

Morgantown Monongalia Metropolitan Planning
Organization's

2040 Long Range Transportation Plan

Existing Conditions Report Executive Summary

PREPARED BY:

BURGESS & NIPLE

MAY 2012

EXISTING TRANSPORTATION SYSTEM

EXECUTIVE SUMMARY

Understanding the current transportation system is vital to the planning process, in that the existing system forms the underlying structure/foundation for the future (2040) system. This document is a summary of the existing conditions report being prepared for the Morgantown/Monongalia Study Area. A more complete discussion of transportation services in the area including freight services will be provided as part of the final report.

Roadway Conditions

Roadway functional classification groups streets and highways according to the service they are intended to provide. As a whole, the street network in an urbanized area has two distinct functions; providing access to properties along a roadway and providing travel mobility - getting from one point to the other. A comparison with the state system by functional classification highlights how different Monongalia County is. Only 9% of the state system is classified as urban. In contrast, almost 23% of Monongalia County is classified using the urban definitions. This distinguishes the county from the rest of the state and how its transportation system operates.

The volumes of vehicles on the roadway facilities are an integral component in evaluating the existing transportation conditions. Roads with average daily traffic volumes greater than 25,000 vehicles per day (vpd) are listed below:

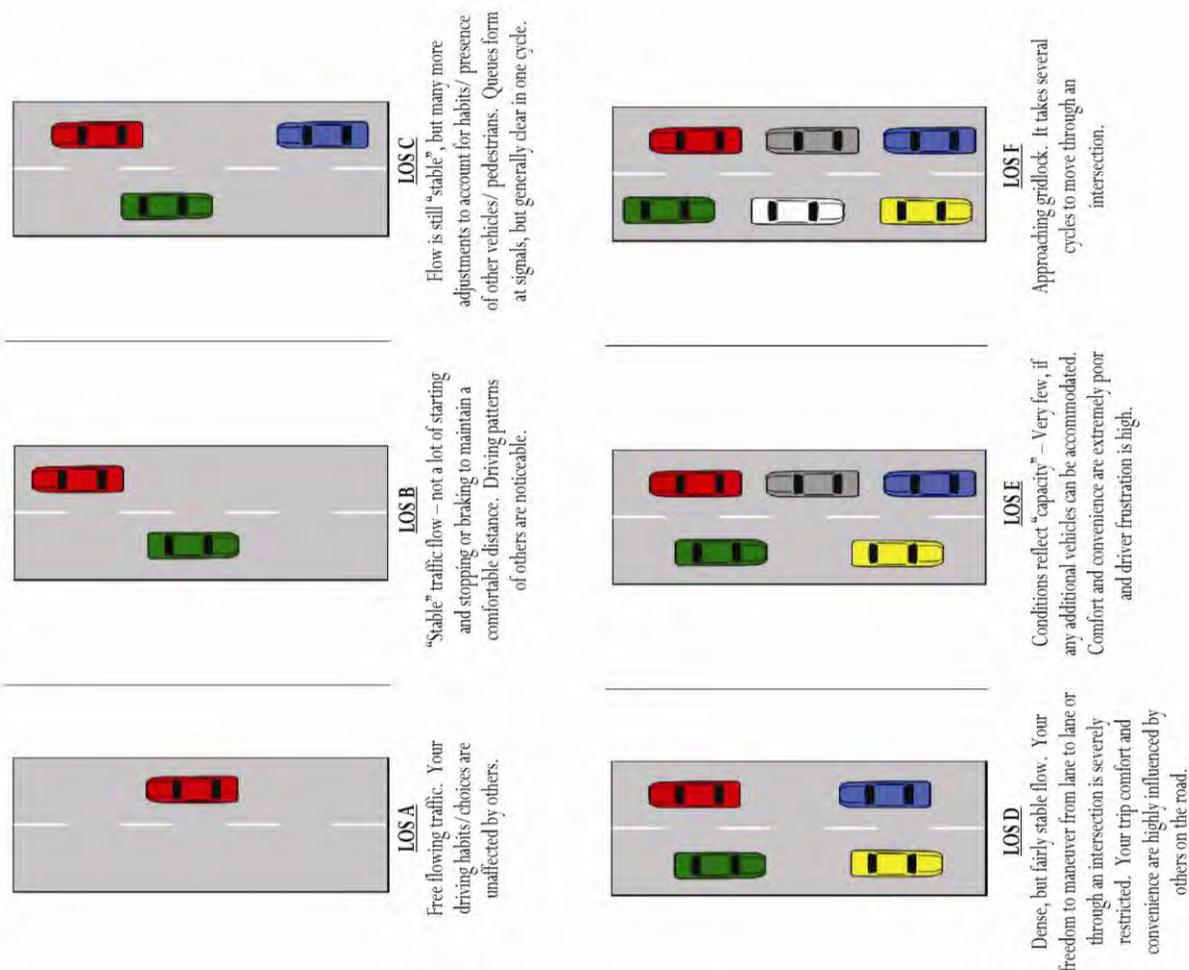
- I-79;
- I-68;
- CR 19/24 (Chaplin Hill Road) from the I-79 Interchange to US 19 (Monongahela Blvd);
- US 19 (Monongahela Blvd) from Chaplin Hill Road to CR 55/7 (Chipps Hollow Road);
- US 19/WV 7 (Beechurst Avenue) south of Campus Drive;
- US 19/WV 7 (University Avenue) south of Foundry Street;
- US 19 (Don Knotts Blvd) south of Dorsey Avenue; and
- WV 705 (Patteson Drive) from Laurel Street to east of CR 67 (Stewartstown Road).

Capacity is often impacted by factors other than simply the volume of traffic on a facility. Roadway design issues such as uncontrolled vehicular access as on the Mileground or uncontrolled pedestrian access such Grumbein's Island in the West Virginia University Downtown Campus drastically reduces vehicular capacity and increases travel time.

As a measure of corridor operations, roadway capacity is often compared to the number of vehicles that travel the corridor. However, the maximum roadway capacity is often greater than the number acceptable to travelers in a community the size of Morgantown. The difference between the acceptable number of vehicles and the capacity is important because as more vehicles try to travel through an intersection, the greater the level of delay resulting for all travelers through the intersection. Level of Service (LOS) is the standard for assessing operations. A visual representation of the six LOS categories is included in Figure 1.



Figure 1 Traffic Flow Characteristics by Level of Service



Source: 2000 Highway Capacity Manual, Transportation Research Board, Washington, DC

Through analysis of the information included in the capacity deficiency figures, it was concluded that the following corridors are operating at either a LOS E or F:

- US 19 (Monongahela Blvd) from Chaplin Hill Road to Boyers Ave.
- US 19 (Beechurst Ave.) from 8th St. to Pleasant St.
- US 19 (Pleasant St/Westover Bridge/Holland Ave.) from University Ave. to Lane St.
- US 119 (Mileground Rd.) from Cheat Rd. to Hampton Ave.
- US 119 (N. Willey St.) from Monongalia Ave. to Richwood Ave.
- US 119 (Grafton Rd.) from Smithtown Rd. to Fairview Cemetery
- WV 705 (Van Voorhis Rd./Chestnut Ridge Rd.) from University Ave. to Pineview Dr.
- WV 705 from Stewartstown Rd. to US 119 (Mileground Rd.)
- WV 7 (Earl Core Rd.) from Deckers Creek Blvd. to Beulah Rd.
- CR 67 (Stewartstown Rd.) from Chestnut Ridge Rd. to south of US 119 (Point Marion Rd.)

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- Boyers Ave. between University Ave. and Stafford St.
- Burroughs St. from University Ave. to WV 705 (Van Voorhis Rd.)
- Pineview Drive from WV 705 (Chestnut Ridge Rd.) to Riddle St.
- Riddle St. from Pineview Dr. to Hickory St.
- Willowdale Rd. from Grove St. to Medical Center Dr.
- University Ave. from WV 705 (Patteson Dr./Van Voorhis Rd.) to North Ave.
- University Ave. from College Ave. to Willey St.

Safety conditions for motorized vehicles in the urbanized area are another key component to analyzing the existing conditions. Crash record information was obtained from the City of Morgantown who obtained the information from WV DOT. Crash data for areas outside the City of Morgantown were unavailable. The data used in this study is from June 2008 to December 2011. During this time period there were a total of 4,060 vehicle crashes; an average of 3-4 crashes per day. Out of the 4,060 crashes, there were 20 that occurred within a work zone.

The key findings of the accident data review are summarized below:

- During the years analyzed, a total of 4,060 crashes occurred throughout the urbanized area. This equates to 3 to 4 crashes per day; and
- The intersections with crash rates in excess of two crashes per million entering vehicles are:
 - WV 705 (Patteson Drive) at US 19 (Monongahela Boulevard): 5.90 crashes/million vehicles entering;
 - Stewart Street at CR 67 (Vangilder Street): 3.62 crashes/million vehicles entering the intersection; and
 - Spruce Street at Walnut Street: 2.05 crashes/million vehicles entering the intersection.

Intersections are not the only locations where crashes occur. Several corridors with a significant number of crashes include:

- US 119 from Cheat Road to Smithtown Road
- WV 705 from US 19 to Pineview Drive
- US 19 from Chaplin Hill Road to Patteson Drive

Public Transportation

The Mountain Line Transit Authority (MLTA) is the primary public transportation service within Morgantown and Monongalia County. MLTA provides deviated fixed-route, flex-route, and dial-a-ride service. West Virginia University (WVU) also provides public transportation service in Morgantown and Monongalia County operating a variety of shuttles and buses as well as a unique fixed-guideway system known as Personal Rapid Transit (PRT).

MLTA primarily operates as a flag stop system, in which passengers can board a bus anywhere along a route by flagging down the driver as the bus approaches. The timetables MLTA provides for each route represent scheduled time points during which passengers can expect a bus along a route. The only exceptions are Mountain Line's two express routes; the West Run Express Route 30 and the Blue & Gold Connector Route 38. Both buses only stop at designated stops to maintain schedules.

MLTA operates 20 deviated fixed-routes within Morgantown and Monongalia County. Three of these routes connect the smaller communities and rural areas of Monongalia County with Morgantown. A map of the



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routes is included in this document. A full description of the routes is available from MLTA and will be in the final document.

MLTA’s NewFit program consolidates all of the flex-route, dial-a ride, and on-demand services available to residents of Monongalia County under one organization. NewFit provides curb-to-curb and door-to-door services to medical appointments and work/training opportunities to all residents; residents with disabilities are given preference priority. NewFit operates Monday through Friday from 6:00 a.m. to 5:30 p.m.

WVU’s PRT system is an Automated Guideway Transit (AGT) system that uses small computer driven cars to transport passengers to five stations located along its 8.7 mile route. The stations include: Walnut Street and Beechurst Avenue two stations on WVU’s downtown campus and the Engineering Science, Evansdale Residential Complex, and Health Sciences stations on WVU’s Evansdale campus.

WVU also operates two campus shuttles. The Sunday Shopping Shuttle operates during Fall and Spring semester to and from various destinations around Morgantown. The Coliseum/Engineering PRT Shuttle operates between the Morgantown Coliseum and the Engineering PRT Station.

The Buckwheat Express provides public transportation to residents of Preston County, including a fixed-route service transporting residents to Morgantown. The Fairmount – Marion County Transit Authority (FMCTA) provides service to Fairmont and Marion County, including one fixed-route service to Morgantown. Fayette Area Coordinated Transportation (FACT) provides service to residents of Fayette County, West including a fixed route to Morgantown. In Touch and Concerned is a non-profit agency that provides door to door service to the elderly in Morgantown and Monongalia County.

Table 1 Transit Capacity and Quality of Service Manual - Level of Service (LOS) Measures¹

Level of Service	Transit Capacity and Quality of Service Measures		
	Frequency (minutes)	Hours of Service	Service Coverage
LOS A	<10	19-24	90.0-100.0%
LOS B	10-14	17-18	80.0-89.9%
LOS C	15-20	14-16	70.0-79.9%
LOS D	21-30	12-13	60.0-69.9%
LOS E	31-60	4-11	50.0-59.9%
LOS F	>60	0-3	<50.0%

¹ The transit level-of-service analysis is based on the methodology described in *TCRP Report 100: Transit Capacity and Quality of Service Manual (TCQSM)*. The TCQSM uses six measures to quantify service quality. Of the six available measures, three were selected for this analysis as being most relevant to a long-range planning effort; service frequency, hours of service, and service coverage.



From the user’s perspective, *service frequency* determines how many times an hour a user has access to the transit mode, assuming that transit service is provided within acceptable walking distance (measured by *service coverage*) and at the times the user wishes to travel (measured by *hours of service*). Service frequency also measures the convenience of transit service to choice riders and is one component of overall transit trip time (helping to determine the wait time at a stop). Regarding service frequency, a majority of the MLTA routes currently operate at LOS E. Table 2 summarizes the transit level-of-service analysis results for service frequency.

Table 2 Service Frequency Level-of-Service Analysis

Routes	Service Frequency (Min)	Composite LOS
Campus PM Route 1	10	B
Downtown Mall PM Route 2	60	E
Green Line Route 3	60	E
Orange Line Route 4	60	E
Gold Line Route 6 – Mountain Valley	60	E
Gold Line Route 6 – Hospital Bus	60	E
Red Line Route 7	80	F
Tyrone Bus Route 8	90	F
Purple Line Bus Route 9	80	F
Brown Line Bus Route 10	120	F
Cassville Bus Route 11	30	D
Blue Line Bus Route 12	60	E
Pink Line Bus Route 16	80	F
West Run Express Bus Route 30	20	C
Blue & Gold Bus Route 38	20	C
Valley View Bus Route 44	15	C

Hours of service, also known as “service span,” is simply the number of hours during the day when transit service is provided along a route, a segment of a route, or between two locations. The hours of service analysis a majority of the MLTA routes currently operate at LOS E. Table 3 summarizes the transit level-of-service analysis results for hours of service.



