



I-293 EXIT 6 & 7 (PART B)

Technical Advisory Committee (TAC)
April 13, 2016



I-293 EXITS 6 & 7 – PART B

(MANCHESTER #16099)

New Hampshire Department of Transportation (NHDOT)

Project Team

Vanasse Hangen Brustlin, Inc. (VHB)

Southern New Hampshire Planning Commission (SNHPC)

RKG Associates

Independent Archaeological Consulting, LLC (IAC)

ARCADIS



TODAY'S AGENDA

- Data Collection
- Project Purpose and Need
- INVEST Sustainability Tool

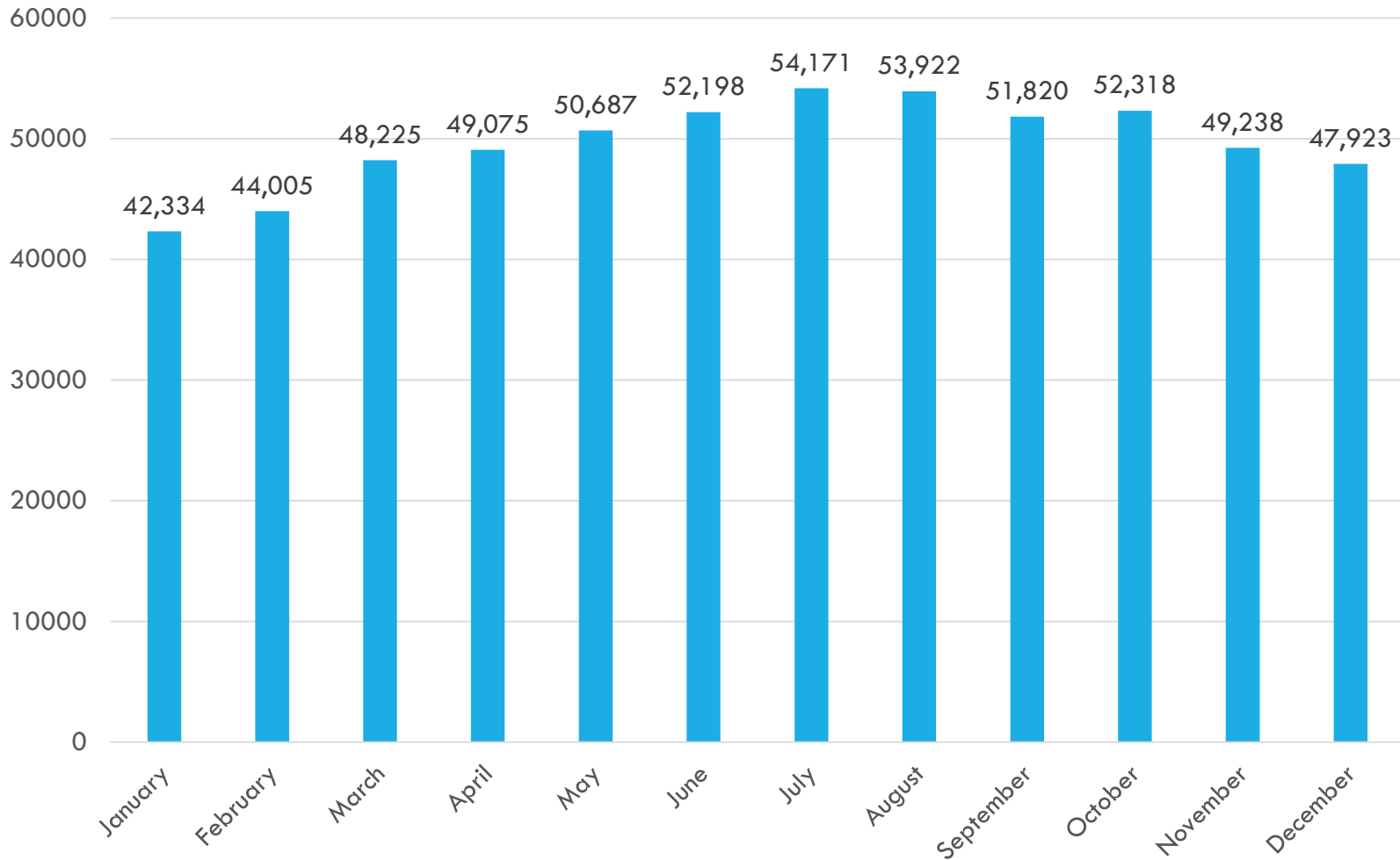


