build Alternatives is whether the two local access ramps just east of Powerline Road are present. The two alternatives are named: With Powerline Road Ramps Alternative, and the Without Powerline Road Ramps Alternative. Both alternatives have the following SW 10th Street ramp connections:

- Eastbound Egress Ramp – Vehicles traveling eastbound on the Connector Road can exit to local SW 10<sup>th</sup> Street just prior to Newport Center; and
- Westbound Ingress Ramp – Vehicles traveling westbound on SW 10<sup>th</sup> Street and vehicles traveling eastbound on local SW 12<sup>th</sup> Avenue can access the Connector Lanes just east of the railroad.

The With Powerline Road Ramps Alternative also includes two additional connections:

- Westbound Egress Ramp – Vehicles traveling westbound on the Connector Road can exit to local SW 10<sup>th</sup> Street just east of Powerline Road; and
- Eastbound Ingress Ramp – Vehicles traveling eastbound on SW 10<sup>th</sup> Street can access the Connector Road just east of Powerline Road.

The highest total traffic volumes for the No Build and two Build Alternatives are associated with the SW 10<sup>th</sup> Street and Powerline Road Intersection. Both the No Build and Build Alternatives were evaluated for the design year (2040). The traffic data used in this evaluation is provided in Table 2.1, which was developed from the Project Traffic Analysis Report (PTAR) dated June 2020.

Estimates of CO were predicted for the default receptors that are located 10 feet to 150 feet from the edge of the roadway. The results of the screening test are summarized in Table 2.2. Only the maximum one-hour and eight-hour CO concentrations are presented in this table. The results of the screening model are included as an attachment to this memorandum. Based on the results from the screening model, the highest project-related CO one- and eight-hour levels are not predicted to meet or exceed the one- or eight-hour National Ambient Air Quality Standards for this pollutant with either the No Build or the two Build Alternatives. As such, the project “passes” the screening model.

The project is located in an area which is designated in attainment for all of the National Ambient Air Quality Standards under the criteria provided in the Clean Air Act. Therefore, the Clean Air Act conformity requirements do not apply to the project.

Construction activities will cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to all applicable State and local regulations and to the FDOT Standard Specifications for Road and Bridge Construction.

### **Mobile Source Air Toxics**

The purpose of this project is to improve regional connectivity by providing a separate limited access connection between the Sawgrass Expressway and I-95 which will increase capacity and improve existing operational and safety deficiencies along SW 10<sup>th</sup> Street between the Sawgrass Expressway, Florida's Turnpike and I-95 while also improving the regional transportation network. This project has been determined to generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special mobile source air toxic (MSAT) concerns. As such, this project will not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause a meaningful increase in MSAT impacts of the project from that of the No Build alternative. Moreover, USEPA regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOVES2014 model forecasts a combined reduction of over 90 percent in the total annual emissions rate for the priority MSAT from 2010 to 2050 while vehicle-miles of travel are projected to increase by over 45 percent (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this project.

**Table 2.1: Traffic Data for Air Quality Analysis  
SR 869 / SW 10<sup>th</sup> Street Connector PD&E Study**

Roadway Type	Roadway Name	Roadway Segment	2040	
			Vehicles Per Hour	Cruise Speed (mph)
No Build Alternative				
North/South Principal Arterial	Powerline Road	Northbound Approach Traffic	1,795	45
		Southbound Approach Traffic	1,780	
East/West Principal Arterial	SW 10 <sup>th</sup> Street	Eastbound Approach Traffic	5,795	45
		Westbound Approach Traffic	2,680	
Build Alternative – With Powerline Road Ramps				
North/South Principal Arterial	Powerline Road	Northbound Approach Traffic	1,810	45
		Southbound Approach Traffic	1,920	
East/West Principal Arterial	SW 10 <sup>th</sup> Street	Eastbound Approach Traffic	2,855	35
		Westbound Approach Traffic	1,510	
Build Alternative – Without Powerline Road Ramps				
North/South Principal Arterial	Powerline Road	Northbound Approach Traffic	1,810	45
		Southbound Approach Traffic	1,920	
East/West Principal Arterial	SW 10 <sup>th</sup> Street	Eastbound Approach Traffic	2,955	35
		Westbound Approach Traffic	1,920	

**Table 2.2: Predicted CO Concentrations**

Alternative	Year	Receptor Site Number(s)	Maximum One-Hour CO Concentration (ppm)	Maximum Eight-Hour CO Concentration (ppm)
SW 10 <sup>th</sup> Street and Powerline Road Intersection				
No Build	Design Year (2040)	8	10.8	6.5
Build (With Powerline Roads Ramp)	Design Year (2040)	3, 8, 13, & 18	7.3	4.4
Build (Without Powerline Roads Ramps)	Design Year (2040)	3 & 8	7.4	4.4

Note: \* The predicted worst-case one-hour and eight-hour CO concentrations for the No Build and the two Build Alternatives are below the NAAQS of 35 ppm for one-hour concentrations and 9 ppm for eight-hour concentrations.