Table 3 Hours of Service Level-of-Service Analysis

Routes	Hours of Service	Composite LOS
Campus PM Route 1	9	E
Downtown Mall PM Route 2	6	E
Green Line Route 3	10	E
Orange Line Route 4	16	C
Gold Line Route 6 – Mountain Valley	15	C
Gold Line Route 6 – Hospital Bus	12	D
Red Line Route 7	11	E
Tyrone Bus Route 8	12	D
Purple Line Bus Route 9	11	E
Brown Line Bus Route 10	9	E
Cassville Bus Route 11	12	D
Blue Line Bus Route 12	11	E
Pink Line Bus Route 16	9	E
West Run Express Bus Route 30	10	E
Blue & Gold Bus Route 38	14	C
Valley View Bus Route 44	7	E

Service coverage is a measure of the area within walking distance of transit service. Based on the TCQSM, areas must be within 1/4-mile of a bus stop (or route in the case of MLTA) or 1/2 mile of a transit station to be considered an area served by transit. Service coverage is an all-or-nothing issue for transit riders—either service is available for a particular trip or it is not. As a result, there is no direct correlation between service coverage LOS and what a passenger would experience for a given trip. Based on the analysis, the MLTA service coverage is a LOS A according to Transit level of service (TLOS) methodology. However, this should be understood as a metric that does not always consider real world conditions such as topography, directness of routes to transit stops, and other factors that affect the user experience. Although TLOS methodology suggests a high level of service for Morgantown’s transit supportive areas, anecdotal understanding of the actual user experience may differ. Map 14 shows the overlap between transit supportive areas and MLTA’s service.

Deficiencies within the MLTA’s transit system are discussed in three areas: service frequency, service hours, and service coverage.

- Service Frequency: MLTA’s fixed-route service currently operates at LOS E throughout the day with respect to frequency. If headways are decreased, service will become more appealing to a broader range of users, and ridership should increase.



- **Service Hours:** MLTA's fixed-route service currently operates at LOS E throughout the day with respect to hours of service. Service at this level is generally used only by those who have no other transportation alternative, such as WVU students. Increasing the hours of service will make bus service usable for a broader range of trip purposes. In contrast, an insufficient service span can cause unwanted time constraints on daily activities or trips because of the limited time available in which to make trips.
- **Service Coverage:** The current population and employment service coverage is LOS A. The area located north of WV 705, which is not currently served by transit, may require additional transit routes or additional transportation facilities in order to be served. This area, however, is currently undeveloped.

Pedestrian System

Morgantown's pedestrian system consists primarily of sidewalks and off-street multi-use trails. It is given added complexity by Morgantown's topography, the separation of West Virginia University's three principal campuses, and the high degree of non-motorized travel demand typical of university cities. As with its bicycle infrastructure network, Morgantown has taken recent steps to enhancing its pedestrian system through development of a formal plan and a quasi-governmental advisory board.

Morgantown's efforts to improve pedestrian infrastructure in the City are based largely on a significant demand for this infrastructure as evident by current travel patterns. Based on a 2000 survey by the West Virginia Department of Transportation, Division of Highways, Morgantown had the highest percentage of persons walking to work in the State (16.8%), compared to a state average of 2.5%. Many residents also walk for exercise and enjoy the use of multi-use paths and trails, such as those along the Monongahela River and Deckers Creek.

As reported in the Morgantown Pedestrian Safety Plan, Prevention Magazine listed Morgantown as having the highest proportion of its population walk for exercise in the State. This may be in part to the variety of multi-use trails providing both recreational and commuting opportunities. The Caperton Trail and the Decker's Creek Trail provide nearly ten miles of paved pathways throughout the City, mainly running along the Monongahela River and through southeast Morgantown. Several of the City's parks include natural surface trails, with approximately five miles of trails at White Park, two miles at University Farm, ten miles at Cooper Rock, five miles at Snake Hill Wildfire Management Area, and additional trails on unregulated private land.

The West Virginia University Injury Control Research Center analyzed crash data from 1998 through 2008, identifying 226 reported pedestrian injuries occurring between January 1998 and June 2008. The following intersections have the highest number of reported pedestrian injuries (noted in parentheses):

- Spruce & Walnut (9)
- High & Willey (8)
- S. University & Pleasant (8)
- University & College (8)
- N. Willey & Prospect (7)
- Spruce & Pleasant (5)
- University/Beechurst/Fayette (5)
- Beechurst & Campus (5)
- Chestnut Ridge/Van Voorhis (5)
- High & Walnut (4)
- High & Fayette (4)
- University & Prospect (4)

In addition, police report data from 2005 through 2011 identify a total of 144 crashes within the city limits involving pedestrians. Of these crashes, 35 occurred on City streets, 15 on private roads or parking lots, and 94 on County, State, or US routes.



What is noteworthy about these two sets of statistics is the relatively consistent number of average yearly accidents involving pedestrians, between 20 and 25 per year. This suggests that particularly problematic locations or corridors likely experience consistent patterns of accident activity.

Bicycle System

Morgantown has taken significant steps in the past few years to support progress towards improving bicycling in the city, including the creation of a Bicycle Board in 2006, the development of the Greater Morgantown Bicycle Plan, and the adoption of a “Complete Streets” policy by the City and the MPO.

Morgantown currently has limited bicycle infrastructure, in part because of the challenges noted in the *Greater Morgantown Bicycle Plan* (2012) with the city’s hilly geography and limited rights-of-way on roadways. However, the city does have some trails for cycling and other bike facilities, which are detailed below. None of the City streets have paved shoulders, and few of the state routes do. There are no on-street bicycle lanes in Morgantown.

Morgantown has numerous bicycle parking racks throughout the City. West Virginia University also provides bicycle racks at many of its buildings. In 2010, City Council approved funding to implement a plan for bicycle parking rings on downtown parking meters. The City has not adopted design standards for bicycle rack facilities or development standards requiring new bicycle rack facilities as part of new retail, commercial, or residential developments.

Bicycle Safety

The Morgantown Bike Board has collected data for bicycle related crashes. There have been nine reported bicycle crashes in the last five years in Morgantown, which are listed in Table 4. Based on accounts from the Bicycle Board, the current process for reporting bicycle crashes is very tedious and lacks support. Therefore, this number could under represent the true number of bicycle collisions and may not reveal all bicycle-related safety concerns.

Table 4 Reported Bicycle Crashes within the City of Morgantown (2007-2011)

Location	Date	Type Involved	Sidewalk Cycling?	Report Number
Dalton St. IMO	5/2/2007	Bicycle	Unknown	2007-15369
Sabraton Ave	8/11/2008	Bicycle	Unknown	2008-26434
US-119	9/18/2008	Bicycle	Y	2008-25297
Jones Ave & Sharon Ave	8/31/2009	Bicycle	N	2009-75462
209 Chestnut St	11/13/2009	Bicycle	Y	2009-98715
1632 Sabraton Ave	11/18/2009	Bicycle	N	2009-100369
Unlisted	4/25/2011	Bicycle	N	2011-42129
High St & Fayette St	8/16/2011	Bicycle	Y	2011-84039
Beechurst Ave & 6th St	8/23/2011	Bicycle	Y	2011-87348



As noted in Table 4, at least four of the reported crashes involved cyclists riding on the sidewalk. This suggests a lack of roadway bicycle facilities or comfort among bicyclists for riding on the road. The *Greater Morgantown Bicycle Plan* notes that, besides being illegal, riding on sidewalk in high-traffic locations can actually place bicyclists at greater risks, particularly at intersections. It suggests that bicycle routes with low traffic volume, bike lanes on arterial streets, and completely separated trails can benefit cyclists that would otherwise ride on the sidewalk.

Public Input

During the initial study process, the public was provided multiple opportunities to engage in Crossroads. Regarding existing conditions, the public brought forth several concerns with the transportation system. Included below is a summary of the Stakeholder Interview comments and comments from the general public that were received at meetings held in January and March of 2012. It should be noted that the ideas expressed in this summary reflect the opinions and perceptions of individuals interviewed and may not be representative of all individuals, or factually accurate.

Business growth and housing development have outpaced the transportation system. This situation has created an environment where the system is incomplete, inadequate, disjointed, and overwhelmed. There are congestion problems due to limited capacity and lack of efficiency.

Projections of future growth will be reviewed in further detail in forthcoming chapters.

Topography. The areas topography severely limits the amount of buildable space.

Transportation system lacks adequate way-finding. This was mentioned for vehicular, pedestrian, and bicycle traffic. Users unfamiliar with the area find it difficult to locate their destination.

Way-finding will be reviewed in further detail in forthcoming chapters.

Major transportation issues were consistently defined as:

- Pedestrian traffic at Grumbein's Island impeding vehicular traffic
- Peak hour congestion
- Topography
- Inadequate pedestrian facilities
- Only two N-S corridors and two E-W corridors
- Funding
- Transit schedule and frequency. Lack of specified bus stops
- County/Cities cooperation/ coordination and politics in the area as well as at the State level
- Lack of county zoning
- Parking downtown, parking during events, and on street parking that restricts municipal services
- Truck traffic through the CBD
- WVDOH should consider/improve signal synchronization and potential reversible lane locations
- No enforcement at dangerous intersections, toward pedestrians who cross illegally, or illegal parking
- Negative media representation
- Vehicular mentality
- Lack of adequate biking facilities

Major Congestion Areas. In each interview the Monongahela Blvd/Beechurst Avenue/University Avenue/Don Knotts Drive corridor, the 705 corridor and Mileground were repeatedly mentioned.



The capacity deficiency analysis performed using existing conditions verifies that several sections of these corridors are operating at unacceptable Levels of Service.

Major Safety Concerns. These revolved around the specific dangerous intersections listed below as well as pedestrians intermingling with motor vehicles. Grumbein's Island was most frequently mentioned.

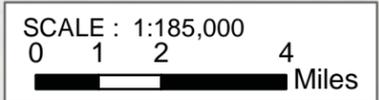
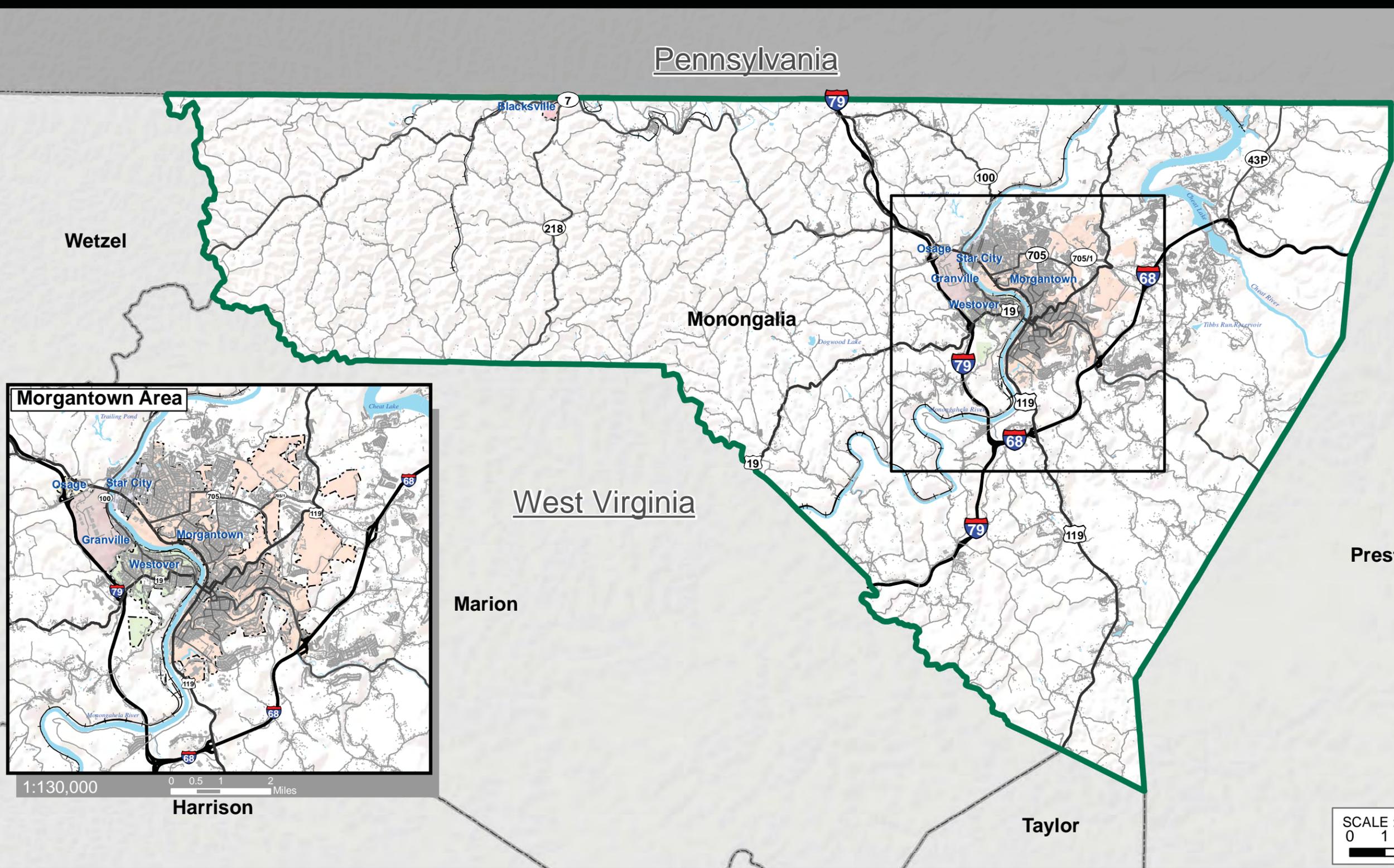
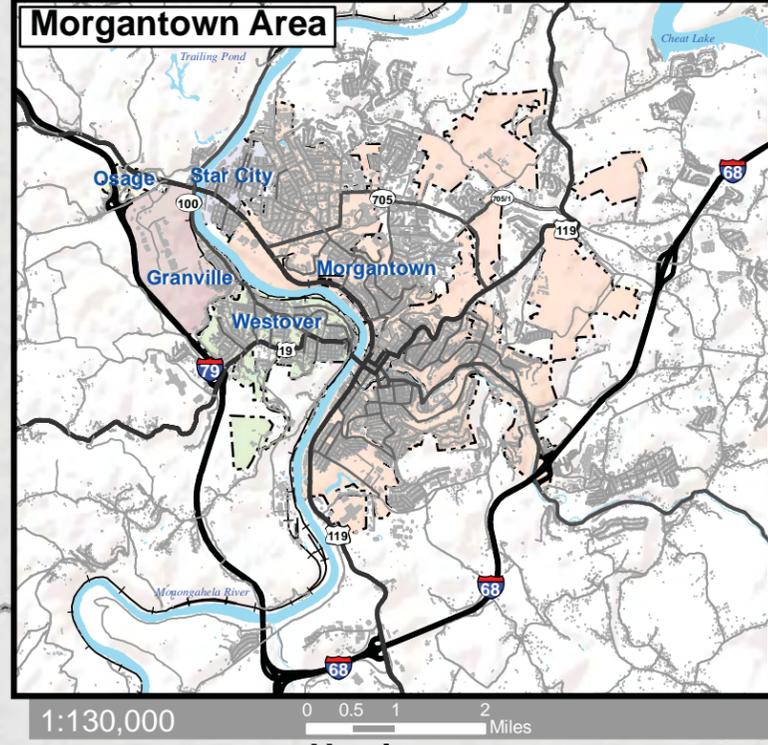
- Grumbein's Island
- US 119 at Stewartstown Road
- WV 705 at Stewartstown Road
- Van Voorhis Rd. at West Run Road
- US 119 at West Run Road
- Cheat Road at Tyrone Avery Road
- Tyrone Road at Tyrone Avery Road
- Don Knotts Blvd at US 119
- Sabraton Road at Greenbag Road
- Mileground at Trinity
- Anywhere along WV 705 corridor