DATA COLLECTION

TRANSPORTATION

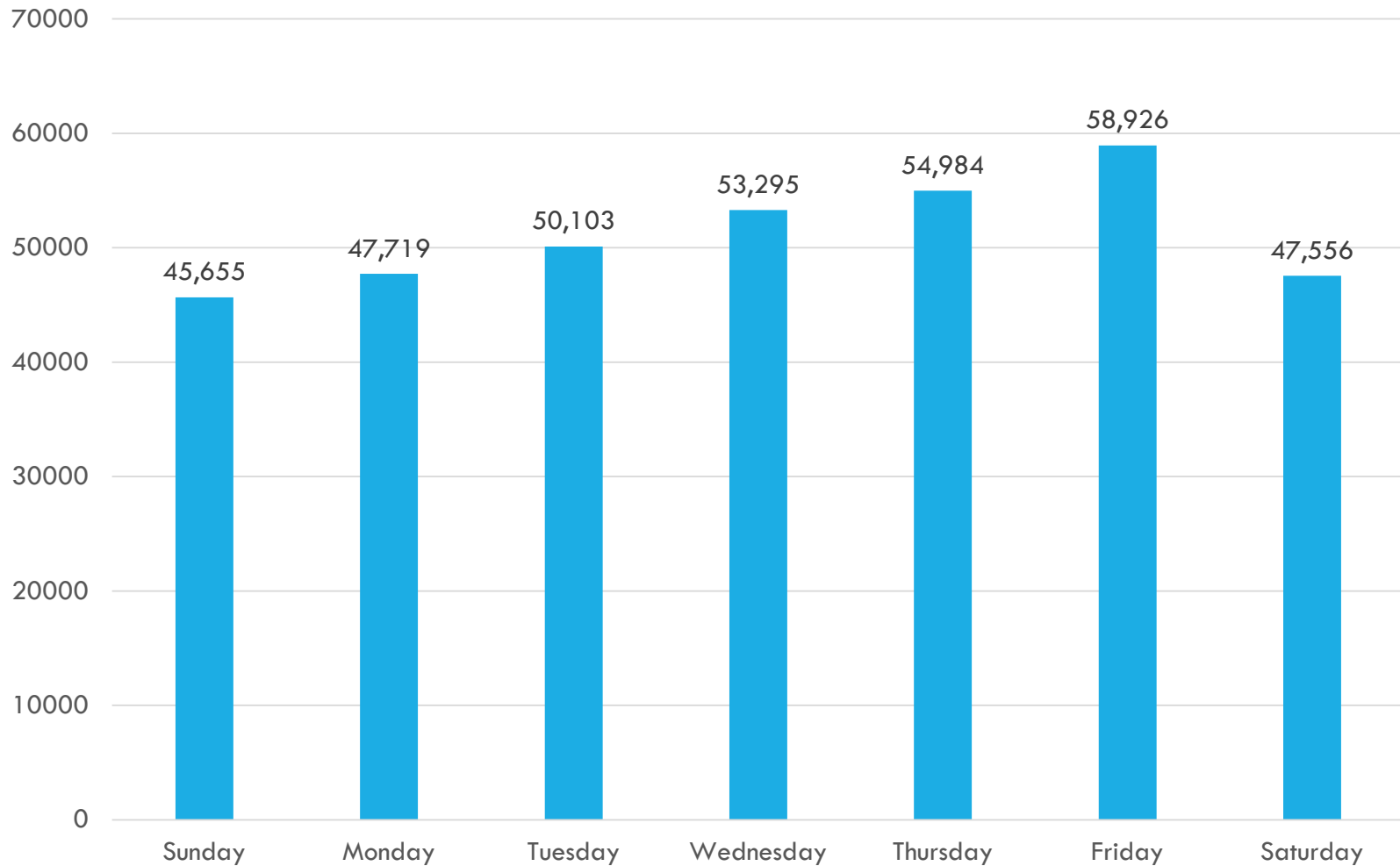
I-293 MONTHLY VOLUMES

2015 AT BEDFORD TOLLS – AVERAGE WEEKDAY



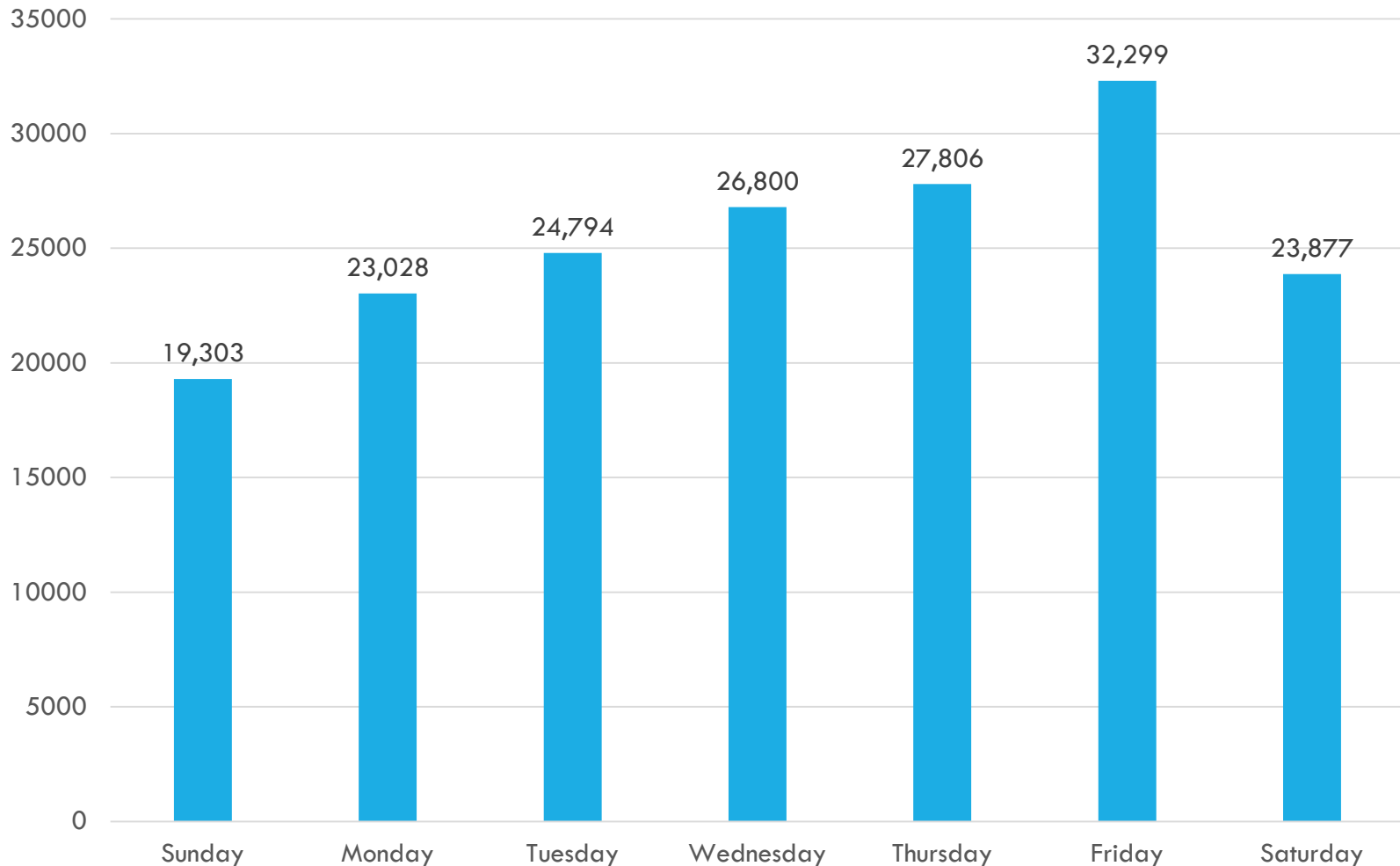
I-293 DAILY VOLUMES

JUNE 2015 AT BEDFORD TOLLS



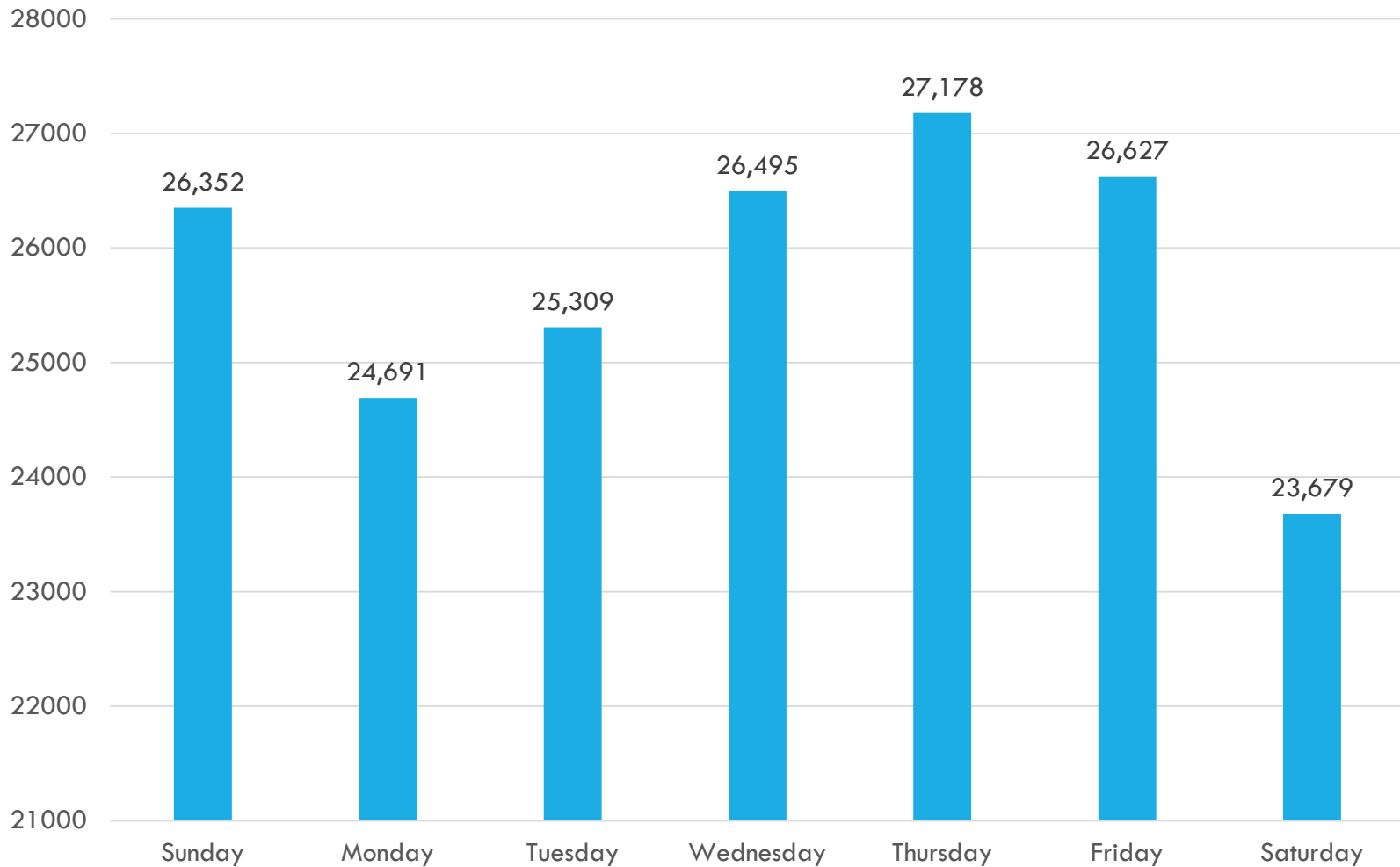
I-293 DAILY VOLUMES (NORTHBOUND)

JUNE 2015 AT BEDFORD TOLLS



I-293 DAILY VOLUMES (SOUTHBOUND)

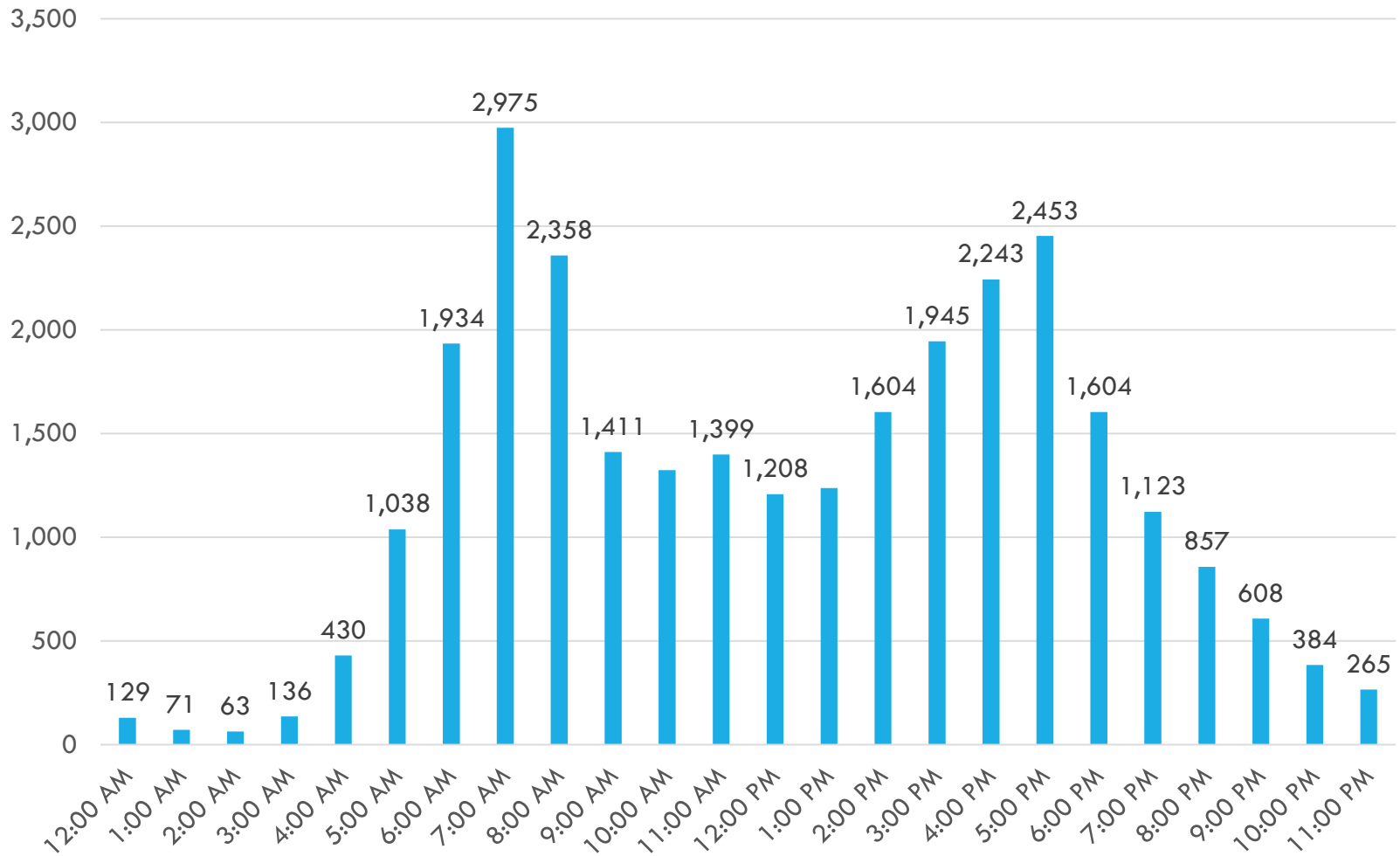
JUNE 2015 AT BEDFORD TOLLS



I-293 HOURLY VOLUMES (SOUTHBOUND)