ATTACHMENT  
Air Quality Screening Results  
CO Florida 2012



CO Florida 2012 - Results  
Thursday, July 9, 2020

Project Description

Project Title SW 10th AQTM  
Facility Name SW 10th Street & Powerline Road  
User's Name RVH  
Run Name 2040 No Build AM  
FDOT District 4  
Year 2040  
Intersection Type 6 X 6  
Speed Arterial 45 mph  
Approach Traffic Arterial 5795 vph

Environmental Data

Temperature 53.9 °F  
Reid Vapor Pressure 13.3 psi  
Land Use Urban  
Stability Class D  
Surface Roughness 175 cm  
1 Hr. Background Concentration 5.0 ppm  
8 Hr. Background Concentration 3.0 ppm

Results

(ppm, including background CO)		
Receptor	Max 1-Hr	Max 8-Hr
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1	10.0	6.0
2	10.2	6.1
3	10.7	6.4
4	9.7	5.8
5	8.7	5.2
6	10.1	6.1
7	10.3	6.2
8	10.8	6.5
9	9.8	5.9
10	8.7	5.2
11	10.0	6.0
12	10.2	6.1
13	10.7	6.4
14	9.6	5.8
15	8.7	5.2
16	10.1	6.1
17	10.2	6.1
18	10.7	6.4
19	9.7	5.8
20	8.7	5.2

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\*\*\*\*\*PROJECT PASSES\*\*\*\*\*  
\*\*\*\*\*NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED\*\*\*\*\*  
\*\*\*\*\*

CO Florida 2012 - Results  
 Tuesday, July 28, 2020

Project Description

Project Title SW 10th AQTM  
 Facility Name SW 10th Street & Powerline Road  
 User's Name RVH  
 Run Name 2040 Build Alt With Ramps AM  
 FDOT District 4  
 Year 2040  
 Intersection Type 6 X 6  
 Speed Arterial 35 mph  
 Approach Traffic Arterial 2855 vph

Environmental Data

Temperature 53.9 °F  
 Reid Vapor Pressure 13.3 psi  
 Land Use Urban  
 Stability Class D  
 Surface Roughness 175 cm  
 1 Hr. Background Concentration 5.0 ppm  
 8 Hr. Background Concentration 3.0 ppm

Results (ppm, including background CO)		
Receptor	Max 1-Hr	Max 8-Hr
1	6.9	4.1
2	7.0	4.2
3	7.3	4.4
4	6.9	4.1
5	6.8	4.1
6	6.9	4.1
7	6.9	4.1
8	7.3	4.4
9	7.0	4.2
10	6.9	4.1
11	6.9	4.1
12	6.9	4.1
13	7.3	4.4
14	6.9	4.1
15	6.8	4.1
16	6.9	4.1
17	6.9	4.1
18	7.3	4.4
19	6.9	4.1
20	6.8	4.1

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 \*\*\*\*\*PROJECT PASSES\*\*\*\*\*  
 \*NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED\*  
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CO Florida 2012 - Results  
 Tuesday, July 28, 2020

Project Description

Project Title SW 10th AQTM  
 Facility Name SW 10th Street & Powerline Road  
 User's Name RVH  
 Run Name 2040 Build Alt Without Ramps AM  
 FDOT District 4  
 Year 2040  
 Intersection Type 6 X 6  
 Speed Arterial 35 mph  
 Approach Traffic Arterial 2955 vph

Environmental Data

Temperature 53.9 °F  
 Reid Vapor Pressure 13.3 psi  
 Land Use Urban  
 Stability Class D  
 Surface Roughness 175 cm  
 1 Hr. Background Concentration 5.0 ppm  
 8 Hr. Background Concentration 3.0 ppm

Results (ppm, including background CO)		
Receptor	Max 1-Hr	Max 8-Hr
1	7.0	4.2
2	7.1	4.3
3	7.4	4.4
4	7.0	4.2
5	6.8	4.1
6	7.0	4.2
7	7.1	4.3
8	7.4	4.4
9	7.0	4.2
10	6.9	4.1
11	7.0	4.2
12	7.1	4.3
13	7.3	4.4
14	7.0	4.2
15	6.8	4.1
16	7.0	4.2
17	7.1	4.3
18	7.3	4.4
19	6.9	4.1
20	6.8	4.1

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 \*\*\*\*\*PROJECT PASSES\*\*\*\*\*  
 \*NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED\*  
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