While these intersections do not show up as safety concerns in the crash analysis, it should be noted that several of the intersections listed above are part of the high corridor crash locations and, as such, will be reviewed in further detail during the transportation planning process.

Transit is key. In each interview, the stakeholders felt that transit is an integral part of the overall system and worked well to incorporate pedestrians and bicyclists. Most participants thought transit worked very well in the area except for a few details. They would like to see improved frequency in service, specific bus stop locations, and a schedule that benefits every day workers; not just students.

Transportation Demand Management (TDM) TDM may be defined as seeking to maximize the operating capacity of the area's existing system by minimizing the number of vehicles on the network. This is done by encouraging the use of alternative modes of transportation, ridesharing and congestion reduction by shifting travel times. The MPO is working to implement TDM in the area. One way the MPO is addressing this issue is seek better coordination among all the major employers and additional park-n-ride locations for the area. Transportation Demand Management will be reviewed further in forthcoming chapters.





Legend

- Buildings
- Monongalia Co Boundary
- Corporate Boundaries

Study Area Map

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
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 Datum: North American 1983
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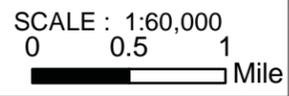
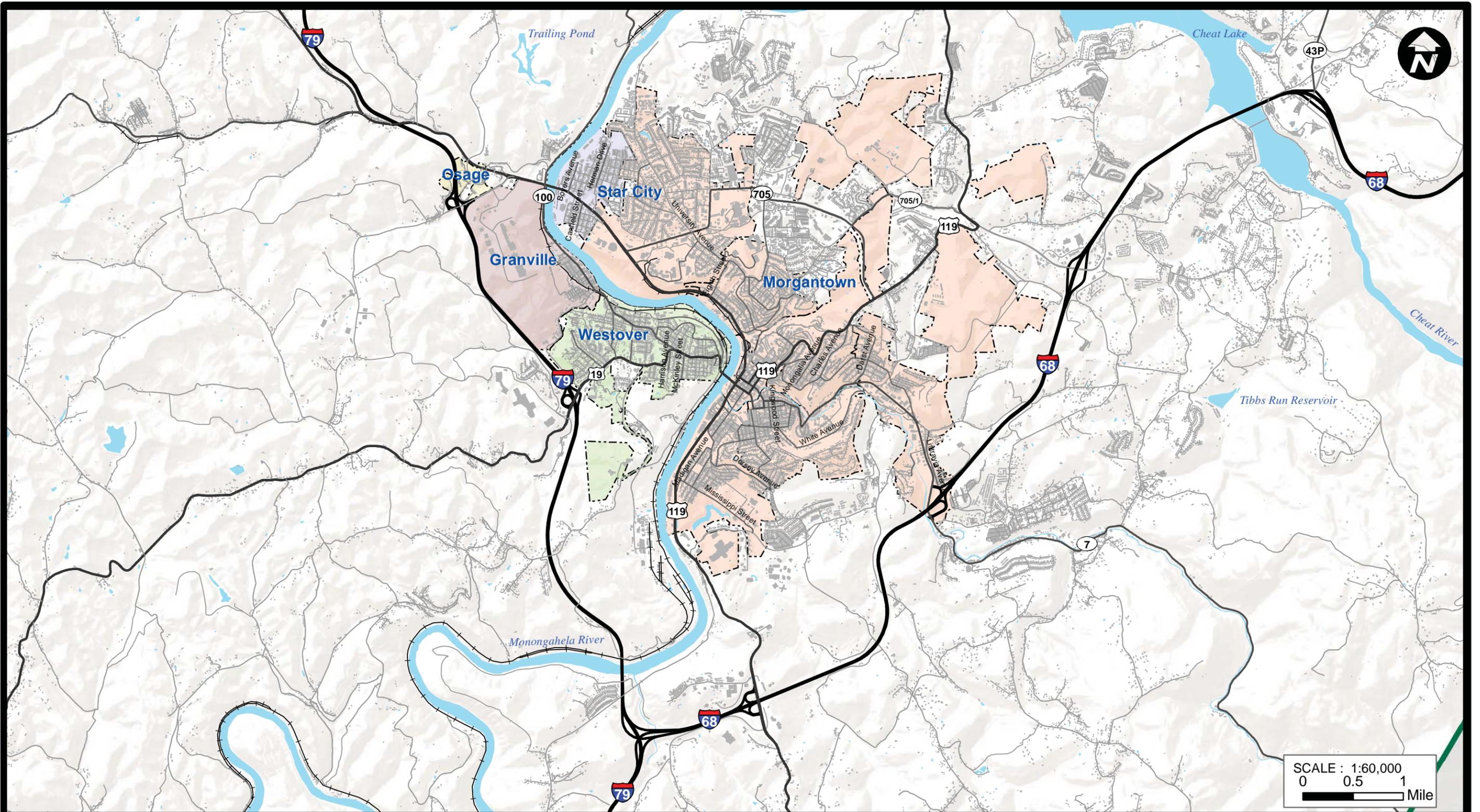
Figure

1 of 21



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Legend

-  Buildings
-  Monongalia Co Boundary
-  Corporate Boundaries

**Study Area Map -
Urbanized Area**

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
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Figure

2 of 21



Pennsylvania

Wetzel

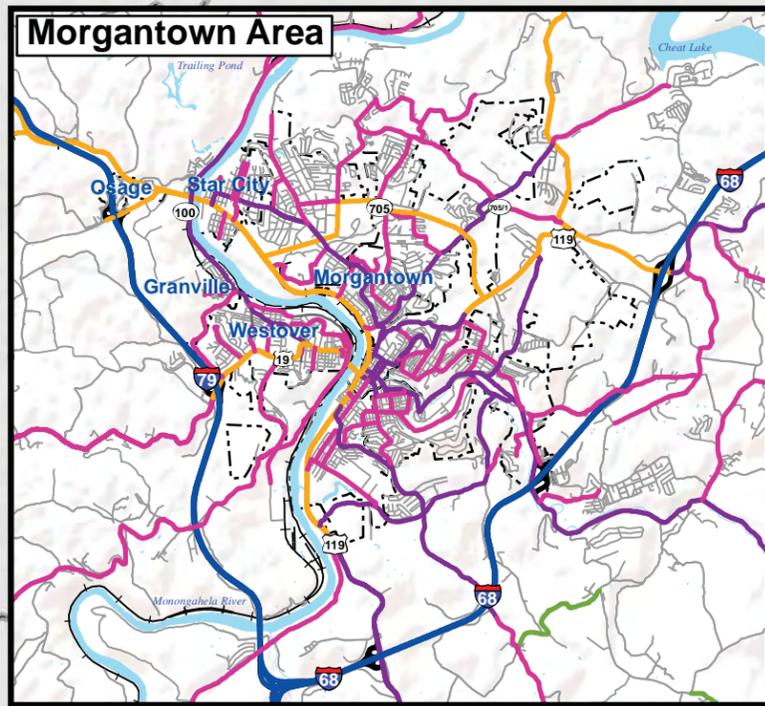
Monongalia

West Virginia

Preston

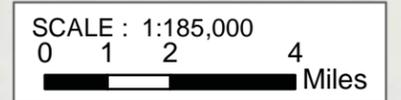
Marion

Taylor



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Harrison



Legend

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local Roads
- MonongaliaCoBoundary
- Corporate Boundaries

Functional Classification Map

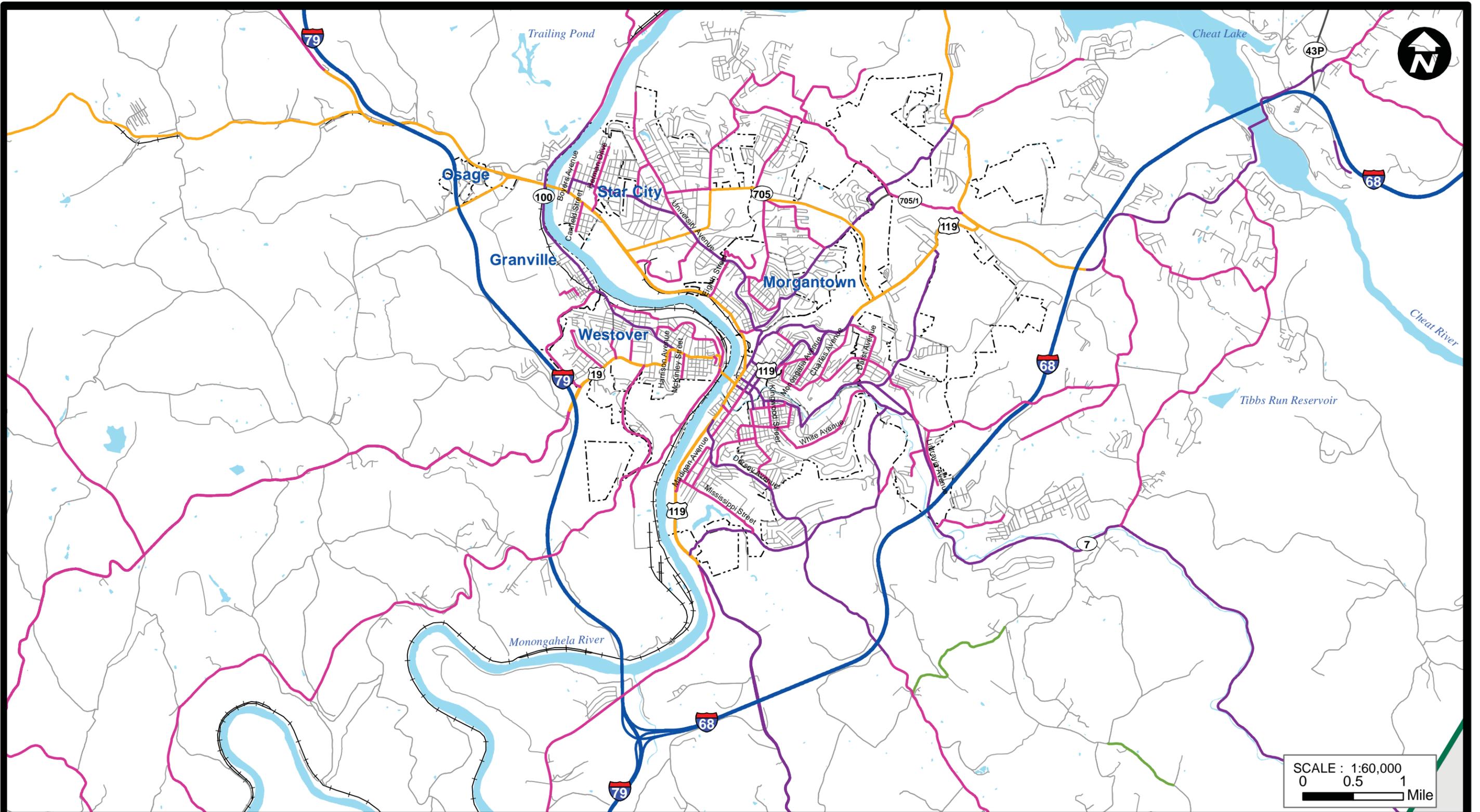
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Figure

3 of 21

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Legend

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local Roads
- Monongalia Co Boundary
- Corporate Boundaries