BETWEEN EXITS 5 AND 6

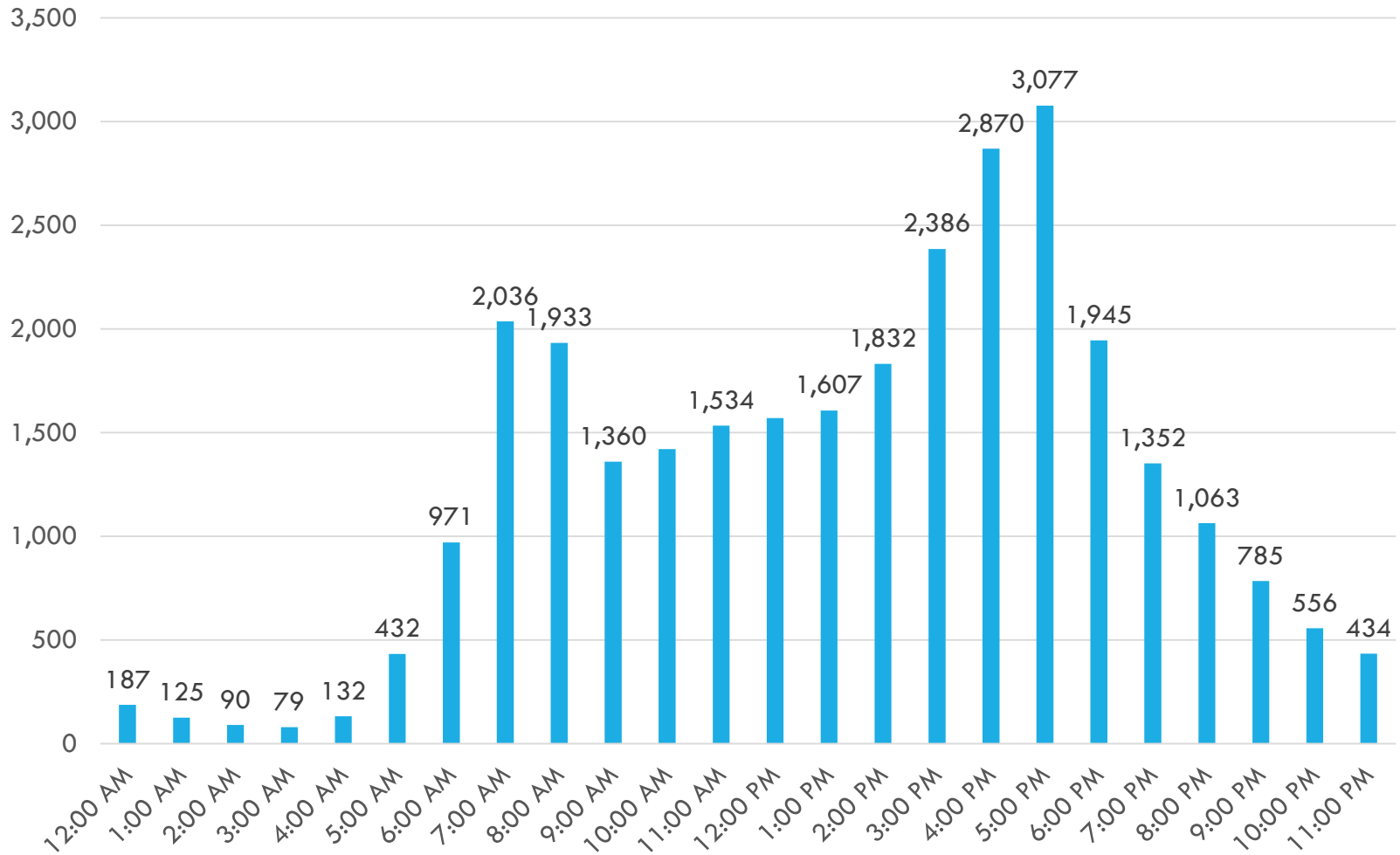
TUESDAY AUGUST 18, 2015



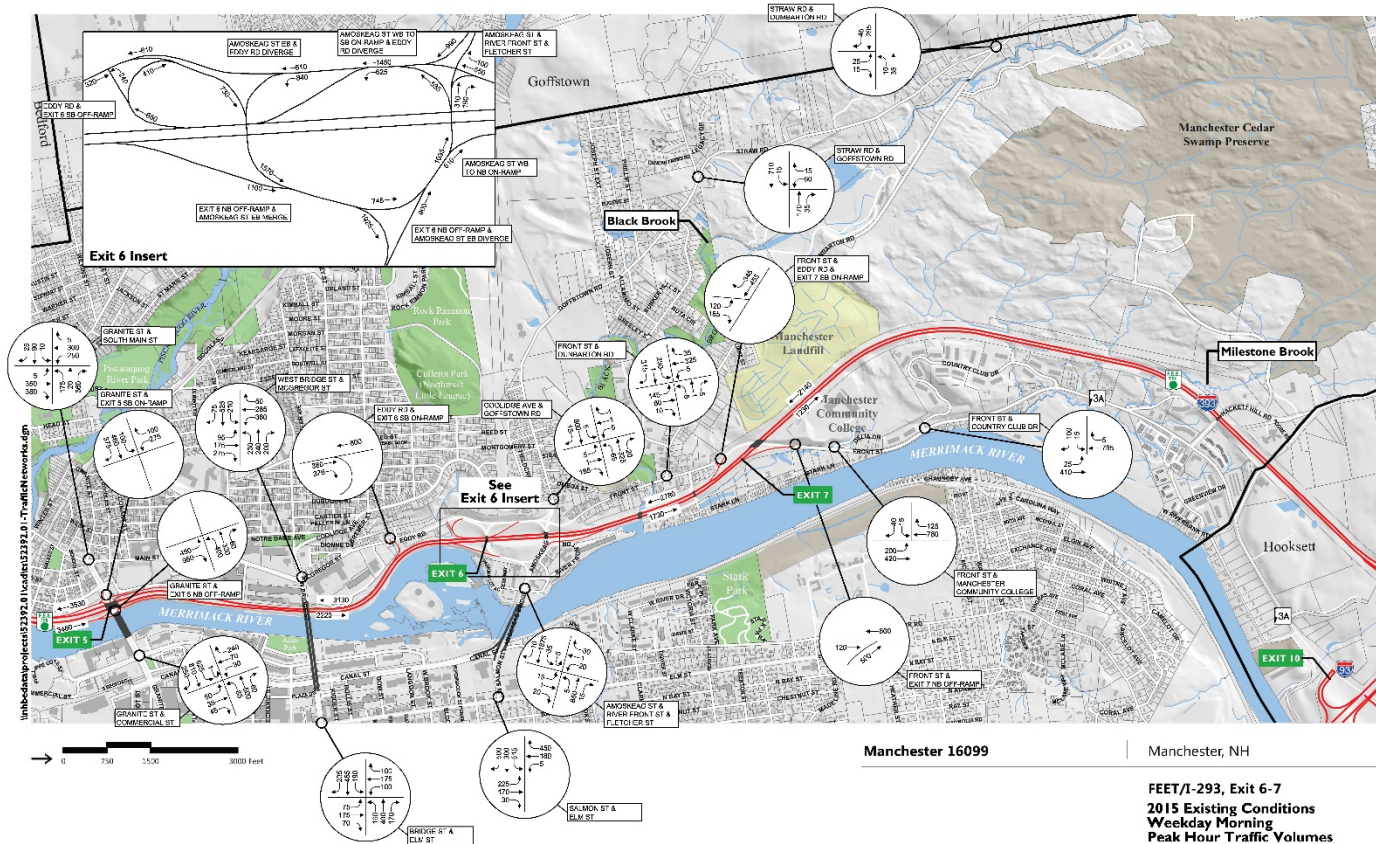
I-293 HOURLY VOLUMES (NORTHBOUND)

BETWEEN EXITS 5 AND 6

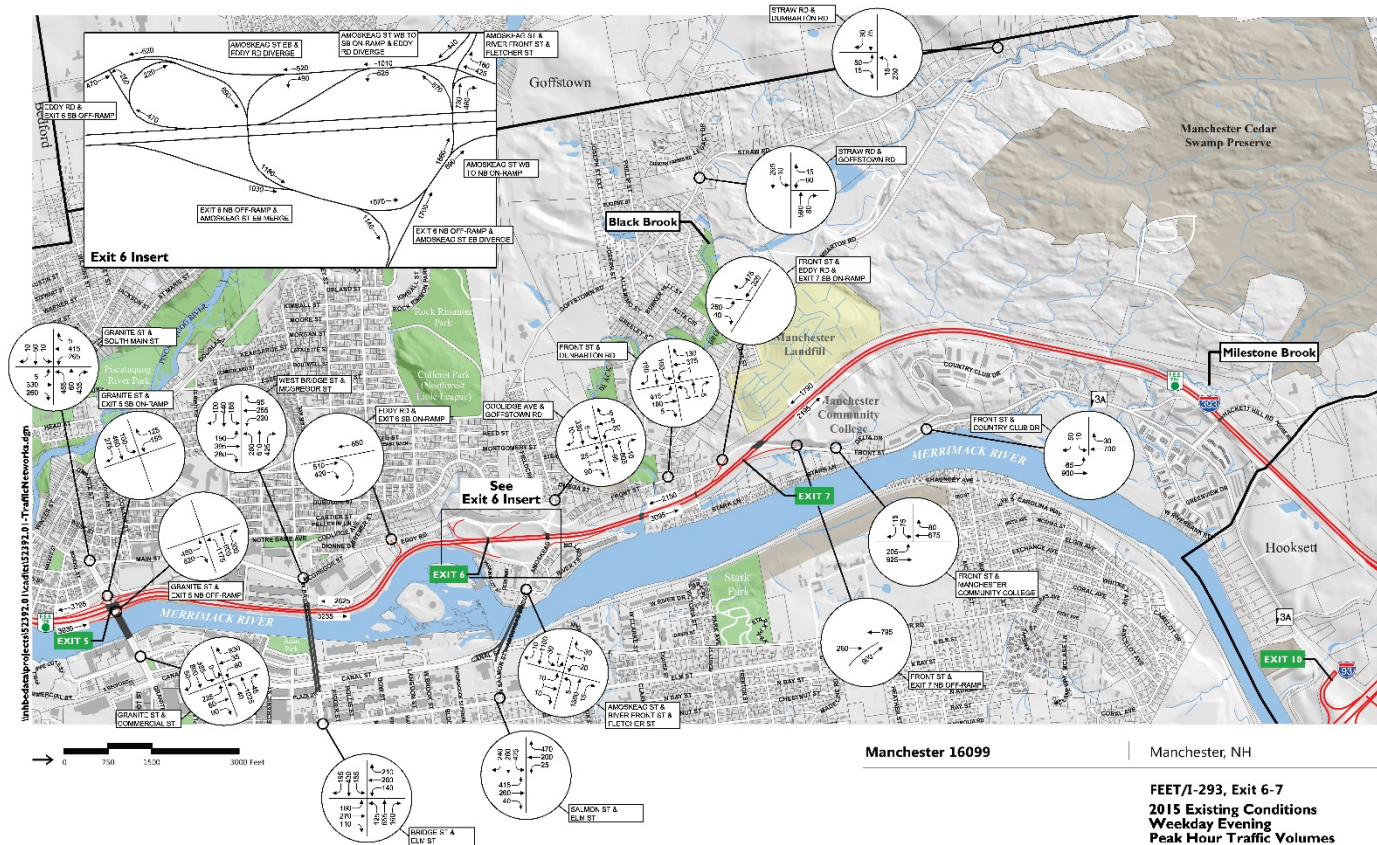
TUESDAY AUGUST 18, 2015



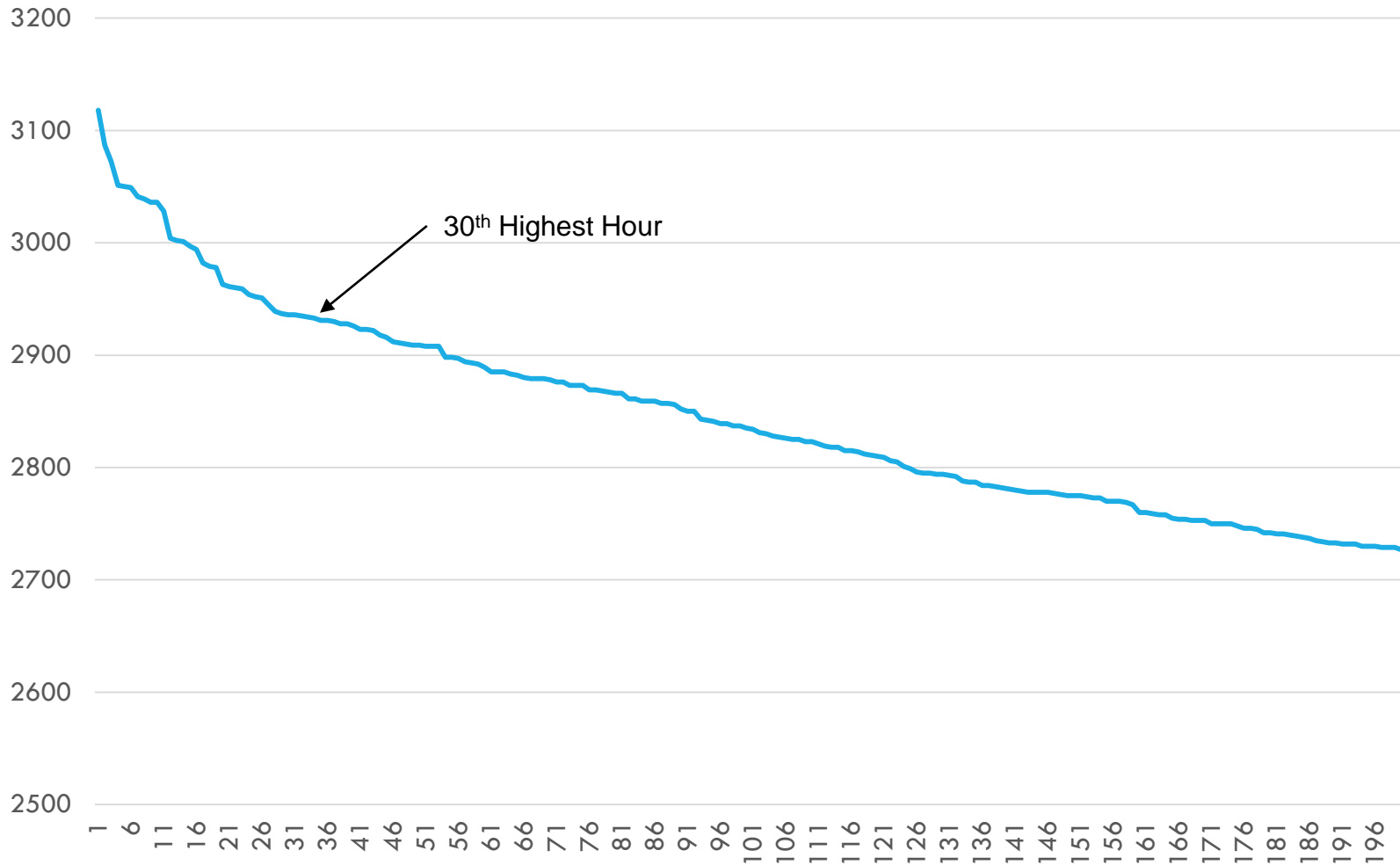
EXISTING WEEKDAY AM PEAK HOUR



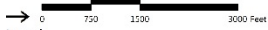
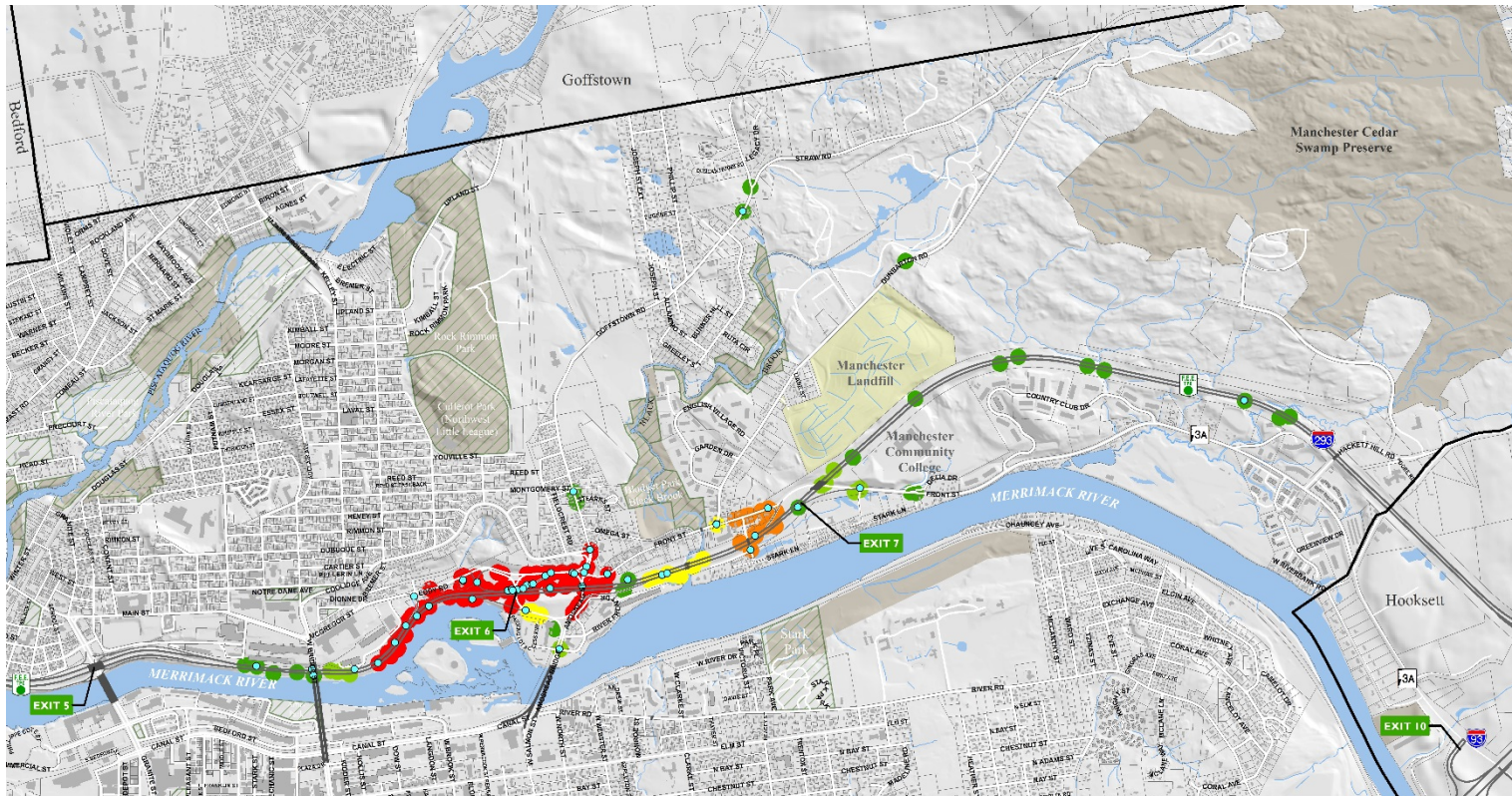
EXISTING WEEKDAY PM PEAK HOUR