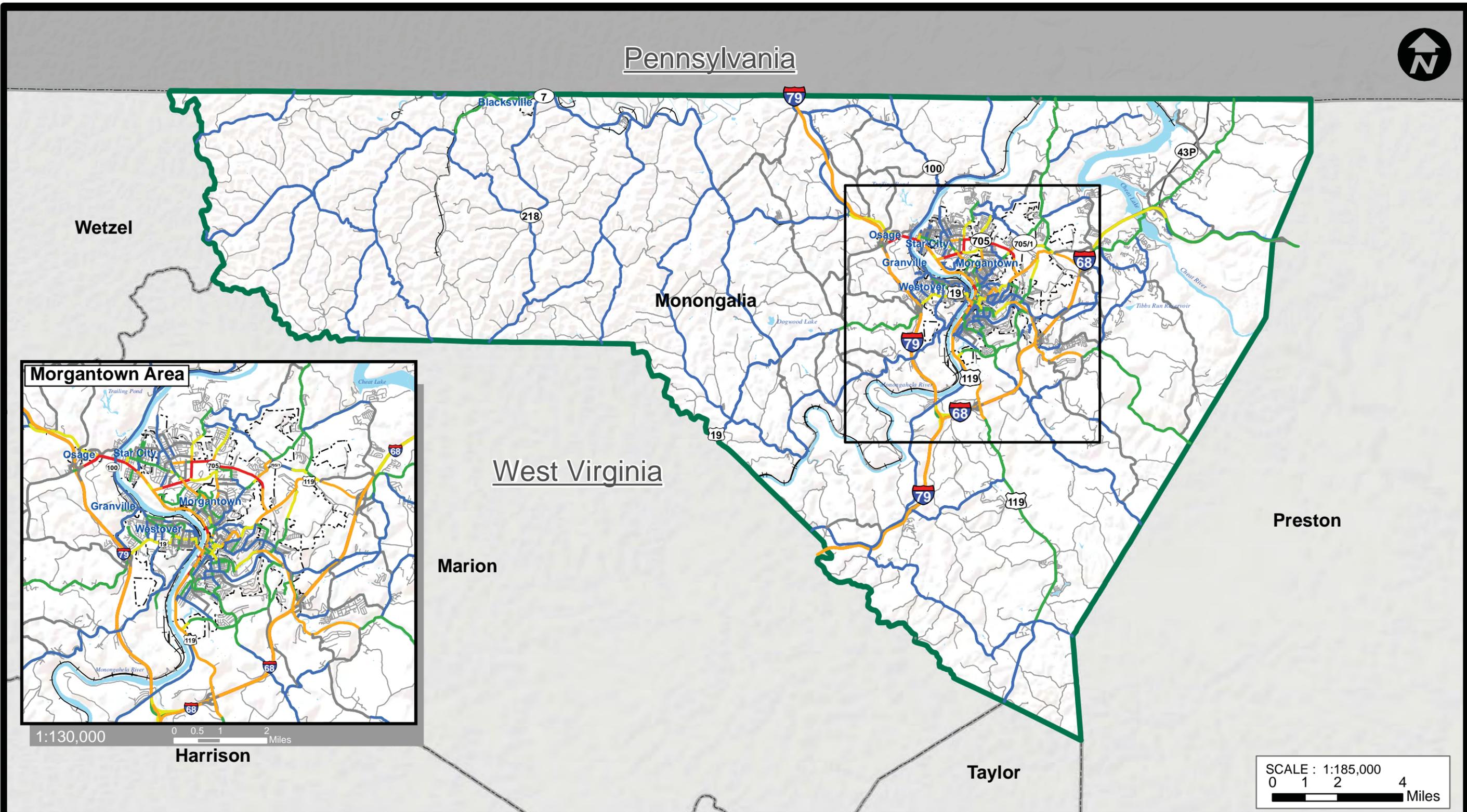
**Functional Classification Map -
Urbanized Area**

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 Units: Foot US
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Figure

4 of 21



Legend

	No Count Available		MonongaliaCoBoundary
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	10001 - 15000		
	15001 - 25000		
	25001 - 45000		

Local Roads

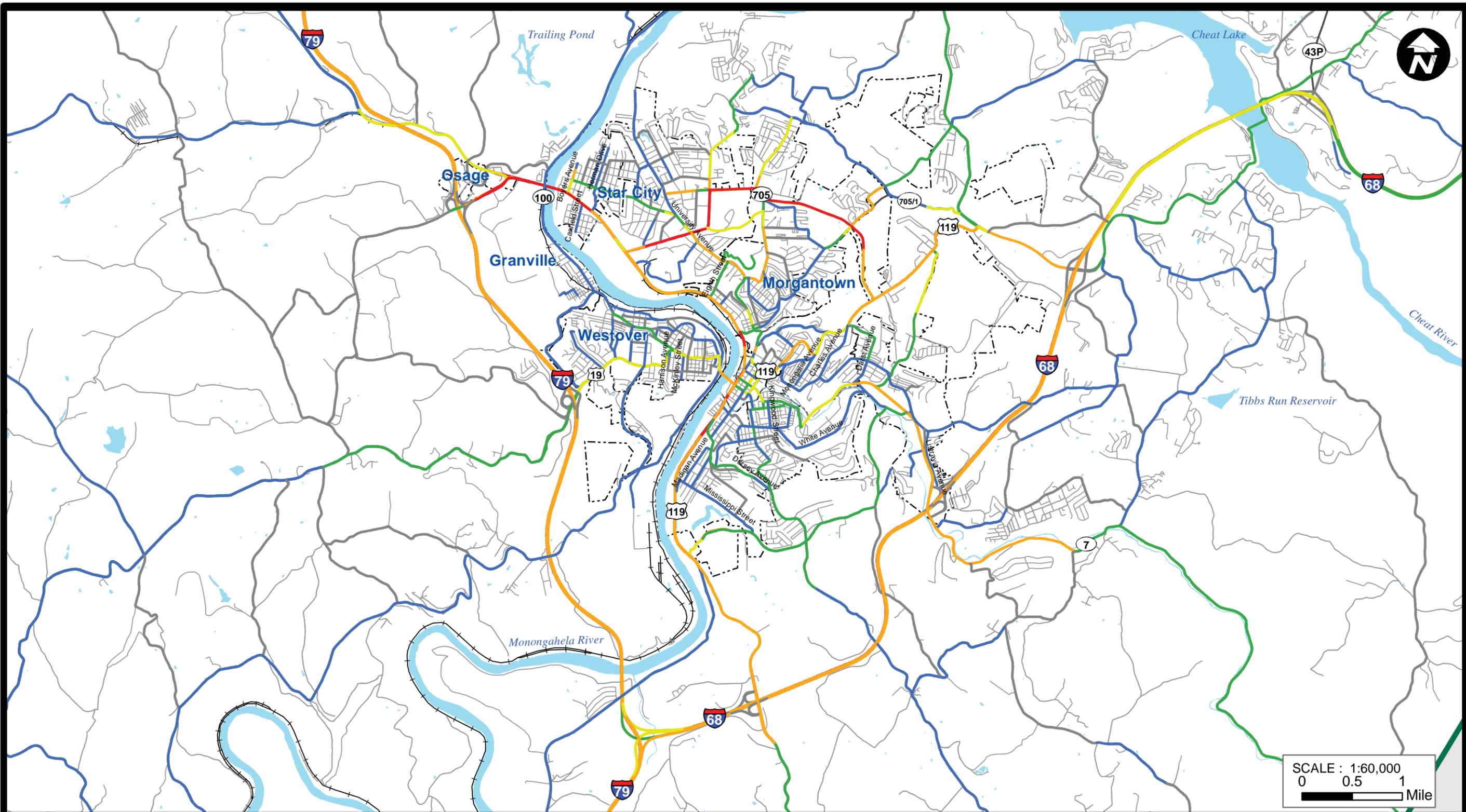
Average Daily Traffic Volumes Map

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Figure
5 of 21

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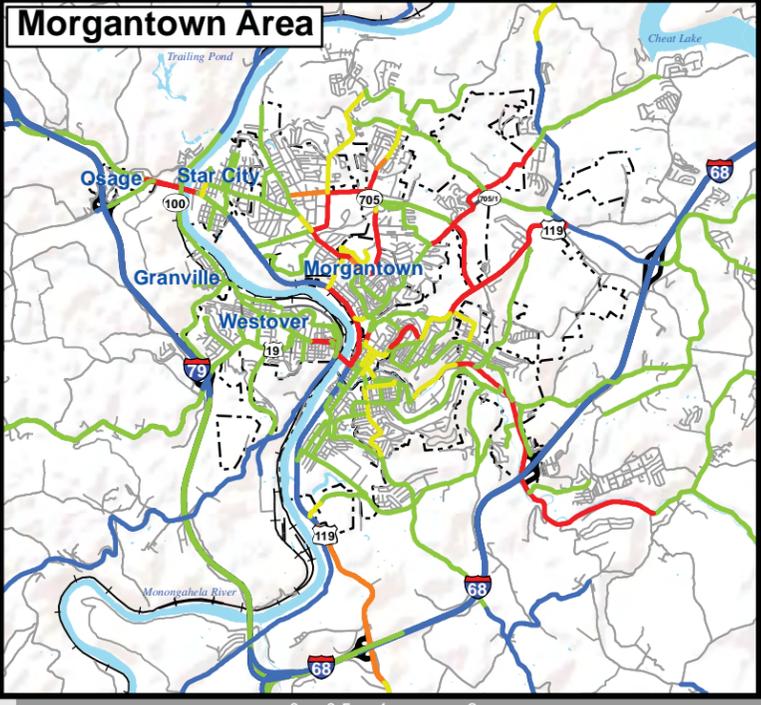
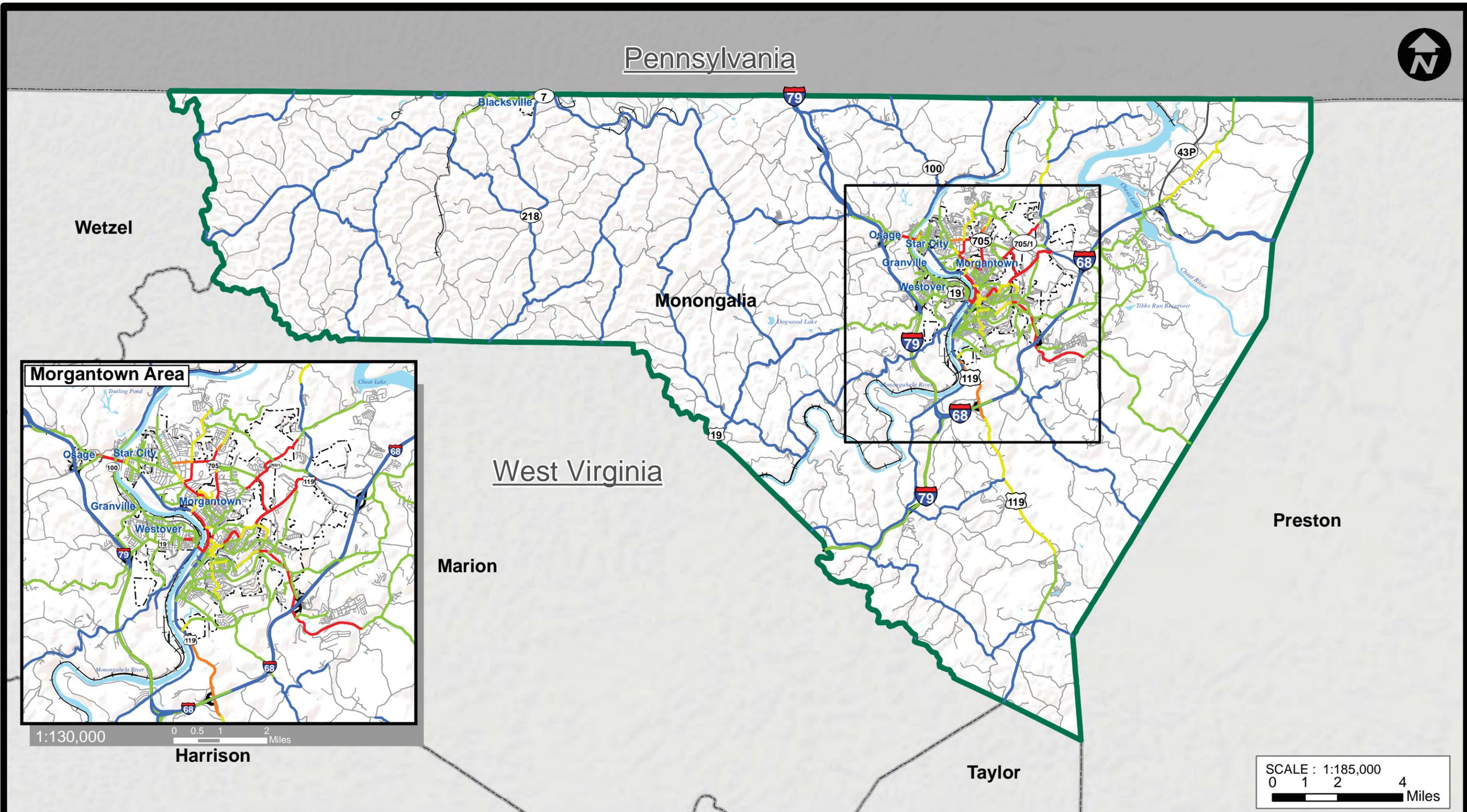
Legend		Vehicles Per Day	
	No Count Available		Monongalia Co Boundary
	1 - 5000		Corporate Boundaries
	5001 - 10000		
	10001 - 15000		
	15001 - 25000		
	25001 - 45000		

Average Daily Traffic Map - Urbanized Area

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 Units: Foot US
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Figure
6 of 21



1:130,000
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SCALE : 1:185,000
0 1 2 4 Miles