DESIGN HOUR VOLUME (DHV)



VEHICLE CRASH HEAT MAP



Legend

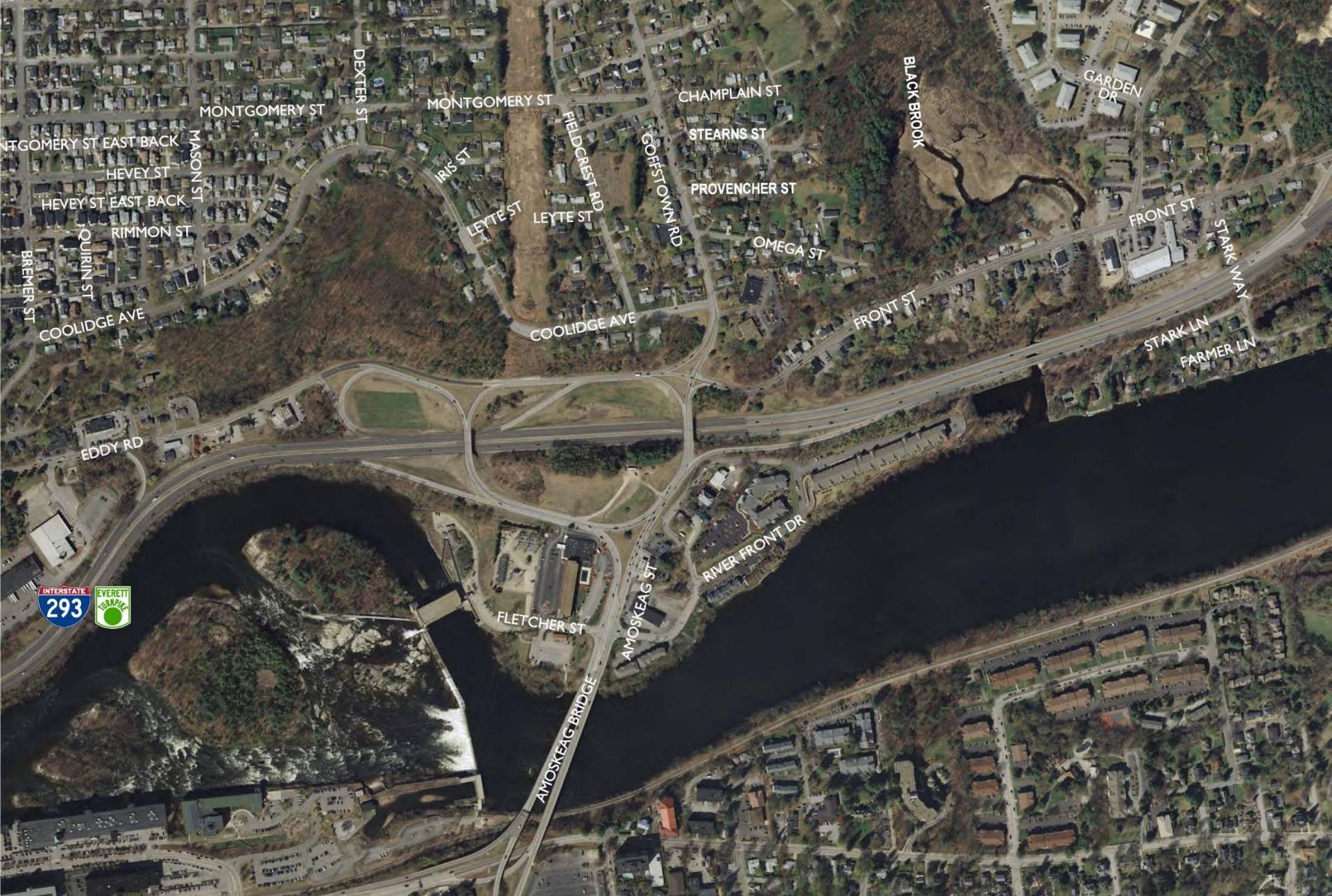
- Assessor's Tax Parcels
- Building
- Bridge
- Town/City Boundary
- Surface Water
- Stream
- City Park Land
- Conservation/Public Land

NHDOT Crash Data 2012-2015

- Crash Clusters (Crashes Clustered within 125')**
- 1 - 2
 - 3 - 5
 - 6 - 12
 - 13 - 18
 - 19 or Greater

- Crash Location - Injuries Reported (52 Crashes)
- 307 Total Crashes
- No Fatal Crashes Reported

Exit 6



Exit 7 – Current Location



Manchester Landfill

Manchester Community College

DELIA DR

FRONT ST

STARK LN

STARK LN

FRONT ST

STARK WAY

STARK LN

FARMER LN

ENGLISH VILLAGE RD

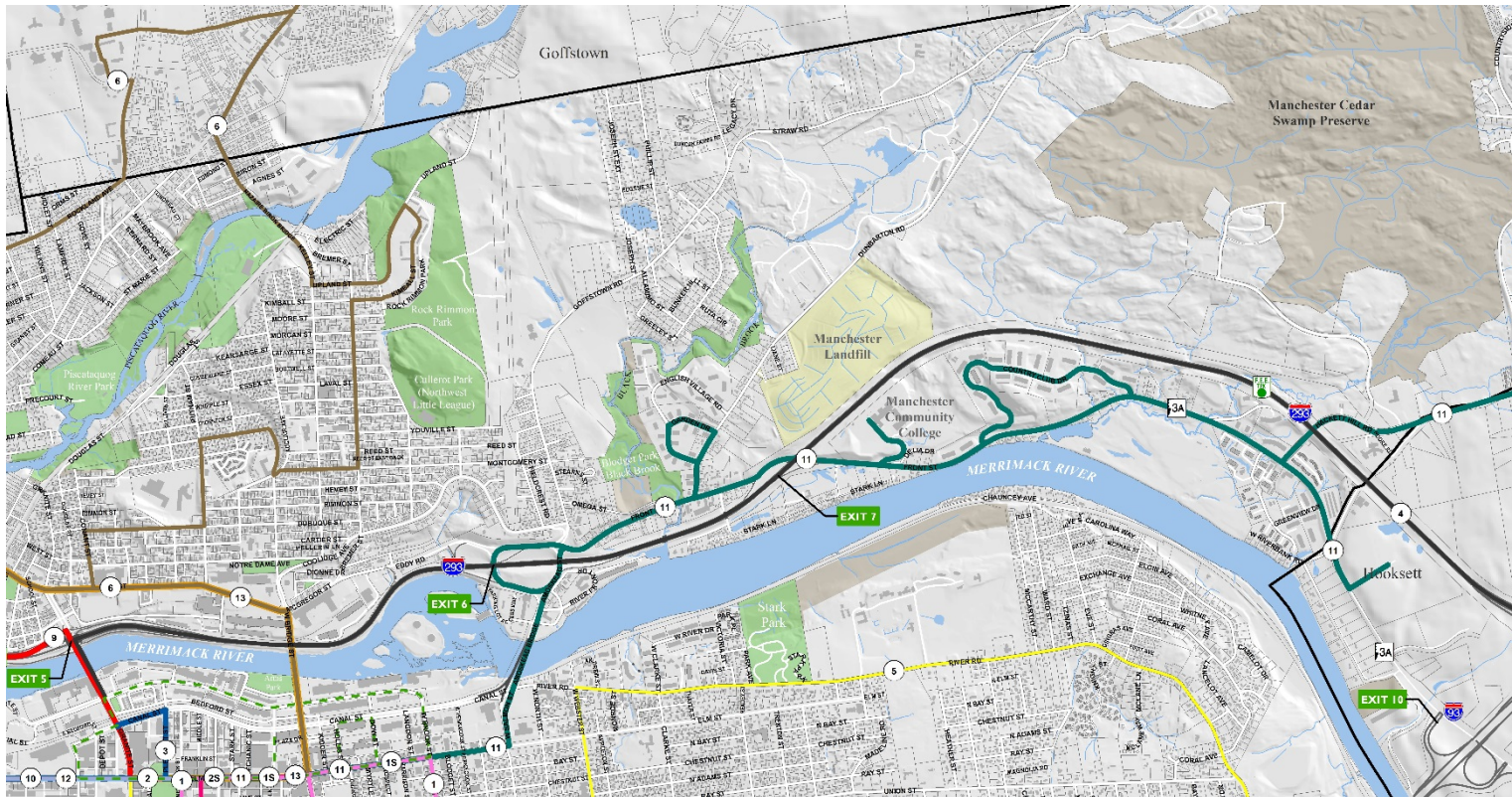
DUNBARTON RD

LOUISE ST

GARDEN DR

GARDEN DR

TRANSIT ROUTES



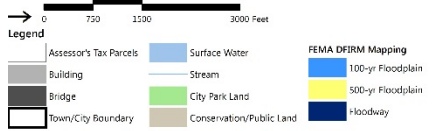
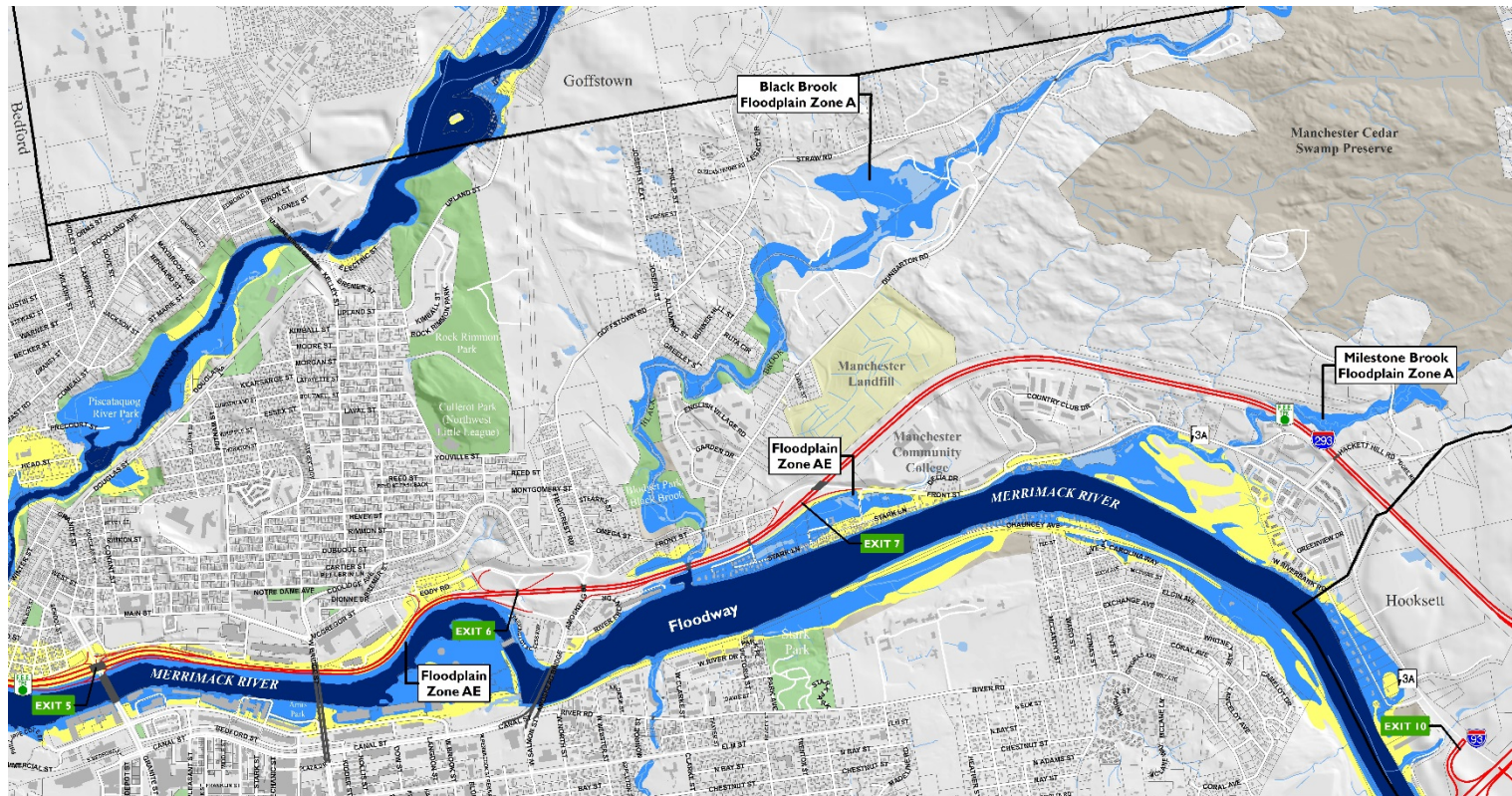
Note: * Weekday service only.
All other routes include Saturday service.

Legend

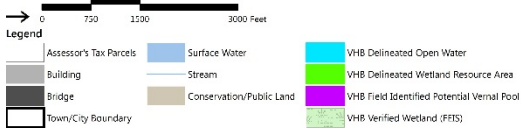
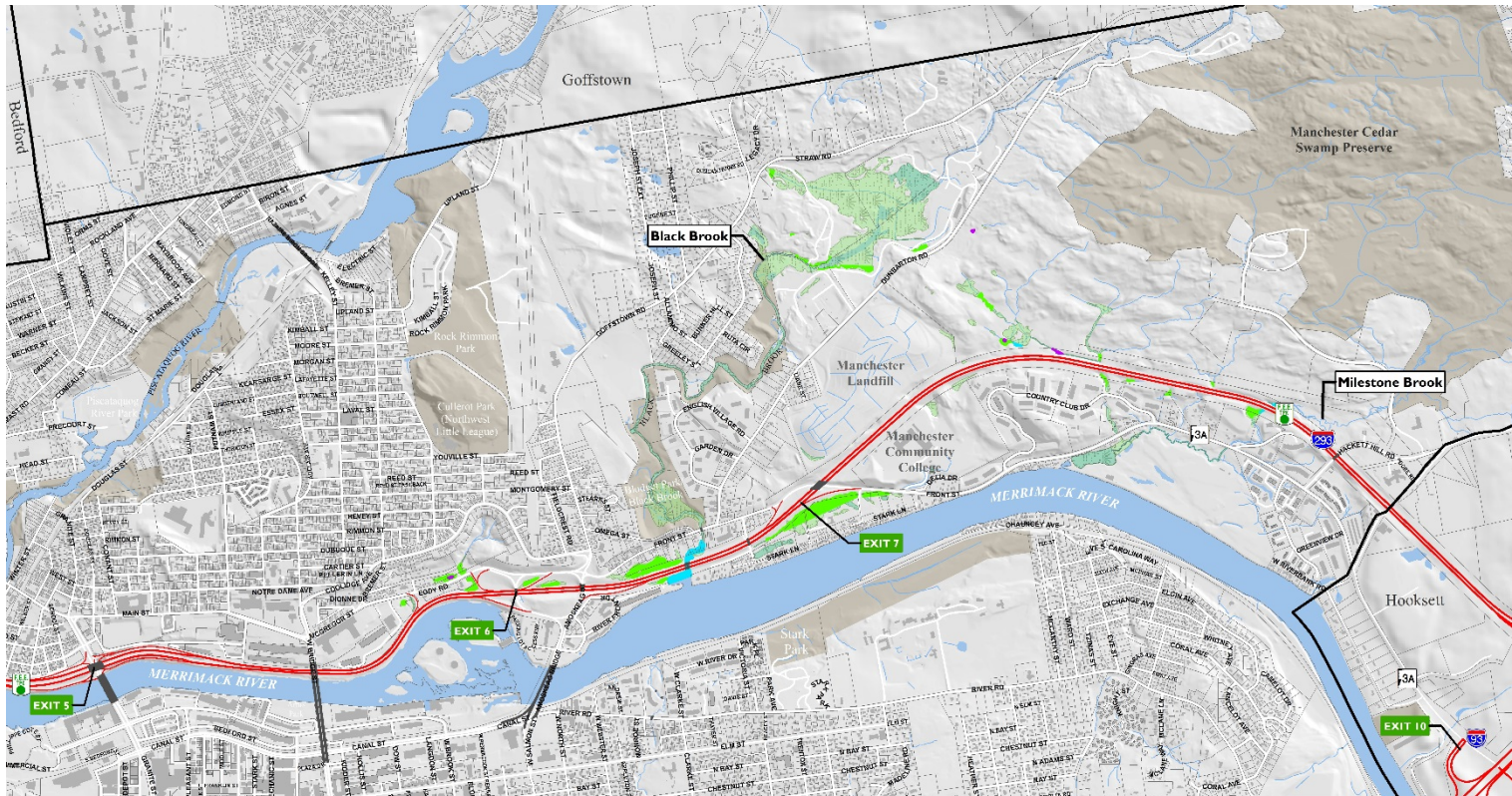
- | | | | | |
|------------------------|--------------------------|--|---|---|
| Assessor's Tax Parcels | Surface Water | Manchester Transit Authority Routes | Route 5 - River Road/SNIHU | Route 11 - Front Street/Hockett Hill Road |
| Building | Stream | Route 1 - Healthcare Shuttle/East Side Plaza | Route 6 - Bremer St/Mast Road | Route 12 - South Beech St/Mall of NH |
| Bridge | City Park Land | Route 2 - Hanover St/East Side Plaza | Route 9 - Nashua Express | Route 13 - Bedford Grove Plaza/Second St |
| Town/City Boundary | Conservation/Public Land | Route 3 - Brown Ave/Airport Industrial Area* | Route 10 - Valley St/Weston Rd/Mall of NH | GREEN DASH - Downtown Area Shuttle* |
| | | Route 4 - Concord Express* | | |

OTHER ENVIRONMENTAL RESOURCES

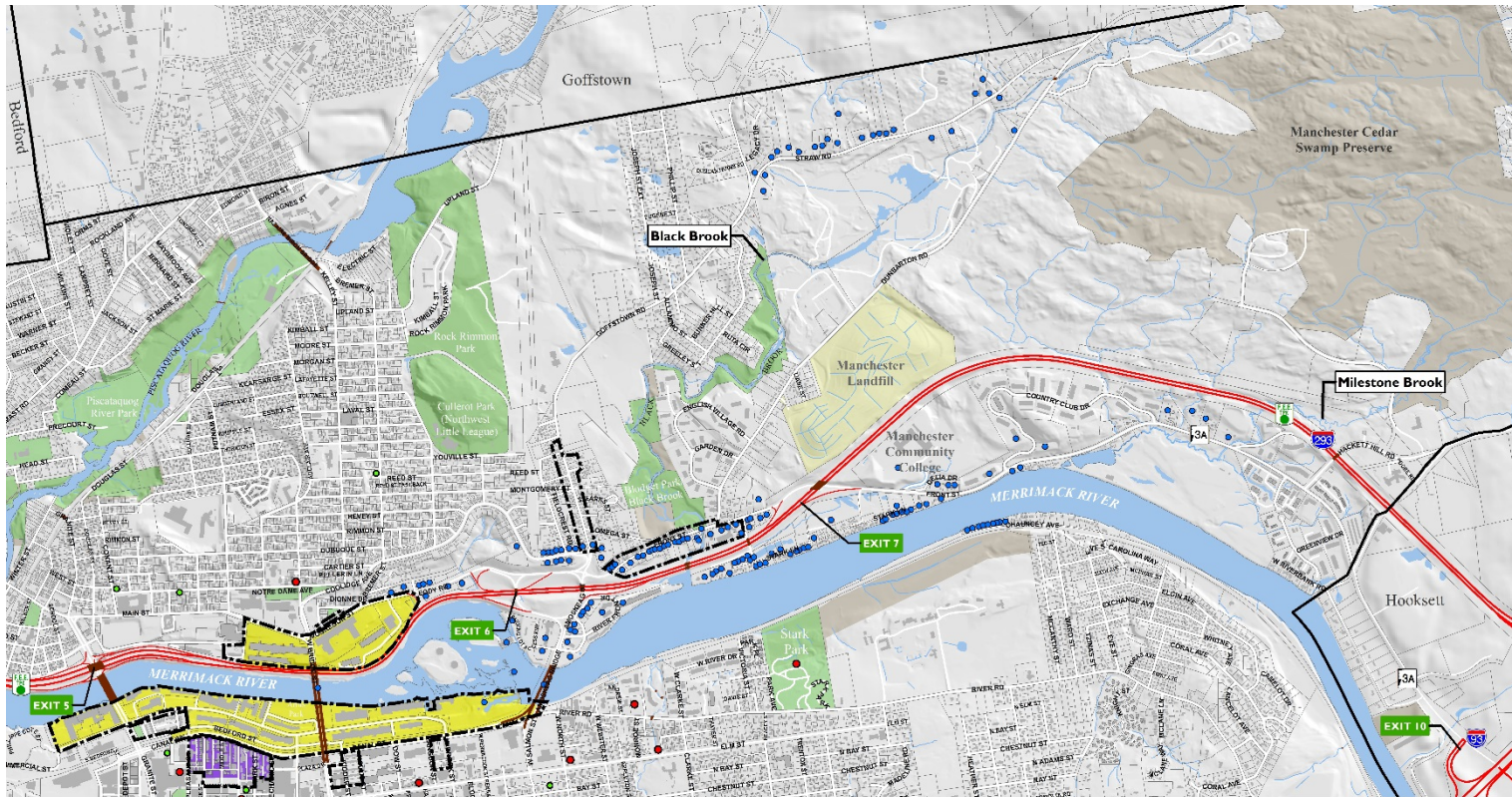
FLOODPLAINS



WETLAND RESOURCES



CULTURAL RESOURCES

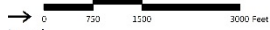
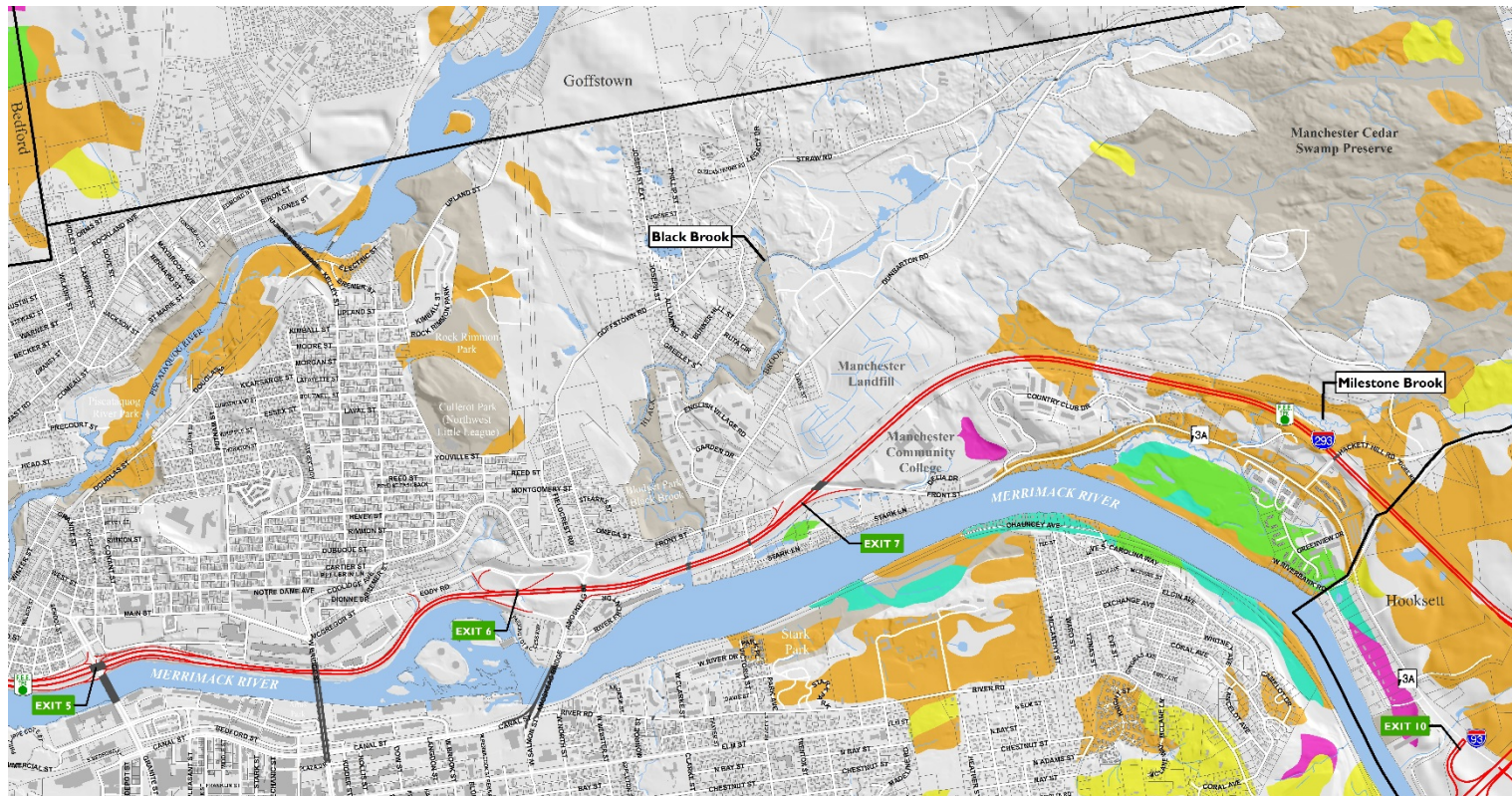