Legend

Level of Service	Monongalia Co Boundary
A-B	Corporate Boundaries
C	
D	
E	
F	

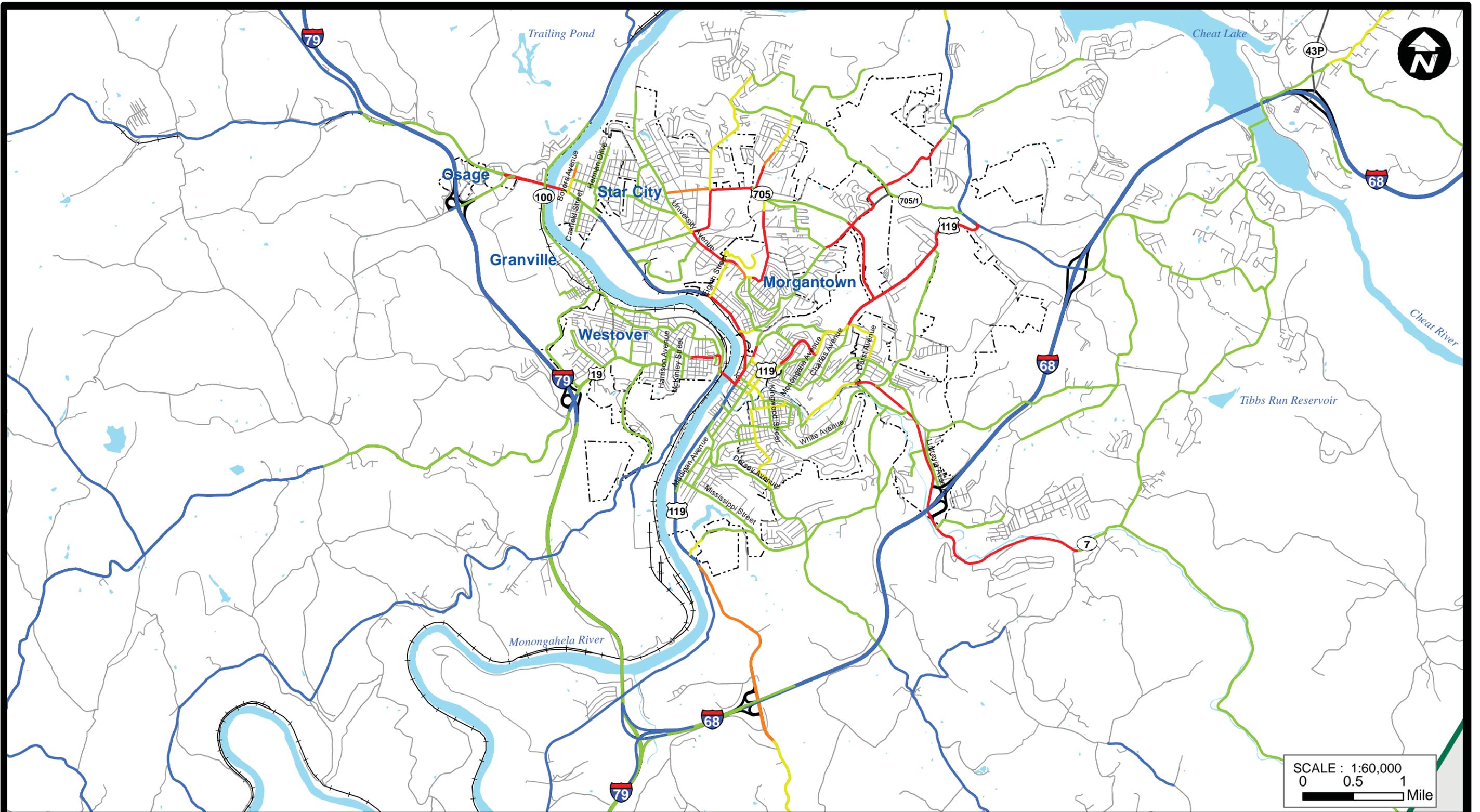
Existing Capacity Deficiencies Map

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Units: Foot US
 Author: Popovich, Kris
 Time : 2:33:26 PM Date : 2/29/2012 Revised : 4/30/2012

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P:\PR50755\Mapping\GIS\Workspaces\Jamie\Maps\Existing Conditions Report 4-30-2012\Map8_DEF_WV_11x17.mxd

P:\PR50755\Mapping\GIS\Workspaces\Jamie\Maps\Existing Conditions Report 4-30-2012\Map9_DEF_Morgantown_11x17.mxd



Legend

- Level of Service**
- A-B
 - C
 - D
 - E
 - F
- Monongalia Co Boundary
- Corporate Boundaries

**Existing Capacity Deficiencies Map -
Urbanized Area**

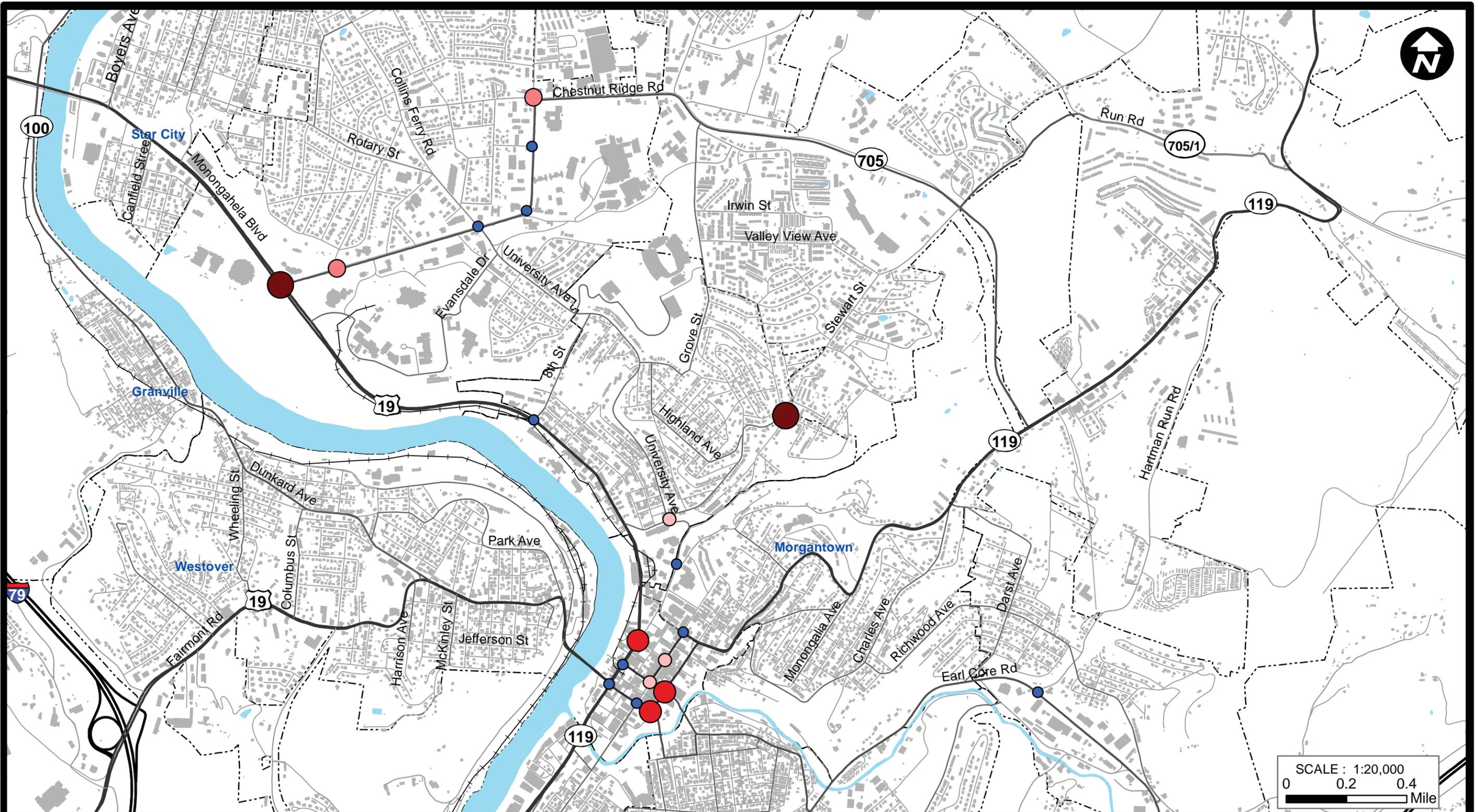
Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Units: Foot US
 Author: Popovich, Kris
 Time : 2:38:31 PM Date : 2/29/2012 Revised : 4/30/2012



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P:\PR50755\Mapping\GIS\Workspaces\Jamie\Maps\Existing Conditions Report 4-30-2012\Map10_Crashes_Morgantown_11x17.mxd



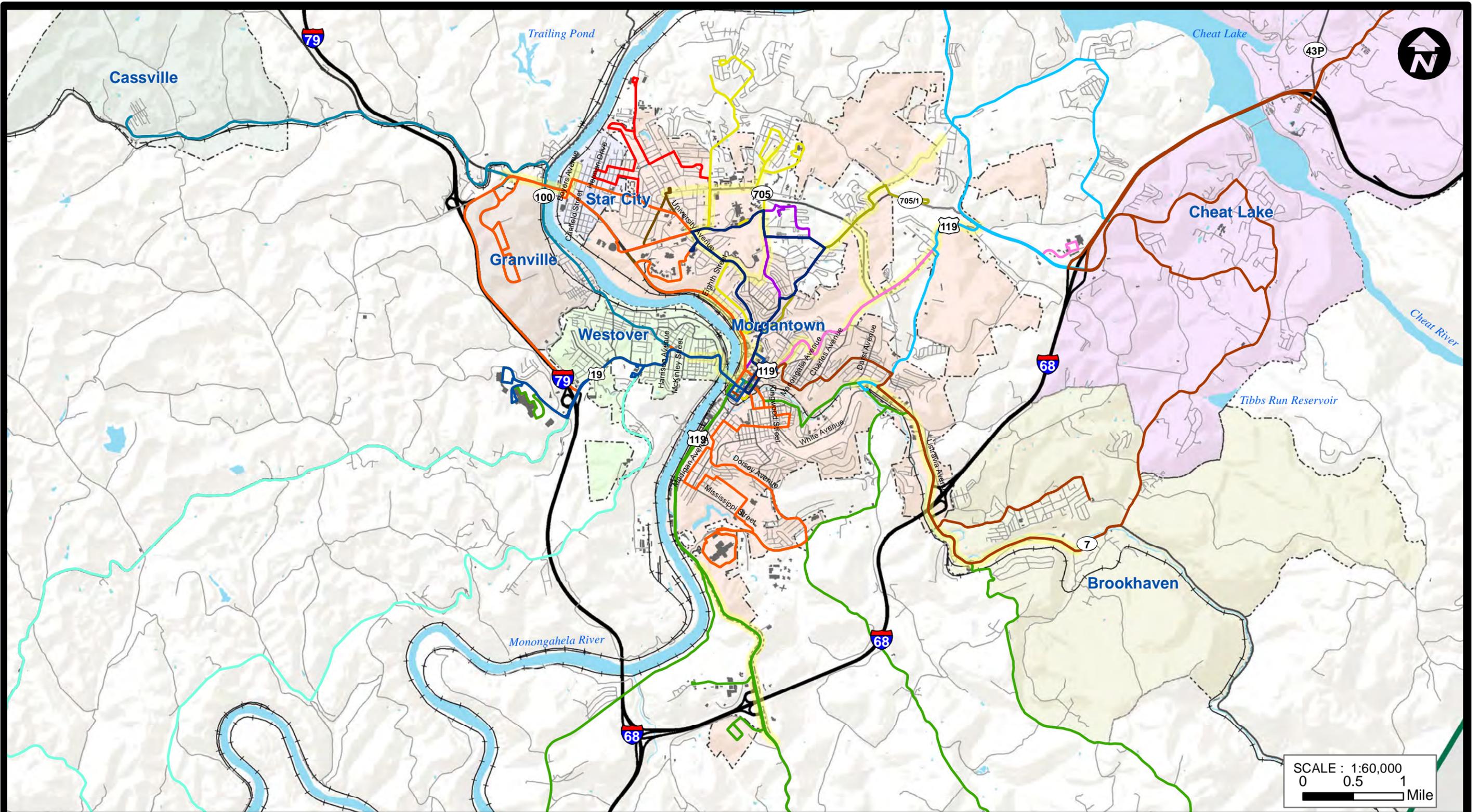
Legend # Of Crashes Per Million Vehicles Entering The Intersection

Crash Rate	● 1.76 - 3.00	Buildings
● 0.75 - 1.28	● 3.01 - 6.00	Corporate Boundaries
● 1.29 - 1.50		
● 1.51 - 1.75		

Intersection Crash Locations Map

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Units: Foot US
 Author: Popovich, Kris
 Time : 3:16:34 PM Date : 2/29/2012 Revised : 4/30/2012

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Legend

- Route 1 Route 8 Route 14 Congested Corridors (LOS E-F)
- Route 2 Route 9 Route 15
- Route 3 Route 10 Route 16
- Route 4 Route 11 Route 30
- Route 6 Route 12 Route 38
- Route 7 Route 13 Route 44