Legend

- Assessor's Tax Parcels
- Building
- Bridge
- Town/City Boundary
- Surface Water
- Stream
- City Park Land
- Conservation/Public Land
- Historic Building (VHB Field Identified)
- Historic District
- City of Manchester Identified Historic Sites
 - NR Listed
 - NR Eligible (Recommended Eligible by Preparer of Documentation)

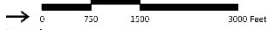
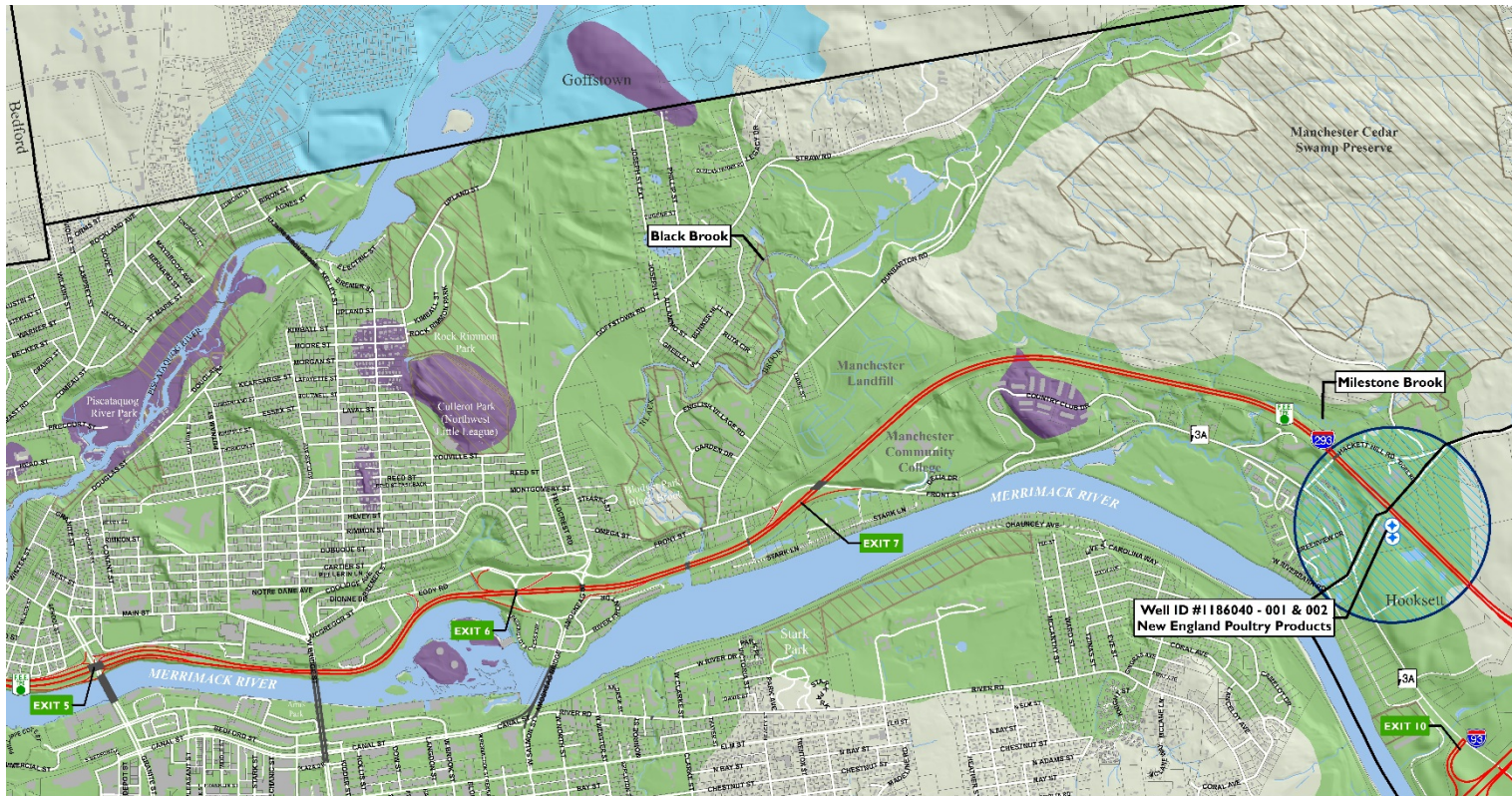
- City of Manchester Districts Under Zoning Ordinance**
- Amoskeag Corporation Housing Historic District
 - Amoskeag Millyard Historic District

FARMLAND SOILS



Assessor's Tax Parcels	Surface Water	All areas are prime farmland	Farmland of statewide importance
Building	Stream	Farmland of local importance	Prime farmland if drained
Bridge	Conservation/Public Land	Prime farmland if protected from flooding or not frequently flooded during the growing season	
Town/City Boundary			

GROUNDWATER RESOURCES

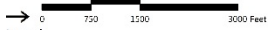
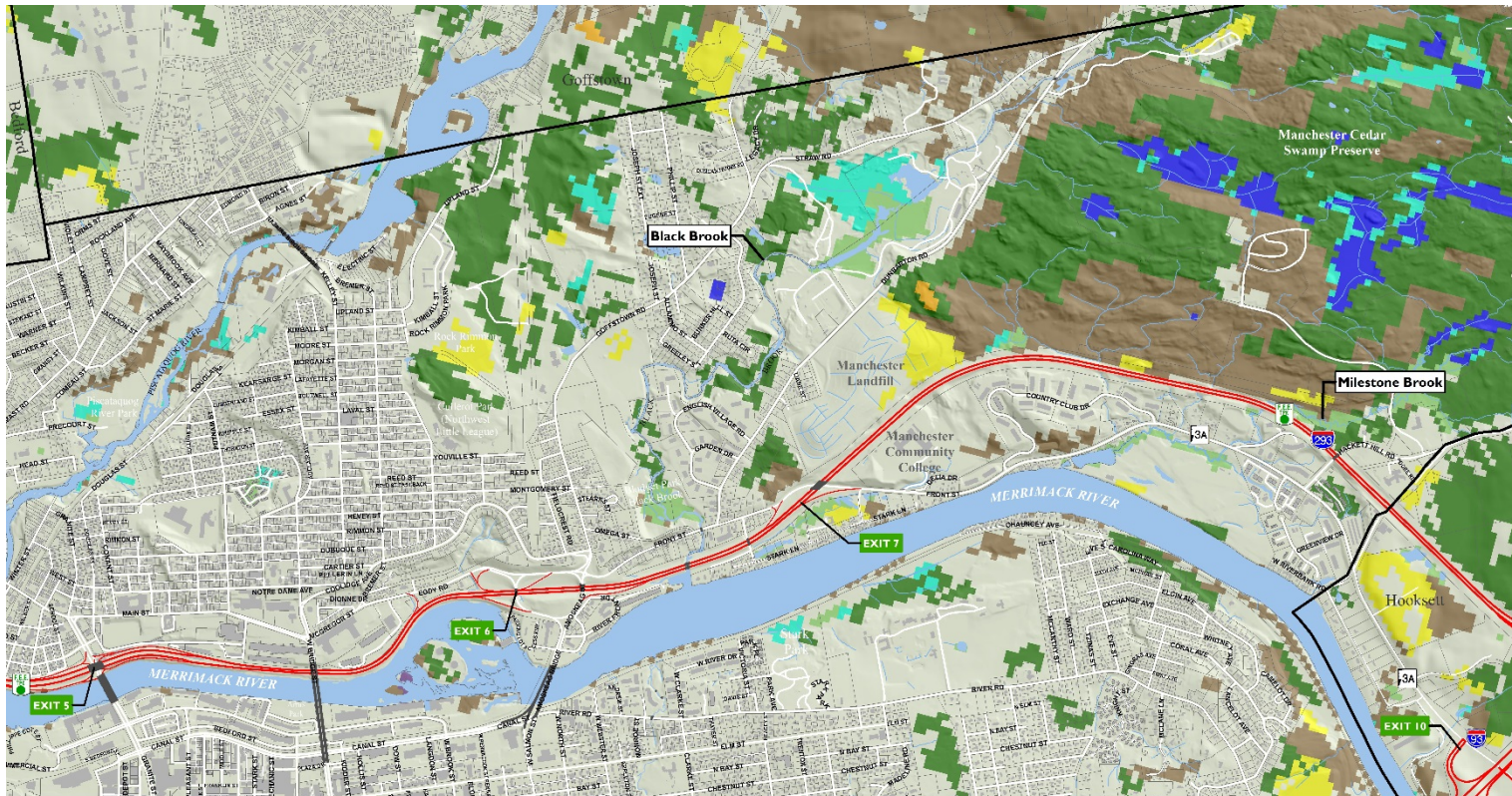


Legend

- | | | | |
|------------------------|--------------------------|------------------------------|---------------------------|
| Assessor's Tax Parcels | Surface Water | USGS Aquifer Boundaries | Public Water Supply |
| Building | Stream | Glacial Lake Bottom Deposits | Well Head Protection Area |
| Bridge | Conservation/Public Land | Stratified-drift | |
| Town/City Boundary | | Till | |
| | | Non-Aquifer Area | |

Note: The entire City of Manchester is located in the Source Water Protection Area (SWPA).

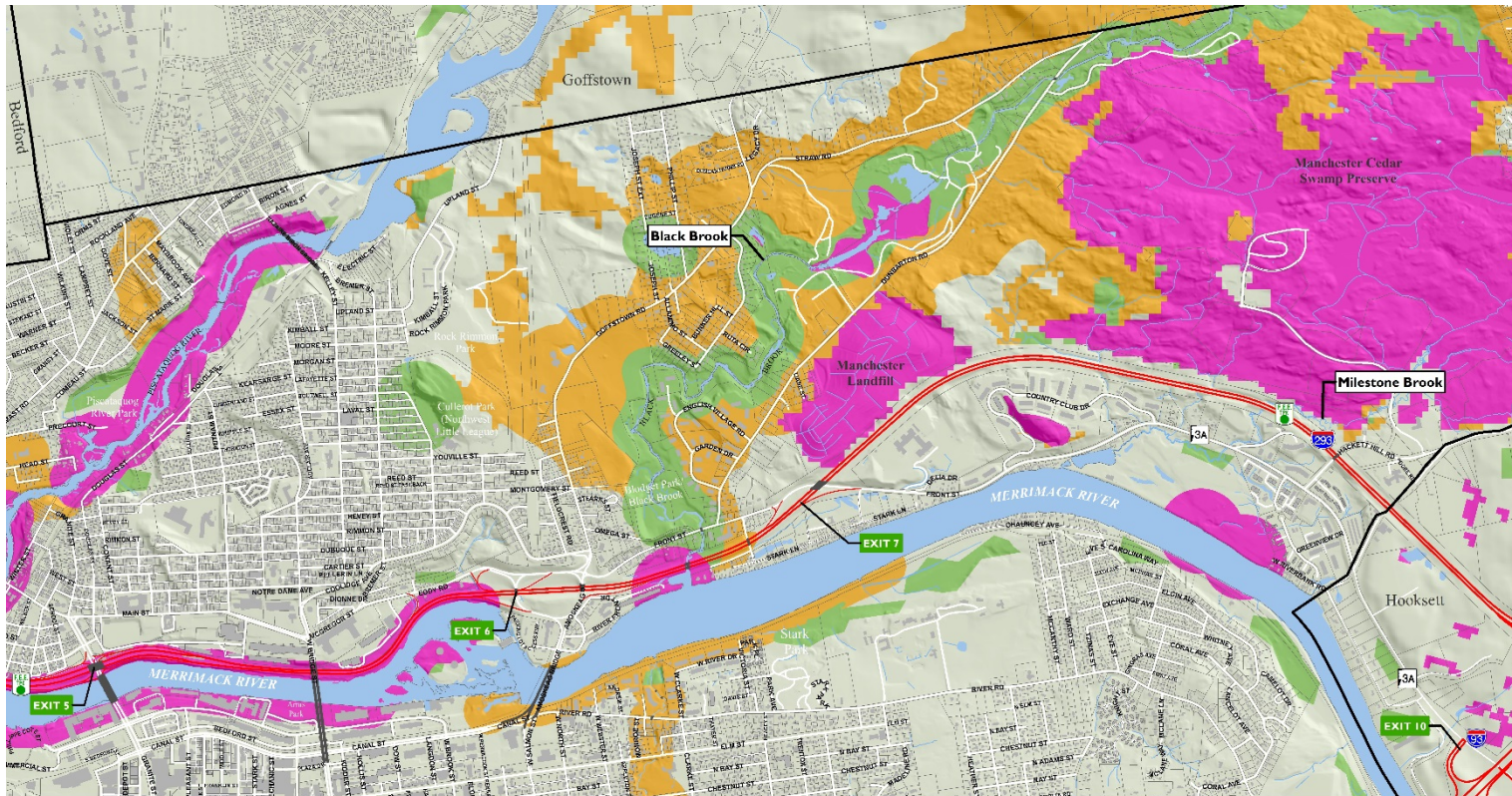
WILDLIFE ACTION PLAN HABITATS



Legend

Assessor's Tax Parcels	Surface Water	New Hampshire Fish & Game Wildlife Action Plan Habitats	Peatland	Area not considered to be priority habitat
Building	Stream	Appalachian oak-pine	Rocky ridge	
Bridge		Floodplain forest	Temperate swamp	
Town/City Boundary		Grassland	Wet meadow/shrub wetland	
		Hamlock hardwood pine		

WILDLIFE ACTION PLAN TIERS



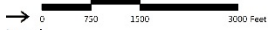
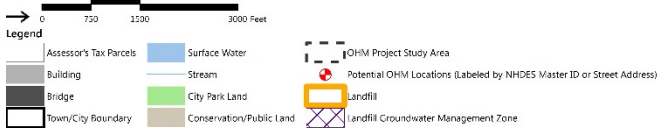
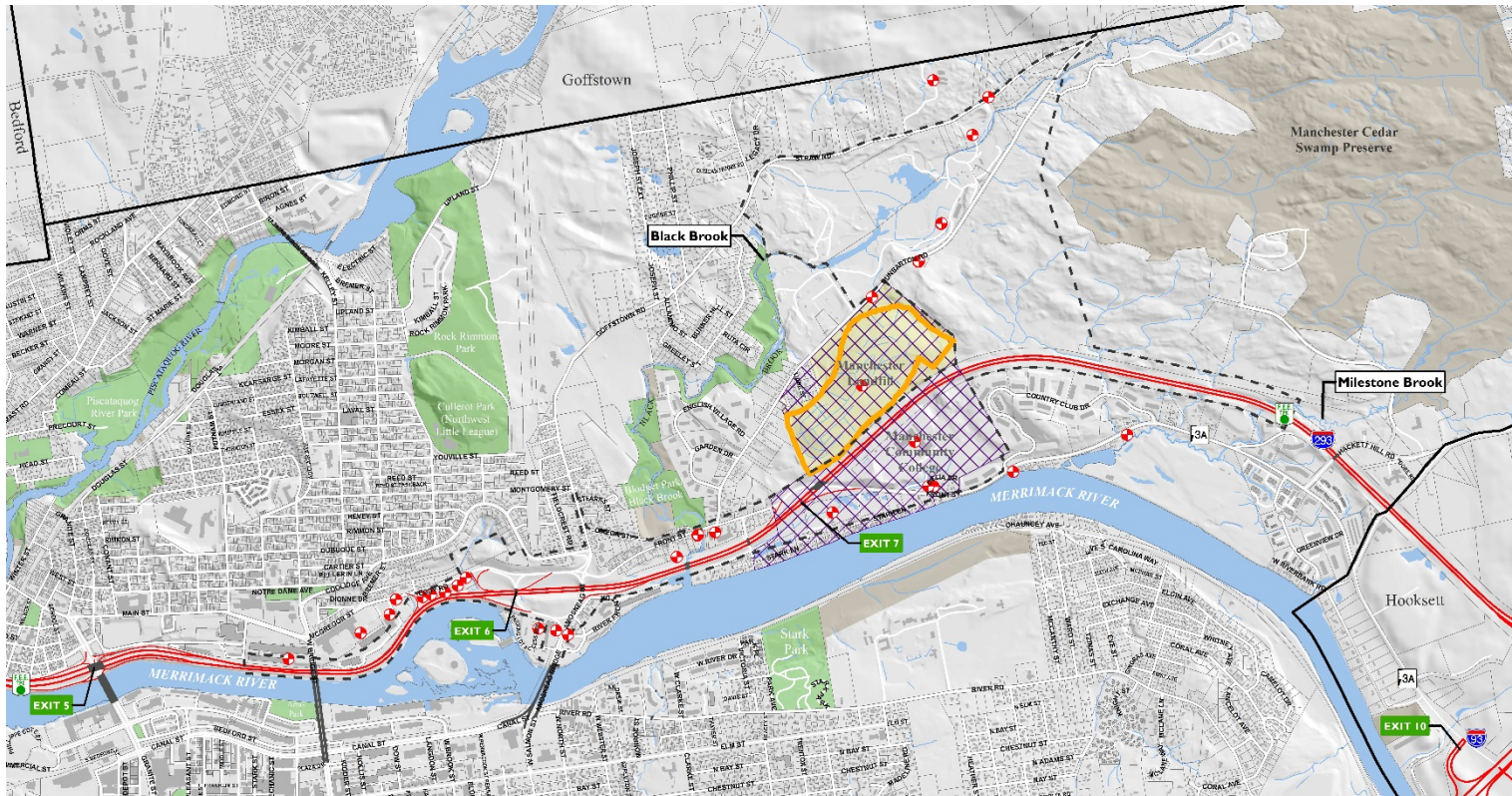
Legend

- Assessor's Tax Parcels
- Building
- Bridge
- Town/City Boundary

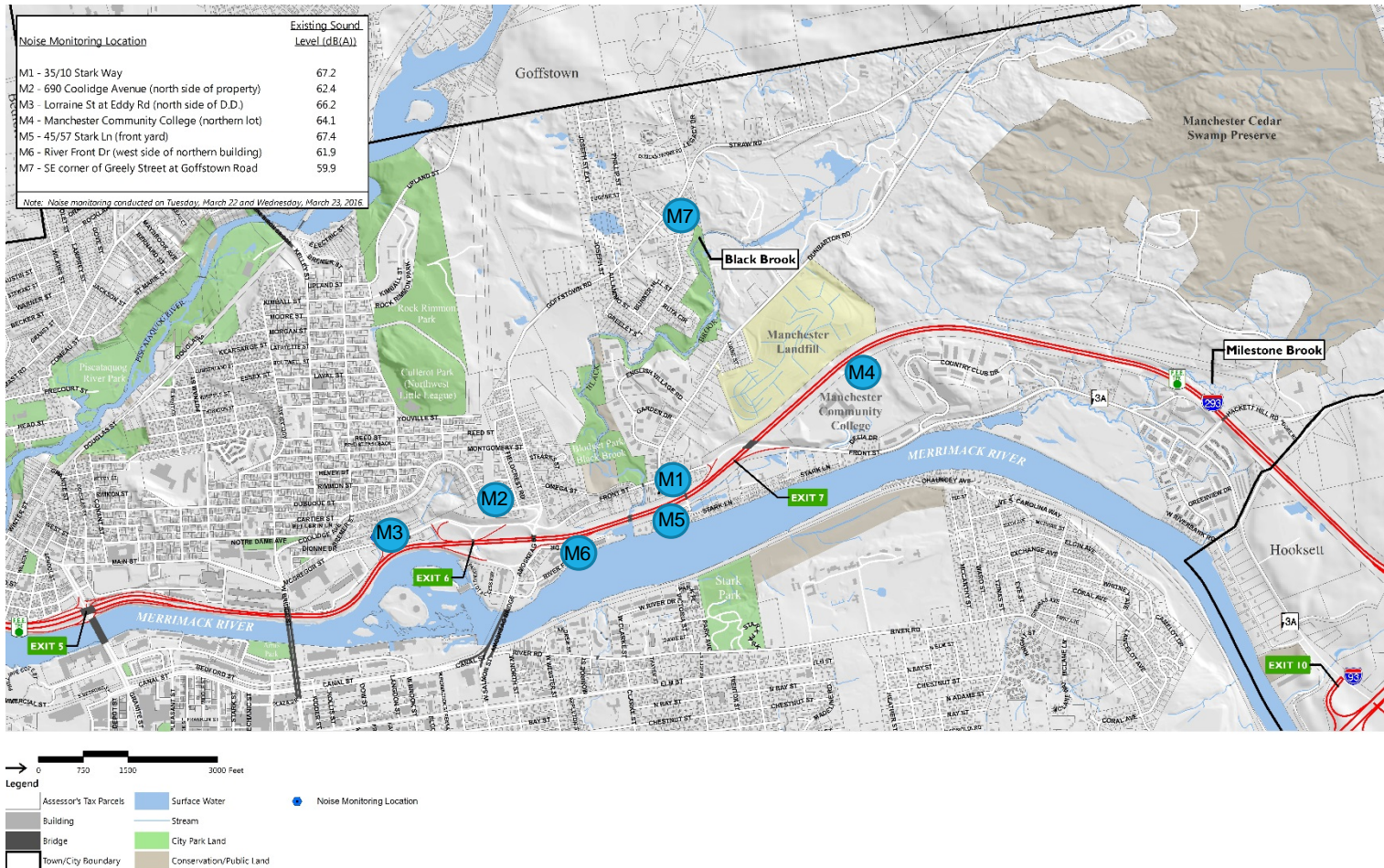
Ranked Habitat Tiers

- Tier 1 - Top Ranked Habitat in the State
- Tier 1 - Top Ranked Habitat in Biological Region
- Tier 3 - Supporting Landscape
- Area not considered to be priority habitat

HAZARDOUS SITES



NOISE MONITORING LOCATIONS



PURPOSE AND NEED

WHAT IS A PURPOSE AND NEED STATEMENT?

A Purpose and Need Statement establishes a basis for the development of a reasonable range of alternatives and assists with the selection of a proposed action.

The statement may describe roadway, operational, safety, or system connectivity deficiencies, and may describe consistency with regional or community planning, social demands or economic development.

PLANNING STUDY FINDINGS

- There are substantial problems that need to be addressed.
- There are a reasonable range of alternatives to address the problems.
- TDM and TSM actions, alone, won't meet the study need.

PLANNING STUDY FINDINGS (CONTINUED)

- I-293 mainline, between Exits 5 and 7 will need 3 lanes per direction.
- I-293 mainline, through and north of Exit 7, could be retained at 2 lanes per direction.
- Each of the Exit 6 alternatives, with the exception of the Diamond Interchange with Roundabouts, operates acceptably and meets the study purpose.

PLANNING STUDY FINDINGS (CONTINUED)

- Reconfiguring Exit 7 at its existing location could be problematic given the proximity to Exit 6.
- Relocating Exit 7 to the north will meet the capacity and safety study purposes and support connectivity to important future economic development areas in Manchester and Goffstown.

INVEST SUSTAINABILITY TOOL

WHAT IS INVEST?

FHWA'S **INVEST** (Infrastructure **V**oluntary **E**valuation **S**ustainability **T**ool) is self-evaluation tool comprised of voluntary sustainability best practices, which cover the full lifecycle of transportation services, including system planning, project planning, design, and construction, and continuing through operations and maintenance.

FHWA developed INVEST for voluntary use by transportation agencies to access and enhance the sustainability of their projects and programs.

PROJECT DEVELOPMENT CRITERIA

Lifecycle Cost Analyses

Freight Mobility

Permeable Pavement

Context Sensitive Project Development

ITS for System Operations

Construction Environmental Training

Highway and Traffic Safety

Historic, Archaeological, and Cultural Preservation

Construction Equipment Emission Reduction

Educational Outreach

Scenic, Natural, or Recreational Qualities

Construction Noise Mitigation

Tracking Environmental Commitments

Energy Efficiency

Construction Quality Control Plan

Habitat Restoration

Site Vegetation, Maintenance and Irrigation

Construction Waste Management

Stormwater Quality and Flow Control

Reduce, Reuse and Repurpose Materials

Low Impact Development

Ecological Connectivity

Recycle Materials

Infrastructure Resiliency Planning and Design

Pedestrian Facilities

Earthwork Balance

Light Pollution

Bicycle Facilities

Long-Life Pavement

Noise Abatement

INVEST CRITERION EXAMPLE

PD-10: Pedestrian Facilities

1-3 points

Goal: Provide safe, comfortable, convenient, and connected pedestrian facilities for people of all ages and abilities within the project footprint.