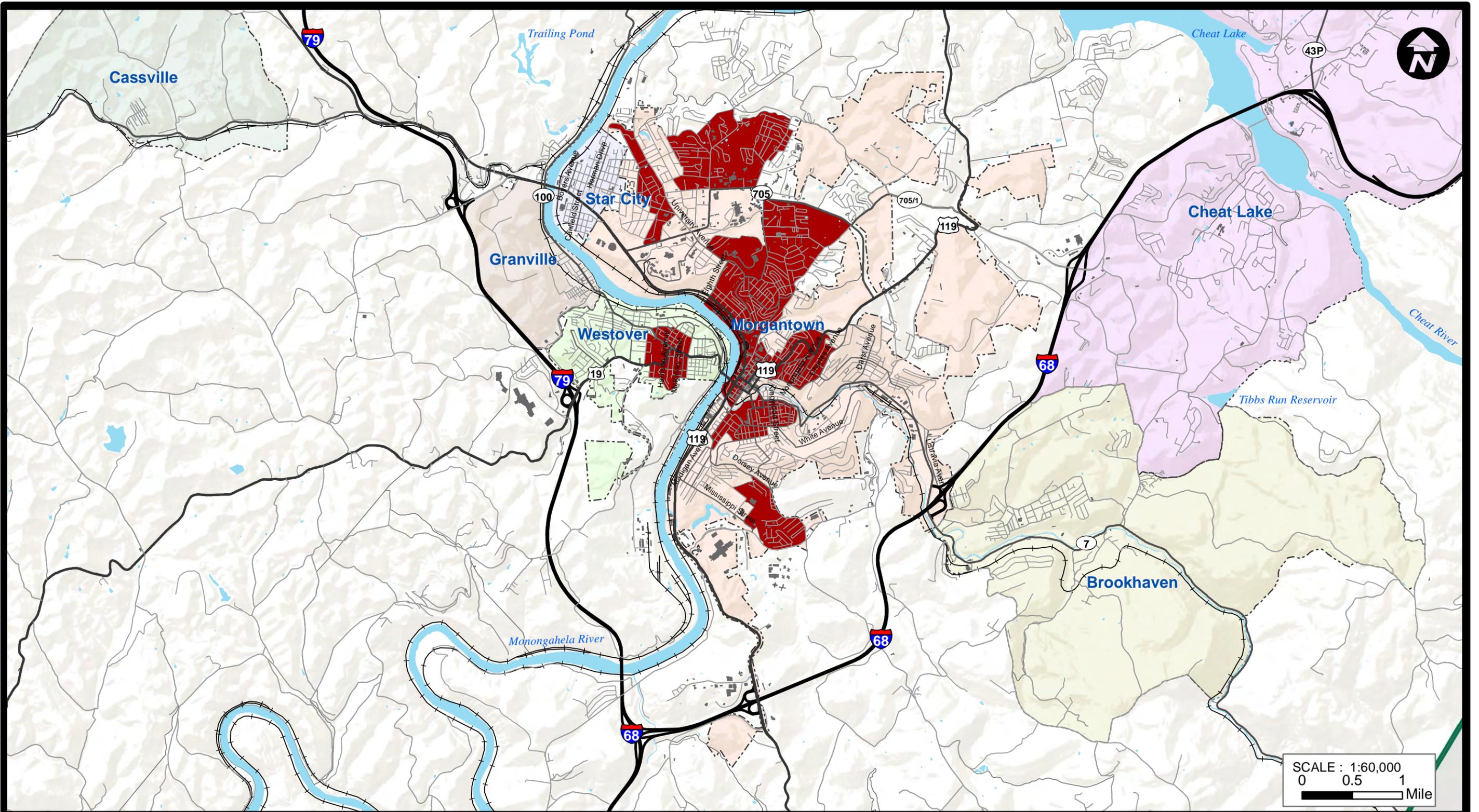
**Mountain Line Transit Authority
Fixed Route Service**

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Units: Foot US
 Author: Popovich, Kris
 Time : 11:56:36 AM Date : 1/4/2012 Revised : 5/3/2012



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H:\profile\11737 - Morgantown LRTP\gis\TM111737_12_Population Density.mxd

Legend

- <3 Households Per Acre
- 3+ Households Per Acre

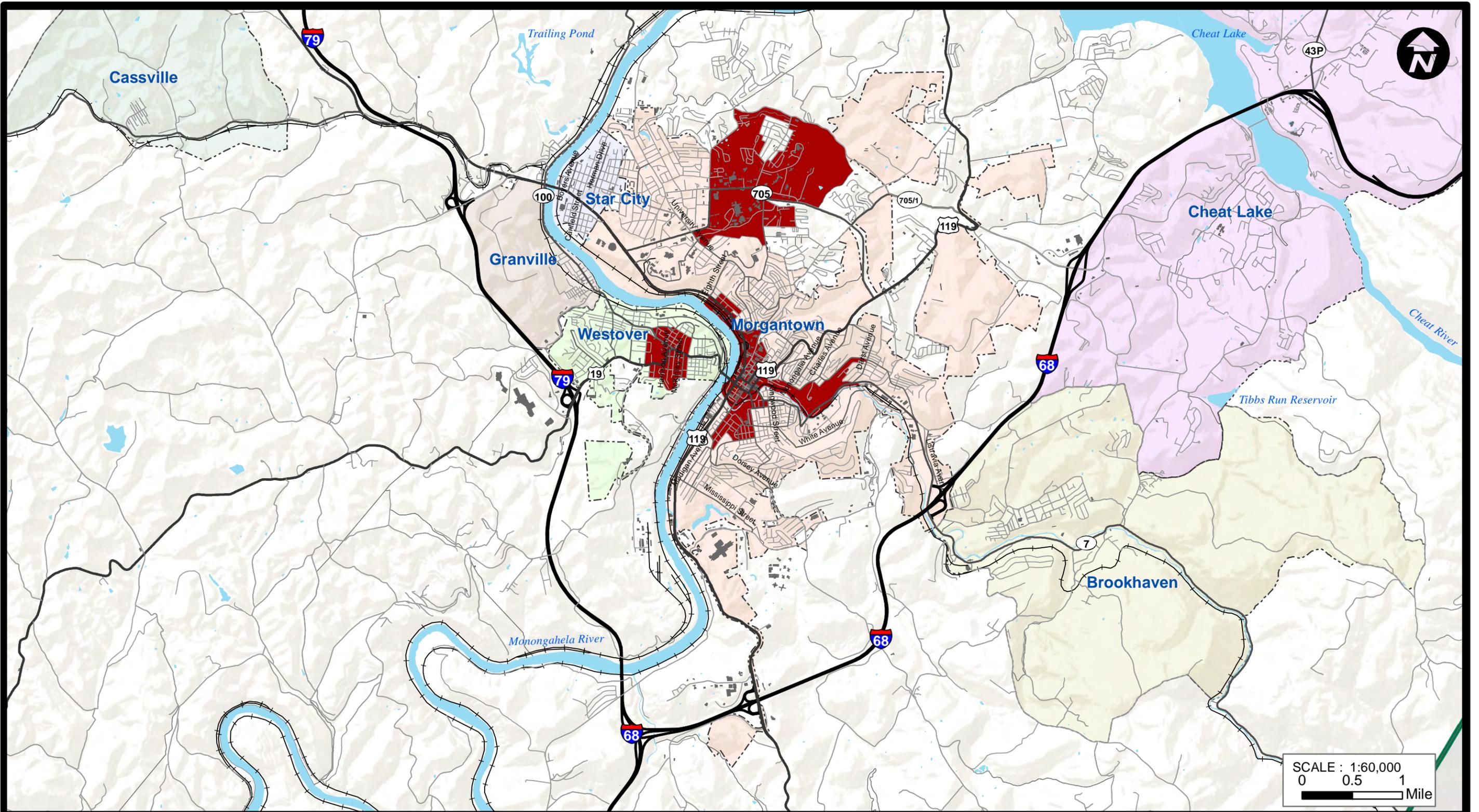
Population Density
Source: 2010 Census Data

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Units: Foot US
 Author: Popovich, Kris
 Time : 11:40:14 AM Date : 1/4/2012 Revised : 5/3/2012



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Legend

- <4 Employees Per Acre
- 4+ Employees Per Acre

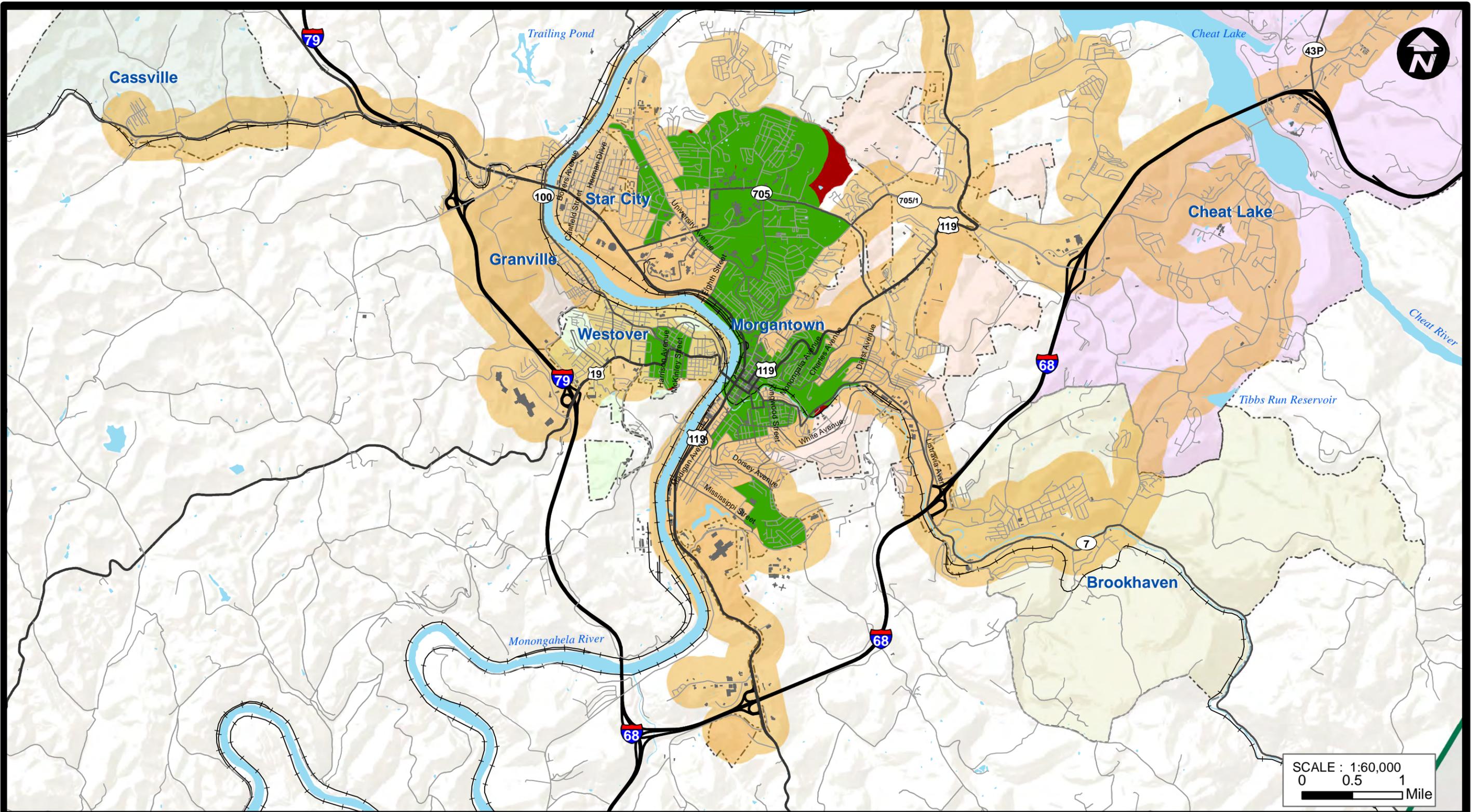
Employment Density
Source: 2010 Census Data

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Units: Foot US
 Author: Popovich, Kris
 Time : 11:38:28 AM Date : 1/4/2012 Revised : 5/3/2012



Figure

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Legend

- TSA_Served
- MLTA_transit_routes_buff
- TSA

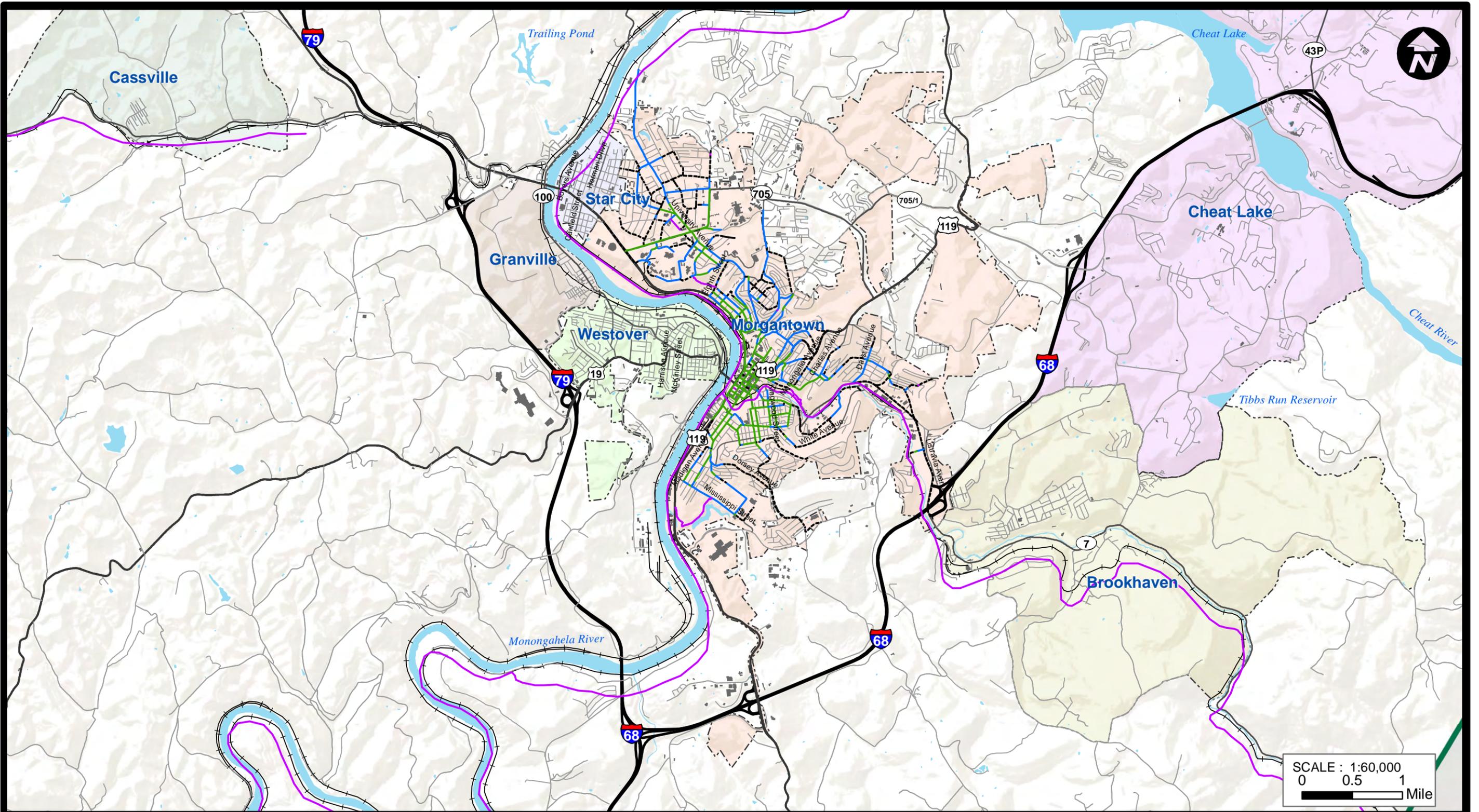
Transit Service Coverage

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Units: Foot US
 Author: Popovich, Kris
 Time : 12:39:27 PM Date : 1/4/2012 Revised : 5/3/2012