Sustainability Linkage

Planning and designing for increased pedestrian activity supports all of the triple bottom line sustainability principles by improving the safety for all users, enhancing livability and quality of life in communities, improving access to economic and educational opportunities and essential services, supporting local businesses and economic development, promoting physical activity and public health, and reducing vehicle emissions.

Background and Scoring Requirements

Background

To receive credit for this criterion, the project must enhance existing pedestrian facilities or provide new pedestrian facilities that are context-sensitive and appropriate. Reconstruction of pedestrian facilities in kind when widening roadways and/or bridges does not meet the requirements of this criterion, although this is still encouraged.

Applicable Pedestrian Guidelines

Per the FHWA Memorandum: *Bicycle and Pedestrian Facility Design Flexibility*¹ and the *Questions & Answers about Design Flexibility for Pedestrian and Bicycle Facilities*², FHWA recommends a flexible approach to pedestrian facility design. The AASHTO *Guide for the Planning, Design, and Operation of Pedestrian Facilities*³ is the primary national resource for planning, designing, and operating pedestrian facilities. The National Association of City Transportation Officials' (NACTO) *Urban Street Design Guide*⁴, and the Institute of Transportation Engineers (ITE) *Designing Urban Walkable Thoroughfares: A Context Sensitive Approach*⁵ guide builds upon the flexibilities provided in the AASHTO guide and can be used when designing safe and convenient pedestrian facilities. The NACTO guide does not supersede compliance with 2010 Americans with Disabilities Act (ADA) *Standards for Accessible Design*⁶, the *Public Rights-Of-Way Accessibility Guidelines*⁷ (PROWAG), and *The Manual on Uniform Traffic Control Devices for Streets and Highways*⁸ (MUTCD).

Qualifying Features

For pedestrian facilities to meet scoring requirements, improvements must be context sensitive and appropriate, go beyond minimum requirements, meet the needs of users of all ages and abilities, and include features that are safe, comfortable, convenient, and connected, such as those listed below.

- Examples of **Safe and Comfortable** features include:
 - Increased sidewalk width – an increased width allows for pedestrian amenities without impeding on the walkway width and increases pedestrian comfort.
 - Improved intersection design for pedestrians – such as countdown signal heads, narrower lanes, pedestrian medians, and curb extensions.

- Trees – provide a physical buffer between pedestrians and moving vehicles, while also providing shade and potentially reducing traffic speeds.
- Sufficient lighting on all sidewalks within the project footprint
- Landscaping, art, furniture, and social amenities (such as parklets, sidewalk cafes, and other gathering spaces) as appropriate to promote the use of the facilities and create a comfortable, pleasing facility.
- Examples of **Convenient and Connected** features include:
 - New facilities that connect to existing facilities in the vicinity as part of the project.
 - Infrastructure that connects homes to places of employment, schools, shopping, services, transit, and recreation areas.

Scoring Requirements

Prerequisite PD-10.1P

0 points. Meet ADA Requirements

Facilities must meet ADA requirements to receive credit. No credit is given for improvements and it is assumed that retrofits to existing facilities will bring them up to required ADA standards.

Requirement PD-10.1

1 point. Install Missing Pedestrian Connections

Review pedestrian master plans and other relevant local, regional, and state documents to determine if the project presents an opportunity to incorporate missing pedestrian connections AND fill gaps in the pedestrian network as part of the project.

Requirement PD-10.2

1-2 points. Install Safe, Comfortable, Convenient, and Connected Pedestrian Features

One of the following requirements may apply:

• Requirement PD-10.2a

1 point. Enhance Existing Pedestrian Facilities

Implement new or improve existing pedestrian facilities to include both safe and comfortable features and convenient and connected features. Current facilities do not qualify for this criterion without additional effort, such as upgrades, improvements, or construction of new features. The attempt to enhance pedestrian transportation should be deliberate and a direct result of the project. No points are earned for improvements and retrofits to bring existing facilities into ADA compliance. Examples of enhancements include curb extensions, pedestrian crossing islands, adding a landscaped buffer to an existing sidewalk, and making intersections safer and more comfortable to navigate on foot.

OR

• Requirement PD-10.2b

2 points. Develop New Pedestrian Facilities

Design and construct new pedestrian facilities that include both safe and comfortable features and convenient and connected features. New facilities include physical or constructed changes to the roadway structure, dimensions, or form that provide pedestrian access within the right-of-way (ROW) or roadway corridor.

INVEST CRITERION EXAMPLE

PD-05: Educational Outreach

2 points

Goal: Increase public, agency, and stakeholder awareness of the integration of the principles of sustainability into roadway planning, design, and construction.



Sustainability Linkage

Educational outreach supports all of the triple bottom line principles by communicating to the public how social, environmental, and economic issues relate to roadway projects.

Background and Scoring Requirements

Background

This criterion awards points for incorporating public educational outreach that promotes and educates the public about sustainability including social, environmental, and economic principles. Specifically, this criterion requires communicating how sustainability principles are being integrated into the planning, design, construction, and operational phases of the roadway project. Credit can be achieved by leveraging public involvement processes where possible.

Note that performing a routine public involvement process does not accomplish this criterion unless it includes specific efforts to educate the audience about the sustainability of the project. Also note that the word “sustainability” does not have to be used specifically, and that terminology should be appropriate to the audience.

Scoring Requirements

Requirement PD-05.1

2 points. Install Educational Elements or Perform Educational Activities

Install or perform a minimum of two different educational elements from the Table PD-05.1.A.

TABLE PD-05.1.A. REQUIREMENTS FOR EDUCATIONAL ELEMENTS (CONTINUED ON NEXT PAGE)

Requirement	Educational Element	Recommended Requirements
PD-05.1a	Include sustainability in a Project Development Process	Specifically include sustainability as a consideration in a project development process that harmonizes transportation requirements and community values through effective decision-making and thoughtful design. Examples of this type of development process include complete streets, context sensitive solutions, neighborhood-aware design, and similar.
PD-05.1b	Include sustainability in Public Involvement	Specifically include sustainability education and promotion of sustainability as a project element throughout the public involvement process for the project.

Requirement	Educational Element	Recommended Requirements
PD-05.1c	Install point-of-interest	Install and maintain off-road point-of-interest kiosk(s) that display(s) information about the project and its sustainability features, as appropriate.
PD-05.1d	Project website	Provide a publicly available and maintained informational project website with capacity for submitting feedback and comments.
PD-05.1e	Stakeholder guide	Include sustainability and how it is being applied to the project in agency and/or stakeholder guide, specification, or policies, as appropriate.
PD-05.1f	School presentations	Perform presentation(s) about the project and its sustainability features for primary and secondary schools.
PD-05.1g	Professional presentations	Perform professional technical presentation(s) about the project and its sustainability features.

Resources

None referenced.

Scoring Sources

The project is considered to have met this criterion if the requirements above can be reasonably substantiated through the existence of one or more of the following documentation sources (or equal where not available):

1. Public Involvement and Outreach materials showing sustainability was specifically included.
2. Text or printed copy of the information offered at the kiosk (i.e., brochure or static installation).
3. Website address and/or screen captures.
4. An agency guide, specification, or policy.
5. A copy of school or professional presentations and the date of the presentation.

INVEST TAC WORKSHOP

May TAC Meeting

- Brief presentation on INVEST
- Breakout groups to review and discuss initial scoring
- Identify opportunities to enhance project sustainability

End of Project TAC Meeting

- Breakout groups to rescore project
- Identify opportunities to enhance project sustainability during final design and construction (Part C)

PROJECT WEBSITE

WWW.293PLANNINGSTUDY.COM



I-293 Exits 6 & 7 Manchester, New Hampshire

NHDOT Homepage

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- [Study Schedule](#)

- [Documents](#)

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Study Overview

Interstate Route 293 is a major, north-south, arterial circumferential highway extending through and around the City of Manchester. It also functions as a local connection to Interstate 93 (north and south), NH Route 101 (east and west) and US Route 3 (F.E. Everett Turnpike south to Nashua and into Massachusetts) and thus providing critical accessibility and mobility within the greater Manchester area as well as throughout southern New Hampshire.

The New Hampshire Department of Transportation (NHDOT) has initiated a project to address the transportation needs of a 3-mile segment of I-293 extending northerly from the Granite Street interchange (Exit 5) to approximately one mile north of the NH Route 3A interchange (Exit 7) in Manchester, NH. The project will be conducted in three phases:

Part A consists of a planning-level study,

Part B consists of preparing preliminary engineering plans and environmental documentation suitable for a Design Public Hearing and formal project approval, and

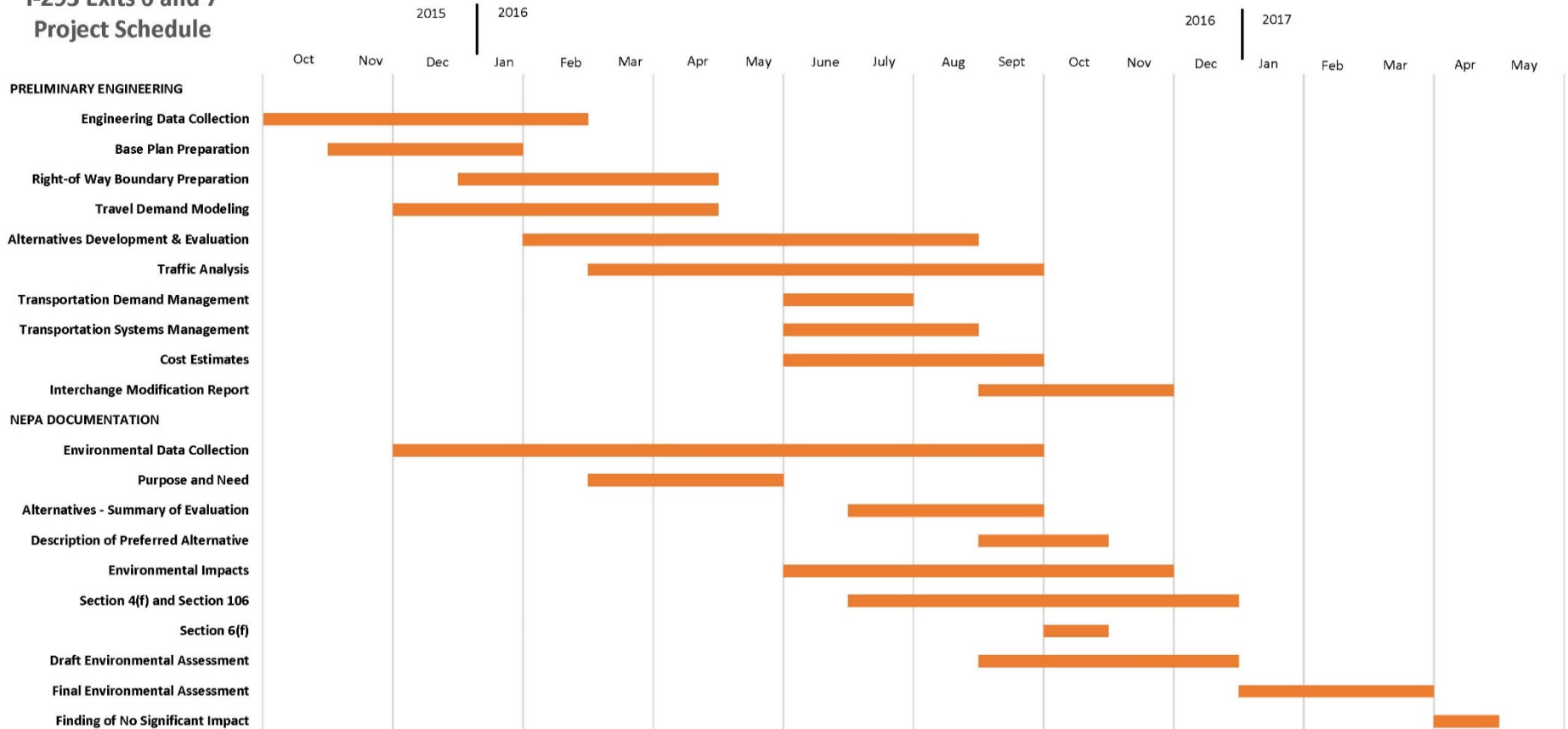
Part C consists of the preparation of final design plans.

The Part A planning-level study, which was completed in December 2013, evaluated potential broad transportation system changes and established a range of practicable alternatives aimed at addressing capacity and safety related deficiencies along I-293 and at the Exit 6 and Exit 7 interchanges. The study



PART B SCHEDULE

I-293 Exits 6 and 7 Project Schedule



QUESTIONS/COMMENTS?

NHDOT Contact		Consultant Contact
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I-293 EXIT 6 & 7 (PART B)

Technical Advisory Committee (TAC)
February 10, 2016