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Legend

- No Sidewalks
- Sidewalks on One Side Only
- Sidewalks on Both Sides
- Multi-Use Path or Trail

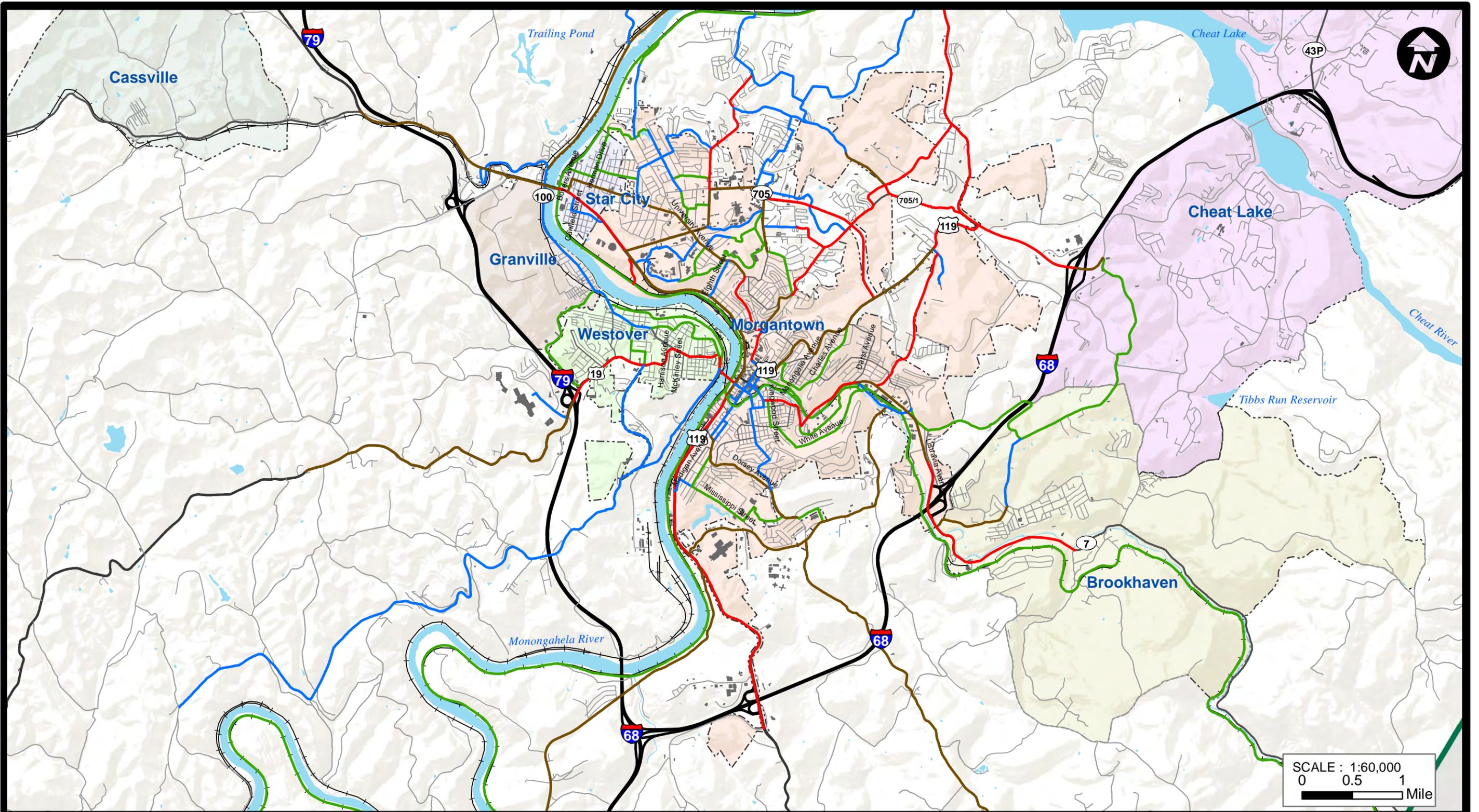
**Connecting Network Streets (CNS),
Rail Trails, and Pedestrian Greenways**

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Units: Foot US
 Author: Popovich, Kris
 Time : 12:40:38 PM Date : 1/4/2012 Revised : 5/3/2012



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H:\profile\11737 - Morgantown LRTP\gis\TM111737_16_Bicycle Commuter.mxd

Legend

- Pleasant
- Ok
- Scary
- Dangerous

Bicycle Commuter Map
 Source: www.bikemorgantown.com

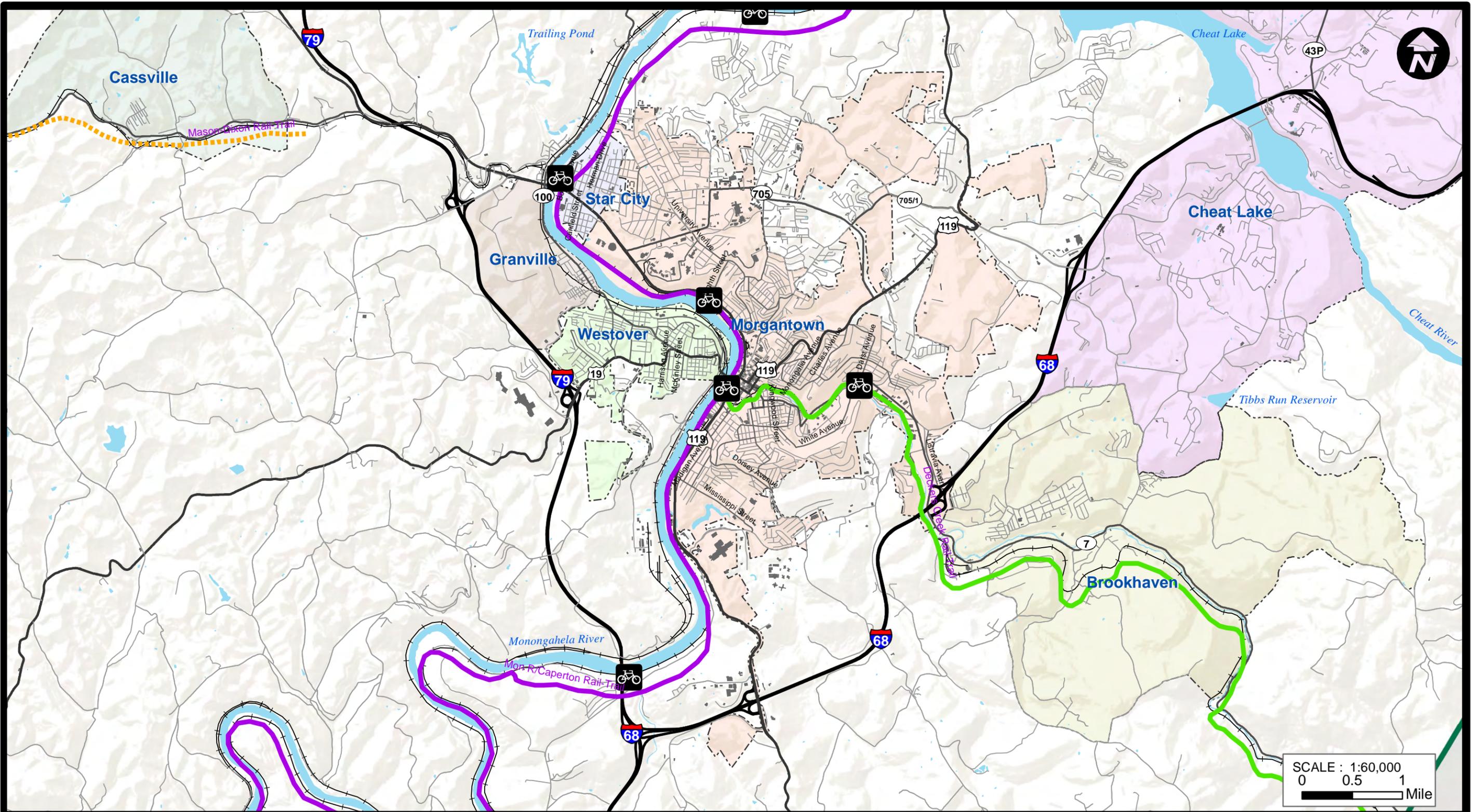
Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Units: Foot US
 Author: Popovich, Kris
 Time : 12:51:11 PM Date : 1/4/2012 Revised : 5/3/2012

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 TRANSPORTATION ENGINEERING/PLANNING



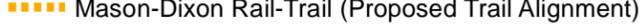
Figure

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H:\profile\11737 - Morgantown LRTP\gis\TM111737_17_Morgantown Trails.mxd

Legend

-  Trailheads
-  Deckers Creek Rail-Trail
-  Mon R/Caperton Rail-Trail
-  Mason-Dixon Rail-Trail (Proposed Trail Alignment)

Morgantown Trails
Source: www.bikemorgantown.com

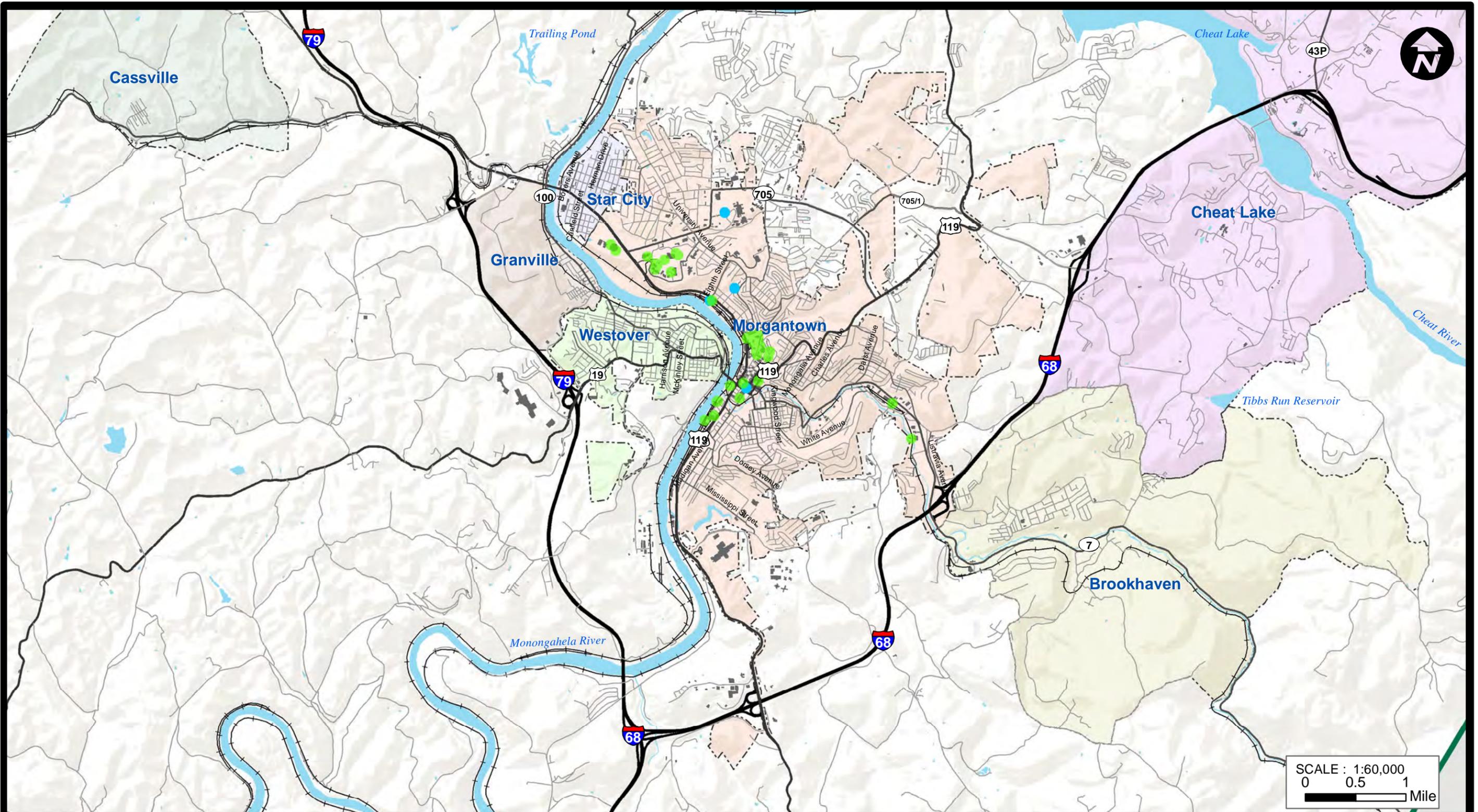
Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Units: Foot US
 Author: Popovich, Kris
 Time : 12:42:11 PM Date : 1/4/2012 Revised : 5/3/2012

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Figure

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SCALE : 1:60,000
 0 0.5 1
 Mile

Legend

- Existing Bicycle Parking
- Bike Service Centers

Bicycle Parking & Service Centers

Source: www.bikemorgantown.com

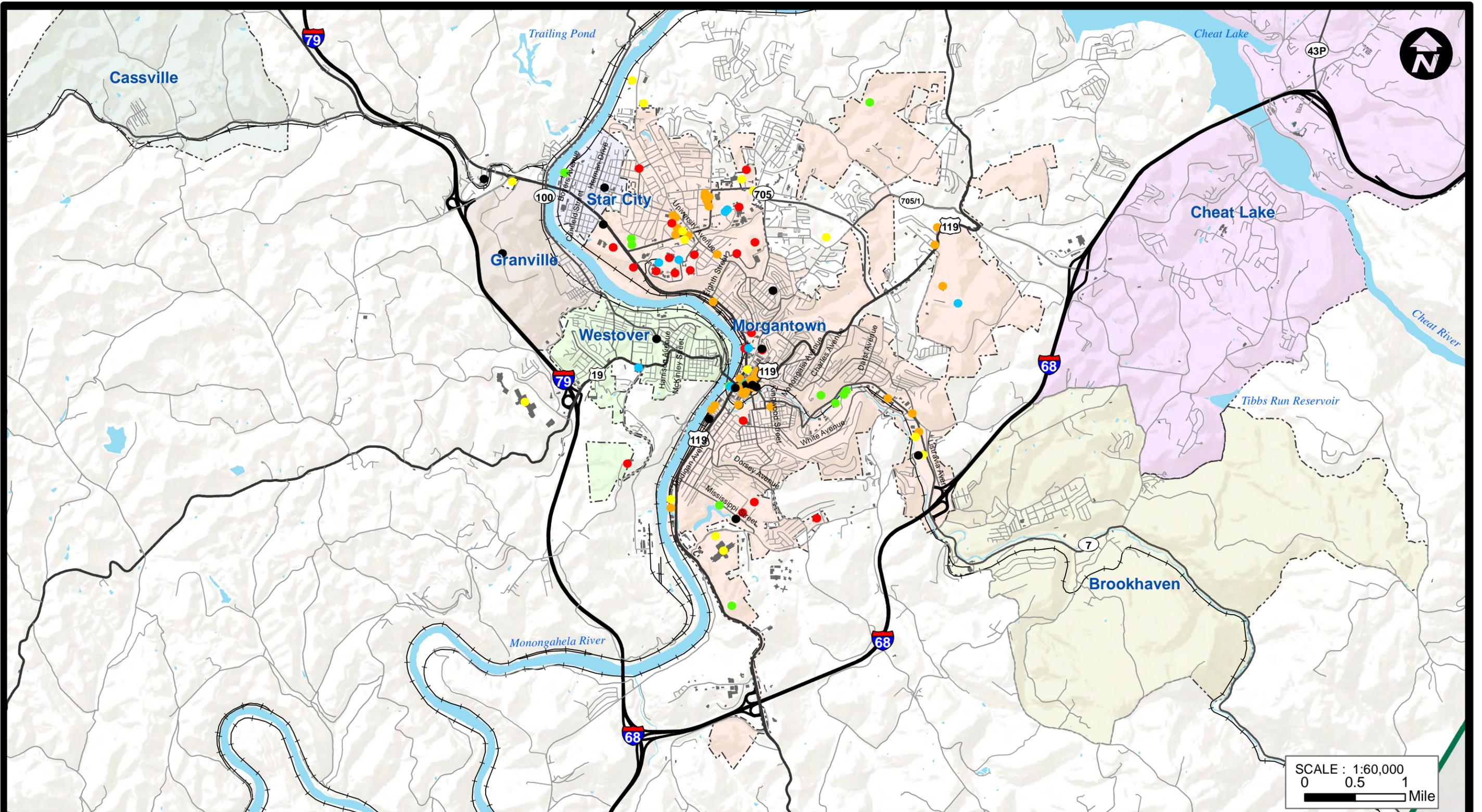
Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Units: Foot US
 Author: Popovich, Kris
 Time : 12:44:30 PM Date : 1/4/2012 Revised : 5/3/2012



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H:\profile\11737 - Morgantown LRTP\gis\TM111737_18_Bicycle Parking.mxd



Legend

- Schools
- Recreation
- Commercial/Retail
- Restaurant
- Transportation
- City/Community Centers

Bicycle Trip Generators

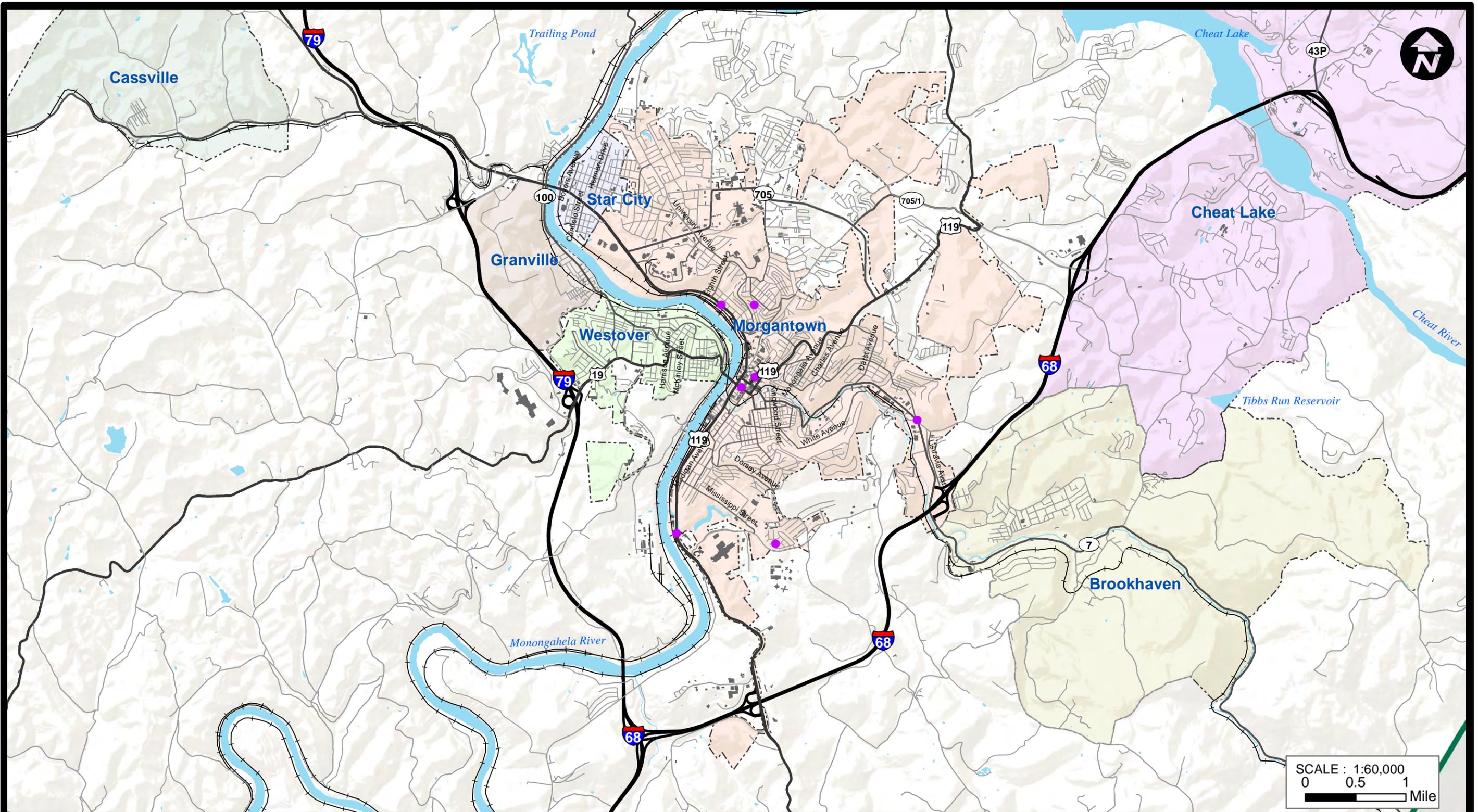
Source: www.bikemorgantown.com

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Units: Foot US
 Author: Popovich, Kris
 Time : 12:45:18 PM Date : 1/4/2012 Revised : 5/3/2012



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Legend

- Bicycle Crashes

**Reported Bicycle Crashes
Within Morgantown (2007-2011)**
Source: www.bikemorgantown.com

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Units: Foot US
 Author: Popovich, Kris
 Time : 12:08:05 PM Date : 1/4/2012 Revised : 5/3/2012

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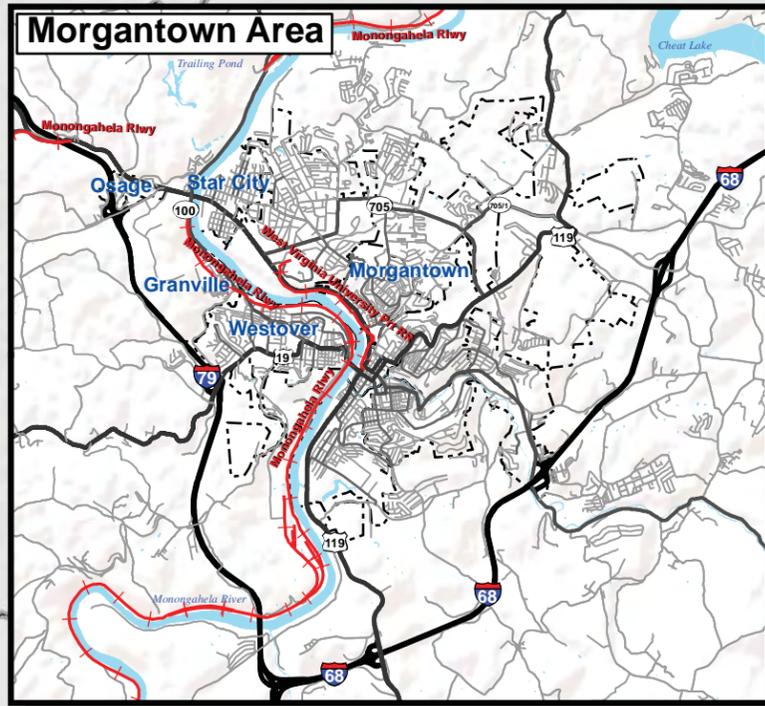
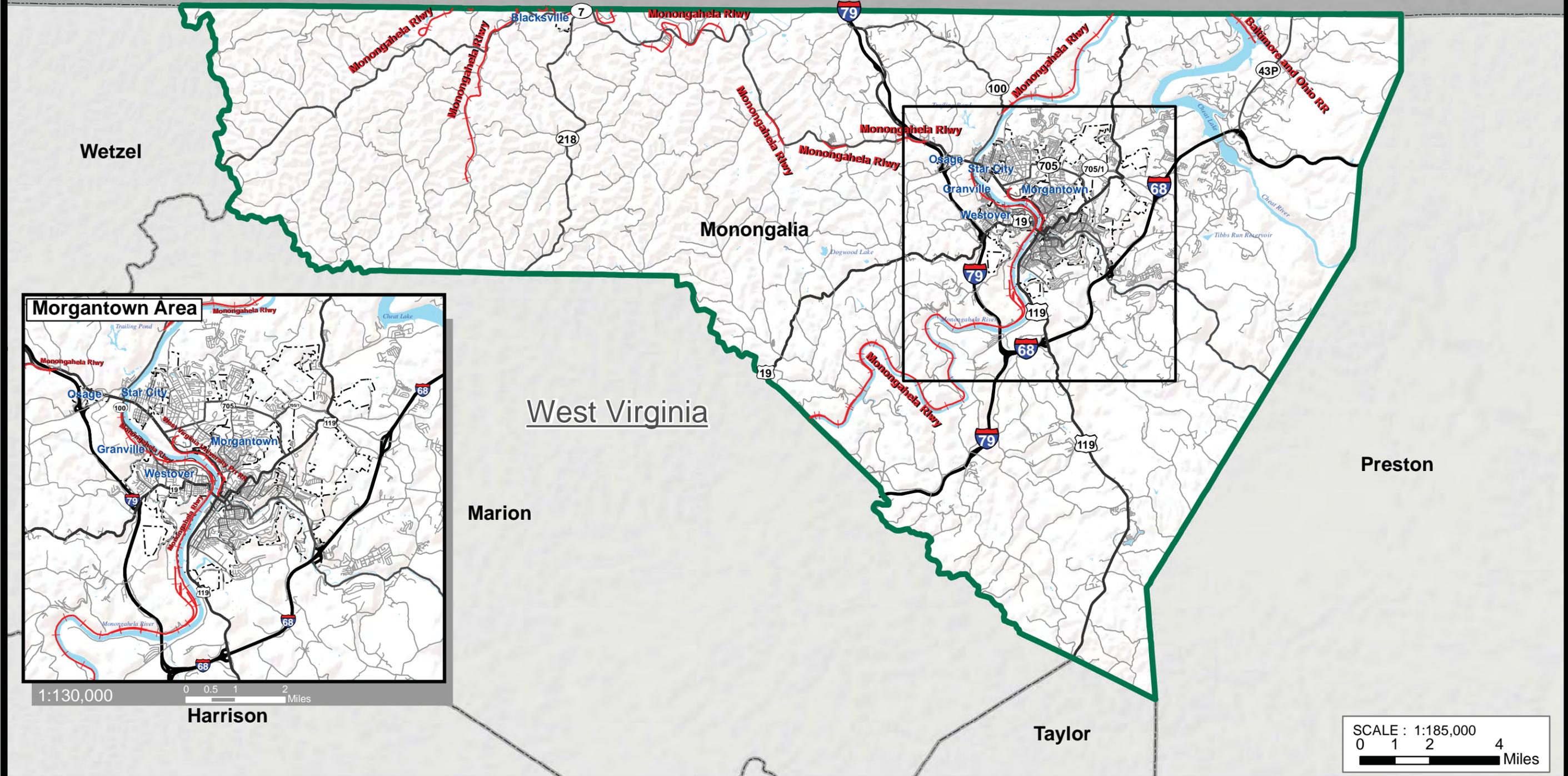


Figure

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Pennsylvania



1:130,000
0 0.5 1 2 Miles

SCALE : 1:185,000
0 1 2 4 Miles

Legend

- Railroad
- Monongalia Co Boundary
- Corporate Boundaries

Rail Lines Map

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Units: Foot US
 Author: Popovich, Kris
 Time : 9:43:50 AM Date : 2/29/2012 Revised : 5/1/2012

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